



UNIVERSITY OF
NOTRE DAME

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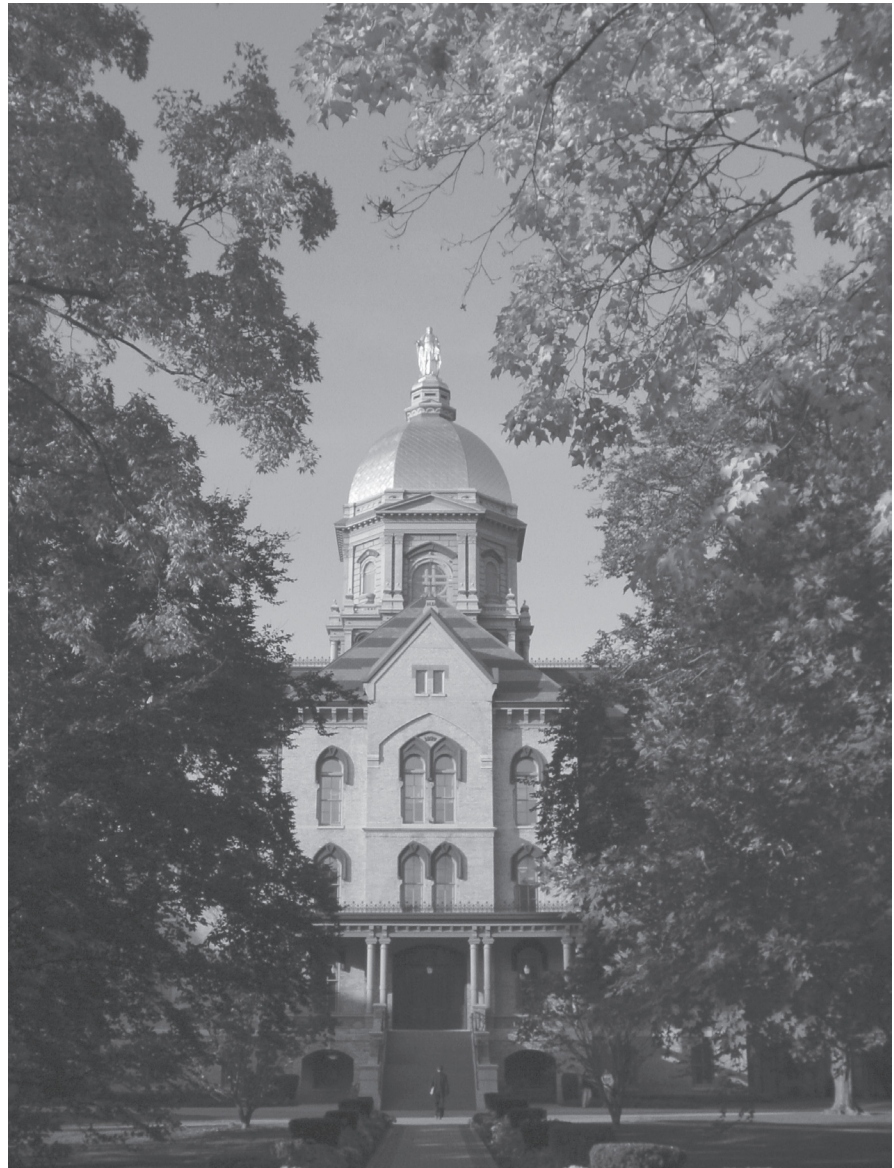
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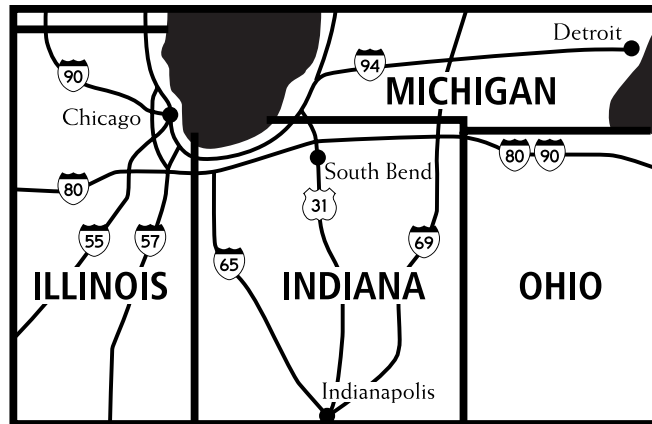
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Volume 102 Number 4 October 2006





The Michiana Regional Transportation Center provides from one location services for travel by air, train, bus, and rental car, including the South Shore Railroad, an electric commuter train to Chicago. South Bend is also served by Amtrak. The city lies about 90 miles east of Chicago, Illinois, 140 miles north of Indianapolis, Indiana, and 200 miles west of Detroit, Michigan.

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The University of Notre Dame does not discriminate on the basis of race, color, national or ethnic origin, sex, disability, veteran status, or age in the administration of any of its educational programs, admissions policies, scholarship and loan programs, athletic and other school-administered programs, or in employment.

The University has designated the director of its Office of Institutional Equity to handle all inquiries regarding its efforts to comply with and carry out its responsibilities under Title IX and under Section 504 of the Rehabilitation Act of 1973. The Title IX and Section 504 coordinator may be contacted as follows:

Director
Office of Institutional Equity
414 Grace Hall
University of Notre Dame
Notre Dame, IN 46556
(574) 631-0444

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Academic Calendar 2006-2007

Fall Semester 2006

August

- 22: Classes begin;
Mass—formal opening of school year
- 30: Last day for course changes

October

- 14: Midsemester break begins (through Oct. 22)
- 23: Classes resume
- 27: Last day for course discontinuance

November

- 1: Application deadline for admission to the Graduate School for spring semester 2007
- 13: Registration for spring semester 2007 (through Nov. 29)
- 23: Thanksgiving holiday begins (through Nov. 26)
- 27: Classes resume

December

- 6: Last class day
- 7: Reading days begin (through Dec. 10)
- 8: Last day for master's examinations and Ph.D. dissertation defenses for graduation in January 2007
- 11: Final examinations begin (through Dec. 15)
- 15: Last day for presenting completed theses and dissertations in the Graduate School office for graduation in January 2006
- 18: All grades submitted through insideND by 3:45 p.m.

January

- 7: January official graduation date (no ceremony)

Spring Semester 2007

January

- 16: Classes begin
- 24: Last day for course changes

February

- 1: Deadline for applying to the Graduate School for fall semester 2007 admission and financial aid

March

- 10: Midsemester break begins (through Mar. 18)
- 19: Classes resume
- 23: Last day for course discontinuance

April

- 6: Easter holiday begins (through Apr. 9)
- 10: Classes resume
- 13: Last day for master's examinations and Ph.D. dissertation defenses for graduation in May 2007
- 16: Registration for fall semester 2007 (through Apr. 25)
- 20: Last day for presenting completed theses and dissertations in the Graduate School office for graduation in May 2007

May

- 2: Last class day
- 3: Reading days begin (through May 4)
- 7: Final examinations begin (through May 11)
- 14: All grades submitted through insideND by 3:45 p.m.
- 18: Commencement weekend begins (through May 20)

Summer Session 2007

June

- 19: Classes begin

July

- 13: Last day for master's examinations and Ph.D. dissertation defenses for graduation in August 2007
- 20: Last day for presenting completed theses and dissertations in the Graduate School office for graduation in August 2007

August

- 2: Last class day
- 3: Final examinations
- 8: August official graduation date (no ceremony)

All dates subject to change.

For more information, visit the Office of the Registrar's Web site at <http://registrar.nd.edu>.

Academic Calendar 2007-2008

Fall Semester 2007

August

- 28: Classes begin;
Mass—formal opening of school year

September

- 5: Last day for course changes

October

- 20: Midsemester break begins (through Oct. 28)
29: Classes resume

November

- 1: Application deadline for admission to the
Graduate School for spring semester 2008
2: Last day for course discontinuance
19: Registration for spring semester 2008 (through
Dec. 5)
22: Thanksgiving holiday begins (through
Nov. 25)
26: Classes resume

December

- 7: Last day for master's examinations and Ph.D.
dissertation defenses for graduation in January
2008
11: Last class day
12: Reading days begin (through Dec. 16)
14: Final examinations begin (through Dec. 19);
Last day for presenting completed theses and
dissertations in the Graduate School office for
graduation in January 2008
22: All grades submitted through insideND by
3:45 p.m.

January

- 6: January official graduation date (no
ceremony)

Spring Semester 2008

January

- 15: Classes begin
23: Last day for course changes

February

- 1: Deadline for applying to the Graduate School for
fall semester 2008 admission and financial aid

March

- 1: Midsemester break begins (through Mar. 9)
10: Classes resume
21: Easter holiday begins (through Mar. 24)
25: Classes resume;
Last day for course discontinuance

April

- 11: Last day for master's examinations and Ph.D.
dissertation defenses for graduation in May 2008
14: Registration for fall semester 2008 (through
Apr. 23)
18: Last day for presenting completed theses and
dissertations in the Graduate School office for
graduation in May 2008
30: Last class day

May

- 1: Reading days begin (through May 4)
5: Final examinations begin (through May 9)
12: All grades submitted through insideND by
3:45 p.m.
16: Commencement weekend begins (through
May 18)

Summer Session 2008

June

- 17: Classes begin

July

- 11: Last day for master's examinations and Ph.D.
dissertation defenses for graduation in August
2008
18: Last day for presenting completed theses and
dissertations in the Graduate School office for
graduation in August 2008
31: Last class day

August

- 1: Final examinations
6: August official graduation date (no ceremony)

All dates subject to change.

**For more information, visit the Office of the Registrar's Web
site at <http://registrar.nd.edu>.**

The Graduate School

As a Catholic research university, the University of Notre Dame offers first-rate academic training in an environment that addresses questions of value and meaning. We are committed to making quality the hallmark of the Graduate School. Our intent is to allow faculty to invest in the lives of gifted graduate students, equipping them to pass on a vision of inquiry, scholarship, teaching, and service.

Over the past two decades, Notre Dame has made dramatic advances in building a distinguished faculty. Ongoing investment in facilities also invigorates the University's graduate programs. For more than a decade major construction projects have added new campus buildings to provide classrooms, faculty offices, and research facilities in the sciences, engineering, humanities, and social sciences.

Notre Dame has a pivotal role to play as a Catholic center of learning, a place that welcomes the intellectual ferment of a university while encouraging its faculty—in a variety of disciplines and from diverse perspectives—to address ultimate questions, religious foundations, and ethical dilemmas.

History

Located north of the city of South Bend, Indiana, the University of Notre Dame, a Holy Cross institution, was founded in 1842 by the Rev. Edward F. Sorin, a priest of the Congregation of Holy Cross. In 1844 it was chartered by a special act of the legislature of the State of Indiana. Combining the style of the French "college" and the seminary in which Father Sorin and his associates were educated, Notre Dame began as both a secondary school and a four-year college offering the baccalaureate degree in the liberal arts. It soon adapted to the style and structure of the typical 19th-century American university, introducing a science curriculum in 1865, the first American Catholic law school in 1869, an engineering college in 1873, a graduate program in 1918, and a college of business in 1921. The University was first accredited by the North Central Association in 1913.

Administration

From 1918 to the present, the University's Graduate School has developed into four divisions—humanities, social sciences, science, and engineering—and the School of Architecture, and includes 30 departments and programs offering master's and/or Ph.D. degrees in most of the major humanistic, scientific, and engineering disciplines.

Administered originally by a graduate committee of faculty members, the Graduate School was organized formally in 1944 with a graduate dean and graduate council. In 1971, the newly created position of vice president for advanced studies underlined the University's intense focus on building quality in the graduate programs. Since 1990, the Graduate School has been administered by a vice president for graduate studies and research, assisted by several associate and assistant deans and the graduate council.

The University's total student population of more than 10,000 includes nearly 1,700 graduate students and 1,000 professional students. Approximately 800 graduate and professional degrees are awarded annually.

Officers of Administration

In the University

Rev. John I. Jenkins, C.S.C., D.Phil.
President of the University
Thomas G. Burish, Ph.D.
Provost
John F. Affleck-Graves, Ph.D.
Executive Vice President
Dennis Jacobs, Ph.D.
Vice President and Associate Provost
Jean Ann Linney, Ph.D.
Vice President and Associate Provost
Christine Maziar, Ph.D.
Vice President and Associate Provost
Rev. Mark L. Poorman, C.S.C., Ph.D.
Vice President for Student Affairs
Louis M. Nanni, M.A.
Vice President for University Relations
Carol Colby Kaesebier, J.D.
Vice President and General Counsel
James J. Lyphout, M.B.A.
Vice President for Business Operations
John A. Sejdinaj, M.B.A.
Vice President for Finance
Scott C. Malpass, M.B.A.
Vice President for Finance and Chief Investment Officer

Hilary Crnkovich
Vice President for Public Affairs and Communications

In the Graduate School

Donald B. Pope-Davis, Ph.D.
Dean of the Graduate School
Michael T. Edwards, M.S.A.
Assistant Vice President for Research and Director, Office of Research
Terrence J. Akai, Ph.D.
Associate Dean of the Graduate School
Andrew B. Deliyannides, Ph.D.
Manager of Technical Support for the Graduate School
Jarren Gonzales, Ph.D.
Assistant Dean of the Graduate School
Terri Hall, B.A.
Associate Director, Pre-Award, Office of Research
Richard A. Hilliard, Ph.D.
Associate Director of Sponsored Programs, Office of Research
Cecilia Lucero
Assistant Dean of the Graduate School
Greg Luttrell
Assistant Director of Post-Award Administration, Office of Research
Jennifer Morehead
Assistant Director of Sponsored Programs, Office of Research
Karen M. Pace, B.S.
Director, Post-Award, Office of Research
Ellen D. Rogers, M.B.A.
Director, Pre-Award, Office of Research
Elizabeth Spencer
Director of Technology Transfer, Office of Research
Barbara M. Turpin, Ph.D.
Associate Dean of the Graduate School
Susan Vissage
Business Manager of the Graduate School

The Graduate Council

Following is the Graduate Council membership for the 2006-2007 academic year.

Ex Officio Members

Donald B. Pope-Davis, Ph.D.
Dean of the Graduate School
Joseph Marino, Ph.D.
William K. Warren Dean of the College of Science and Professor of Chemistry

THE GRADUATE SCHOOL

Mark W. Roche, Ph.D.

I. A. O'Shaughnessy Dean of the
College of Arts and Letters and the Rev.
Edmund P. Joyce, C.S.C., Professor of
German Language and Literature

Carolyn Woo, Ph.D.

Martin J. Gillen Dean of the Mendoza
College of Business and the Raymond
and Milann Siegfried Professor of
Entrepreneurial Studies

James Merz, Ph.D.

Frank M. Freimann Professor of Electrical
Engineering and Interim Dean of the College
of Engineering

Jennifer A. Younger, Ph.D.

Director of University Libraries

Patricia O'Hara

Joseph A. Matson Dean of the Law School and
Professor of Law

Elected Members

Philip Bess, M.Arch.

Professor of Architecture

Theodore J. Cachey, Ph.D.

Chair and Professor of Romance Languages
and Literatures and the Albert J. Ravarino
Family Director of the Devers Program in
Dante Studies

Crislyn D'Souza Schorey, Ph.D.

Associate Professor of Biology and Chair of the
Walther Cancer Institute

Thomas Fuja, Ph.D.

Chair and Professor of Electrical Engineering

Darcia Narvaez, Ph.D.

Associate Professor of Psychology

Igor Veretennikov, Ph.D.

Chemistry and Biochemistry, Research Faculty

Appointees

Mark Alber, Ph.D.

Notre Dame Chair in Applied Mathematics
and Director of the Center for the Study of
Biocomplexity

Sharon Hu, Ph.D.

Associate Professor of Computer Science and
Engineering

Thomas P. Slaughter, Ph.D.

Andrew V. Tackes Professor of History

Additional Members

An appointee and representatives from the Academic
Council will be announced.

Graduate Student Representatives

Michael Lundin

Chemical and Biomolecular Engineering,
President of the Graduate Student Union

Amber Handy

History, Vice President of the Graduate
Student Union

Graduate School Representatives (Non-Voting)

Terrence Akai, Ph.D.

Associate Dean of Financial Resources

Barbara Turpin, Ph.D.

Associate Dean of Academic Policies and
Procedures

Graduate Student Union

Through a council of elected officers, appointed committee chairs and representatives from the departments of its constituent colleges, the Graduate Student Union (GSU) provides a variety of services and represents its membership on several University councils and committees. In particular, it subsidizes graduate student travel to present original research, promotes excellence in graduate education, looks for the highest quality of life for graduate students, and maintains a liaison with the administration regarding pertinent issues. The GSU publishes the newsletter, provides listserv updates, conducts a graduate orientation program, and offers awards for outstanding teaching assistants and graduate instructors, in addition to providing various social, cultural, and intellectual activities. The GSU is the graduate students' official liaison with the University administration and the Office of Student Activities.

The Graduate Student Union finances its operations and Conference Presentation Grant (formerly known as the Robert E. Gordon Travel Grant) through a yearly, mandatory activity fee assessed on all graduate students through the Office of Student Accounts. The Graduate Student Union maintains offices in the LaFortune Student Center at the mezzanine location; send any e-mail inquiries to dfrahn@nd.edu. Telephone: (574) 631-6963, Web: <http://www.gsu.nd.edu>

Graduate Degrees Granted

Master of Architecture

Master of Architectural Design and
Urbanism

Master of Arts in the following fields:

Art History, Design, and Studio Art

Early Christian Studies

Economics

English

French and Francophone Studies

History

History and Philosophy of Science

Iberian and Latin American Studies

Italian Studies

Literature

Peace Studies

Philosophy

Political Science

Psychology

Sociology

Theology

Master of Divinity

Master of Education (only for students in the
Alliance for Catholic Education program)

Master of Engineering (only with J.D.)

Master of Engineering in Mechanical
Engineering

Master of Fine Arts in the following fields:

Creative Writing

Design

Studio Art

Master of Medieval Studies

Master of Sacred Music

Master of Science in Aerospace Engineering

Master of Science in Applied Mathematics

Master of Science in Chemical Engineering

Master of Science in Civil Engineering

Master of Science in Computer Science and
Engineering

Master of Science in Electrical Engineering

Master of Science in Environmental

Engineering

Master of Science in Geological Science

Master of Science in Mechanical

Engineering

Master of Science in the following fields:

Biochemistry

Biological Sciences

Biophysics

Chemistry

Geological Sciences

Mathematics

Physics

Master of Theological Studies

Doctor of Philosophy in the following fields:

Aerospace and Mechanical Engineering

Biochemistry

Biological Sciences

Biophysics

Chemical and Biomolecular Engineering

Chemistry

Civil Engineering and Geological Sciences

Computer Science and Engineering

Economics

Electrical Engineering

English

History

History and Philosophy of Science

Literature

Mathematics

Medieval Studies

Philosophy

Physics

Political Science

Psychology

Sociology

Theology

Areas and Fields of Study

The University of Notre Dame offers graduate programs leading to master's and/or doctoral degrees in the following areas and fields of study:

Aerospace and Mechanical Engineering

Aerospace Sciences

Advanced Aerospace Vehicle Concepts

Aeroacoustics

Aero-optics

Aerospace Structural Design

Aerospace Systems Design

Flow Physics and Control

THE GRADUATE SCHOOL

- High-Lift Aerodynamics
 Low Reynolds-Number Aerodynamics
 Low Speed Aerodynamics
 Particle Dynamics
 Transonic, Supersonic, Hypersonic Flows
 Vortex Aerodynamics
- Biomechanics and Biomaterials
 Biocompatibility
 Biological Material Characterization
 Computational Modeling of
 Biomechanical Systems
 Design and Manufacture of Next-
 Generation Orthopedic Devices
 Design, Synthesis, and Characterization
 of Novel Biomaterials
 Human Body Kinematics
 Surgical Simulation
 Tribology
- Mechanical Systems and Design
 Computer Aided Design and
 Manufacturing
 Design for Manufacturing
 Design Optimization
 Dynamic and Control Systems
 Mechanism and Machine Theory
 Robotics
 Tribology
- Solid Mechanics and Materials
 Composite Materials
 Environmental Assisted Cracking
 Fatigue
 Fluid/Structure Interaction
 Fracture Mechanics
 Manufacturing Processes
 Mechanics of Porous Media
 Plasticity
 Structural Stability
- Thermal and Fluid Sciences
 Boundary Layer Phenomena
 Chaos in Fluid Systems
 Computational Fluid Mechanics
 Detonation Theory
 Droplet Sprays
 Fire Research
 Fluid/Structure Interaction
 Flow Control
 Hydrodynamic Stability
 Hydronics
 Industrial Energy Conservation
 Microfluid Mechanics
 Molecular Dynamics
 Multiphase and Buoyant Flows
 Reacting Flows
 Solidification of Liquid Metals
 Turbulent Flows
- Architecture***
 Classical Architecture
 Traditional Urban Design
- Art, Art History, and Design**
 Studio Art+
 Ceramics
 Painting
 Photography
 Printmaking
 Sculpture
- Art History*
 American
 Ancient
 Contemporary
 Medieval
 Modern European
 Renaissance and Baroque
- Design+
 Graphic Design
 Industrial Design
- Biological Sciences**
 Animal Behavior
 Aquatic Biology
 Biochemistry
 Biogeochemistry
 Biotechnology
 Cancer Biology
 Cell and Molecular Biology
 Developmental Biology
 Ecology
 Ecosystem Ecology
 Endocrinology
 Environmental Biology
 Environmental Microbiology
 Evolutionary Biology
 Genetics and Bioinformatics
 Genomics
 Medical Entomology and Vector Biology
 Microbial Pathogenesis
 Neurobiology
 Nutritional Sciences
 Parasitology and Infectious Diseases
 Physiology
 Plant Science
 Population Biology
- Chemical and Biomolecular Engineering**
 Applied Mathematics
 Biological Materials
 Bioseparations
 Catalysis and Surface Science
 Ceramic Materials
 Chemical Reaction Engineering
 Combustion Synthesis of Materials
 Drug Delivery Systems
 Ecological Modeling
 Environmentally Conscious Design
 Fuel Cells
 Gas-Liquid Flows
 Ionic Liquids
 Materials Science
 Microfluidic Devices
 Microscale Sensor Arrays
 Molecular Modeling and Simulation
 Molecular Theory of Transport
 Nanostructured Materials
 Parallel Computing
 Phase Equilibria
 Pollution Prevention
 Polymer Rheology
 Process Dynamics and Control
 Process Optimization and Design
 Process Simulation
 Statistical Mechanics
 Superconducting Materials
 Supercritical Fluids
 Suspension Rheology
 Transport in Porous Media
- Chemistry and Biochemistry**
 Biochemistry
 Bio-inorganic Chemistry
 Bio-organic Chemistry
 Inorganic Chemistry
 Materials Chemistry
 Molecular Biology
 Nanotechnology and Surface Chemistry
 NMR Spectroscopy
 Organic Chemistry
 Organometallic Chemistry
 Physical Chemistry and Radiation Sciences
 Structural Biochemistry
 Theoretical and Computational Chemistry
- Civil Engineering and Geological Sciences**
 Aquatic Chemistry
 Bioengineering
 Biological Treatment of Hazardous Waste
 Dynamics of Offshore Structures
 Earthquake Engineering
 Environmental Engineering
 Environmental Mineralogy
 Finite Element Modeling
 Geotechnical Engineering
 Groundwater Hydrology
 High and Low Temperature Geochemistry
 Mantle Petrology
 Materials Characterization and Durability
 Multiphase Flows
 Natural and Man-made Hazard Reduction
 Paleontology
 Structural Mechanics and Design
 Structural Reliability
 Wind Engineering
- Classics**
 Early Christian Studies
 Latin Literature
 Greek Literature
 Greek and Roman Civilization
- Computer Science and Engineering**
 Algorithms and Theory of Computations
 Artificial Intelligence and Behavior-based
 Robotics
 Computationally Demanding Applications
 Computer Architecture in Emergent
 Technologies
 Computer Systems Design
 Computer Vision and Pattern Recognition
 E-technologies
 Systems and Networks
- Economics**
 Development and International Economics
 Economic Theory, Economic Thought, and
 Methodology
 Institutions (Labor, Financial, Industrial, and
 Public)
- Electrical Engineering**
 Communication Systems
 Control Systems
 Nanoelectronics
 Optoelectronics
 Semiconductor Materials and Devices
 Signal and Image Processing
 Solid-State Integrated Circuits

THE GRADUATE SCHOOL

English

Old and Middle English
 Renaissance
 Restoration and 18th Century
 Romantic and Victorian
 Modern British
 Early American (to 1865)
 Middle American (from the Civil War to 1930)
 Post 1930 American Literature
 African American
 Latino/a Studies
 Irish Studies
 Drama
 Novel
 Poetry
 Prose Fiction
 Literary Theory
 Creative Writing++

History

Latin American History
 Medieval History
 Modern European History
 United States History

History and Philosophy of Science

History of the Philosophy of Science
 Analytic Philosophy of Science and
 Epistemology
 History and Philosophy of Biology
 1700 to 1980
 Philosophy of Contemporary Physics
 History of Astronomy and Physics
 Medieval Natural Philosophy and
 Medicine
 History and Philosophy of Economics
 Philosophy of Mind and Neuroscience
 Social History of Medicine and
 Technology
 History and Philosophy of Mathematics
 Intellectual History of Science 1600 to 1950
 Scientific Revolution Studies
 Science and Literature

Literature

Classics
 East Asian Studies
 French
 German
 Irish Studies
 Italian
 Spanish (Iberian and Latin American)
 (Literatures can be studied in various
 combinations)

Mathematics

Algebra
 Algebraic Geometry
 Applied Mathematics
 Complex Analysis
 Differential Geometry
 Logic
 Partial Differential Equations
 Topology

Medieval Studies

Medieval Art
 Medieval History
 Medieval Literatures
 Medieval Music
 Medieval Philosophy
 Medieval Theology

Peace Studies*

The Role of International Norms and
 Institutions in Peacemaking
 The Impact of Religious, Philosophical, and
 Cultural Influences on Peace
 The Dynamics of Inter-Group Conflict and
 Conflict Transformation
 The Promotion of Social, Economic,
 and Environmental Justice

Philosophy

Ancient Philosophy
 Contemporary European Philosophy
 Epistemology
 Ethics
 Logic
 Medieval Philosophy
 Metaphysics
 Modern Philosophy
 Philosophy of Language
 Philosophy of Mathematics
 Philosophy of Mind
 Philosophy of Religion
 Philosophy of Science
 Political Philosophy

Physics

Astrophysics
 Atomic Physics
 Condensed Matter Physics
 Elementary Particle Physics
 Nuclear Physics
 Statistical Physics/Biophysics
 Theoretical Physics

Political Science

American Government and Politics (including
 public law)
 Comparative Politics
 International Relations
 Political Theory

Psychology

Cognitive Psychology
 Counseling Psychology
 Developmental Psychology
 Quantitative Psychology

Common Languages and Literatures*

(See Literature for Ph.D. program)
 Comparative Literatures
 French and Francophone Studies—Middle
 Ages, Renaissance, 17th-century Classical,
 18th-century Enlightenment, 19th Cen-
 tury, 20th Century
 Italian Studies—Italian Literature:
 Medieval, Renaissance, Modern;
 Art History; Architectural History;
 Film Studies; Translation; History;
 Philosophy; Music
 Iberian and Latin American Studies—
 Medieval, Golden Age, Colonial
 Spanish-American, Modern Spanish
 Peninsular, Modern Spanish-American
 Periods; Gender Studies

Sacred Music

Liturgical
 Musical
 Pastoral

Sociology

Comparative/Historical Sociology
 Cultural Sociology
 Development
 Education

Family
 Political Sociology
 Quantitative Methodology
 Religion
 Social Psychology
 Social Stratification
 Theory

Theology

Biblical Studies*
 Christianity and Judaism in Antiquity—
 Hebrew Bible and Judaica, New Testament
 and Early Church
 Early Christian Studies*
 History of Christianity—Early Church,
 Medieval Studies, Reformation Studies,
 Modern Studies
 Liturgical Studies
 Moral Theology/Christian Ethics
 Systematic Theology
 Professional Studies*
 (Master of Divinity Program)
 Theological Studies*

* Master's programs only

+ Master's program and M.F.A. in studio art and design

++ M.F.A. in creative writing

Academic Regulations

Please note:

The following information represents the minimum standards established by the Graduate School. Individual departments may require higher standards. Students are expected to be fully cognizant of their department's requirements.

No exceptions to the following policies and procedures will be valid without the formal written approval of the Graduate School.

Admission to the Graduate School

Applicants for admission to the Graduate School must hold a bachelor's degree or its equivalent from an accredited American college or university or from a foreign institution of acceptable standing by the time of graduate matriculation. If at that time they do not hold a bachelor's degree, the Graduate School admission is void. The applicant should have earned at least a B average in his or her undergraduate major courses and should meet the level of academic achievement that implies a developed ability for advanced study and independent scholarship.

An applicant may seek admission in nondegree status or as a degree-seeking student in either a master's or doctoral program.

Admission to a graduate degree program is not equivalent to admission to candidacy for the degree. (See "Admission to Candidacy," under master's and Ph.D. degree requirements.) Also, admission to the master's program does not automatically mean admission to the doctoral program upon completion of the master's program. A separate decision is required for continuation in the doctoral program.

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Application Requirements

An applicant for admission to a degree program is required to submit:

1. one completed online "Application for Admission and Financial Aid"
2. the application fee
3. two (2) copies of the Statement of Intent
4. three (3) letters of recommendation and a second copy of each
5. a waiver of access form for each letter of recommendation with original signatures in ink
6. two (2) official transcripts from each postsecondary institution attended. International applicants must send both an original language and an official (i.e. notarized) English translation of each transcript.
7. official Graduate Record examination (GRE) General Test scores (students may temporarily submit two (2) unofficial photocopies)
8. official GRE Subject Test scores if required by the department (students may temporarily submit two (2) unofficial photocopies)
9. official scores of the Test of English as a Foreign Language (TOEFL) from all non-native speakers of English (students may temporarily submit two (2) unofficial photocopies)
10. two (2) copies of a curriculum vitae/resumé (recommended)

Students seeking admission to more than one department, but who plan to enroll in only one, must submit separate applications for each department. Only one application fee is necessary.

The application fee must accompany the application. This fee is nonrefundable. The fee is \$50 for all applications submitted after December 1 for admission to the following fall semester. For applications submitted by December 1 for admission to the following fall semester, the application fee is \$35. Fees may be paid by check, money order, or credit card (see online application).

Unless otherwise specified, the application deadline is February 1 for admission and financial aid for the fall semester, and November 1 for the spring semester, though some departments have earlier deadlines. Only a few departments offer spring admission; therefore, applicants who wish to begin in the spring are advised to consult the department.

Beyond these Graduate School admission requirements for all graduate departments and programs, particular programs may require personal interviews and/or submission of special materials such as writing samples or portfolios. Consult the specific department in this regard and submit one (1) copy of each required item to the Graduate School.

The Graduate Record Examination (GRE) is offered several times each year at sites in the United States and abroad. The annual schedules and other information about the GRE can be obtained online at <http://www.gre.org> or from Educational Testing Service (ETS), Graduate Record Examination, Box 6000, Princeton NJ 08541-6000, USA. If you need to call about the GRE, telephone the Educational Testing Service at (609) 771-7670.

The Test of English as a Foreign Language (TOEFL) is offered several times each year at sites in the United States and abroad. Foreign students, except those noted above, must submit TOEFL scores as part of their application to demonstrate a sufficient command of English to meet the requirements of their field. If not available locally, the annual schedules and other information about the TOEFL can be obtained online at <http://www.toefl.org> or from Educational Testing Service (ETS), TOEFL, Box 6151, Princeton NJ 08541-6151, USA. If you need to call about the TOEFL, telephone the Educational Testing Service at (609) 771-7100.

Admission to Multiple Degree Programs

An applicant who seeks admission to more than one master's degree program in the Graduate School in order to earn two degrees, or an applicant who seeks admission to a degree program in the Graduate School concurrently with a degree program in another school in the University (i.e., Law School or Mendoza College of Business) must submit a separate and complete application for each program. The applicant must also be accepted by each of the cooperating departments. The Graduate School will consider only applicants whose past academic performance indicates the potential for success in each of the programs. In consultation with the appropriate advisers from each unit, the applicant will select a plan of study acceptable to all units. The Graduate School must approve the written plan of study before the student may begin the program. No more than nine credit hours of classes from any one master's degree may be counted toward any other master's degree.

Admission to Joint Degree Programs

It is possible for a student to pursue a program of study combining two programs and leading to a joint degree. An applicant who seeks to earn a joint degree, either master's or Ph.D., must submit a separate and complete application to each program and be accepted by both. The relevant departments must agree upon a plan of study defining what will constitute the joint degree program, and the approved written plan must be on file with the Graduate School before the student may begin the program.

Nondegree Applicants

An applicant for admission to a nondegree program is required to submit one completed Graduate School application and two official transcripts from each postsecondary institution attended. (When possible, transcripts should be sent directly to the Graduate School by the institution.) Particular departments may require personal statements detailing the applicant's graduate plans and expectations.

A nondegree applicant may seek admission as a departmental nondegree student or as an unclassified, visiting, or auditing student in the Graduate School.

A departmental nondegree student is one who has been admitted to a department but does not seek an advanced degree from the University. An applicant with degree intent who lacks one or more admission requirements may be admitted temporarily to this nondegree status at the discretion of the department and with the approval of the associate dean for graduate admissions. The student may register for one to 12 credit hours in any graduate courses for which he or she meets the course prerequisites. However, no student initially admitted to nondegree status will be admitted to degree status until all admission requirements have been satisfied. No more than 12 credit hours earned by a student while in a nondegree status may be counted toward a degree program. Admission as a departmental nondegree student does not guarantee later admission as a degree-seeking student.

An unclassified student is one who is admitted to the Graduate School in a nondegree status, but who is not a member of a particular department. Such a student may, with the approval of the Graduate School, take courses in any graduate department, subject to approval by the department. This category is usually open to nondegree students who wish to take courses in more than one department or students who have completed their degree programs, but wish to continue in the University in graduate student status. No more than 12 credit hours earned by a student while in a nondegree status may be counted toward a degree program. Admission as an unclassified nondegree student does not guarantee later admission as a degree-seeking student.

A visiting student is normally a degree student in another university who enrolls for credit in selected courses at Notre Dame. Unless otherwise arranged by the home university and Notre Dame, the visiting student is considered a nondegree student at Notre Dame and follows the same application and enrollment procedures as a nondegree student.

An auditor is a nondegree student who meets the course prerequisites but receives no academic credit. With the permission of the instructor and the department chair, a degree student also may audit courses. Audited courses may be recorded on a

ACADEMIC REGULATIONS

student's permanent record only if the student requests the instructor to record it at the beginning of the semester and if he or she attends the course throughout the entire semester. A recorded audit is graded V. Incomplete audits are not recorded. The audit grade of V cannot be changed to a credit grade.

In the academic year, full-time graduate students may audit courses without charge. Part-time graduate students who audit courses will be charged the normal audit fee of one-half the current credit hour fee.

In the summer session, there is no free audited course. Any course taken or audited in the summer session will be charged the full price.

Acceptance

Official acceptance to the Graduate School in the academic year is granted only by the associate dean. Applicants will be informed officially of the results of their application by a letter from the associate dean for graduate admissions. Applicants who intend to accept offers of admission are required to confirm their acceptance by returning the appropriately completed form that is supplied with an offer of admission.

A student whose degree program begins or continues in the summer must complete a summer session course selection form.

Enrollment in the University

Once admitted, all degree and nondegree graduate students must enroll each semester at the times and locations announced by the University Registrar.

Any admitted student who fails to enroll for one semester or more must apply for readmission upon return. (See "Continuous Enrollment," below.)

Full-time and Part-time Status

A full-time student is one who is working full time toward his or her degree objective. The student's department is responsible for determining who is a full-time student, and who is otherwise a part-time student.

A nondegree student, however, must register for at least nine credit hours per semester, or six in the summer session, to claim full-time status.

All degree-seeking students are expected to maintain full-time status and to devote full time to graduate study. No degree student may hold a job, on or off campus, without the express permission of his or her department and the Graduate School.

Academic Good Standing

Continuation in a graduate degree program or in nondegree status, admission to degree candidacy, and graduation require maintenance of at least a 3.0 (B) cumulative grade point average (G.P.A.). A student may be dismissed from the department or program if the G.P.A. in any one semester is below 2.5 or if the G.P.A. is below 3.0 for two consecutive semesters. Some departments require higher averages for enrollment and support continuance.

An adequate G.P.A. is only one factor taken into consideration in determining a student's qualifications for an advanced degree. Degree students should be aware of their department's performance criteria. The department and the Graduate School annually evaluate each graduate student's overall performance on the basis of these criteria.

A student must be in academic good standing to be eligible for new or continued financial support.

Continuous Enrollment

All students must enroll each semester in the academic year and register for at least one credit hour per semester to maintain student status. Continuous enrollment is met normally by both enrollment in the University and registration in a graduate-level course relevant to the student's program. A student who is concurrently pursuing degrees in the Graduate School and in another school in the University meets the continuous enrollment requirement by registering for a course in either program. Any exception to this rule, including a leave of absence, must be approved by the Graduate School. (See "Leave of Absence," below.) Degree students who have completed the course work requirement for their degree must register for at least one credit hour per semester, including the final semester or summer session in which they receive their degree. This credit hour should consist of either resident or non-resident thesis or dissertation research within their department. These students may be considered full-time students whether or not they are in residence. Students not in residence and taking one credit hour pursuant to continuous enrollment requirements are charged a special registration fee.

A student who fails to enroll and register for one semester or more must apply for readmission upon return.

Continuing students (i.e., degree-seeking students who are eligible to continue their studies in the fall semester) may have access to University facilities and services from May through August without enrolling and registering for academic credit in the summer session.

Leave of Absence

For exceptional reasons and on the recommendation of the department, a student in good academic standing may request a leave of absence for a maximum of two consecutive semesters. A request for a leave of absence must be made before the semester in which the leave is taken, and all leaves of absence must be approved by the Graduate School. If, for some urgent reason, a student is allowed to leave the University after the beginning of the semester, the withdrawal procedure below must be followed. If at the end of the leave of absence period the student does not return, the student is considered terminated. Application for readmission is required if the student wishes to return.

Medical Separation from Academic Duties

Students enrolled in the Notre Dame Graduate School who wish to temporarily interrupt their programs for medical reasons must apply to the Graduate School. Students are eligible under this policy if they have a "serious medical condition." For purposes of this policy, "serious medical condition" means a medical condition that (1) requires multiple day hospitalization OR (2) renders the student unable to engage in coursework and all other Graduate School-related duties for a period of at least ten (10) calendar days. Certification by a physician that the student has a serious medical condition as defined in this policy must be submitted to the Graduate School no less than three months prior to the separation period (for childbirth and other predictable requests) or as soon as the need is foreseen (for emergency requests). In situations involving childbirth, the separation period will generally begin on the actual date of childbirth; in all cases, regardless of the nature of the medical condition, the duration of the separation will be as certified by the physician up to a maximum of six weeks. Students may utilize this medical separation policy two non-consecutive times during their graduate studies. Should students need more than six weeks at any one time, they must withdraw from the University. Leaves of absence for one semester or more for medical or other reasons are governed by the Graduate School Leave of Absence policy.

Full-time degree-seeking students in their sixth year of study or less who are receiving financial aid from the Graduate School or external funds will receive a stipend equal to their normal stipend during their period of separation, for a maximum of six weeks paid by the Graduate School. Students will retain their tuition scholarships, access to on-campus medical facilities, and all other resources available to students during the entire separation period (up to six weeks). Students also will be deemed "continuously enrolled" at the University during the entire period of separation.

Teaching Assistant and Research Assistant duties will cease at least during the period of separation. Students are responsible for making arrangements, through their departments, to cover their duties. Students taking classes will be required to make arrangements with individual course instructors for completion of any courses in progress during the leave. Students will be granted the option to reschedule exams, extend candidacy deadlines or other deadlines not discussed herein. Students are responsible for making arrangements to reschedule exams, extend deadlines and to make up other work not discussed herein. Unlike a regular one-semester leave, time off in conjunction with this policy *will* count towards the students' degree time limit of eight years and university-sponsored funding cap of six years.

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Withdrawal from the Program

To withdraw from the University before the end of the semester, a student must inform the department and the Graduate School as well as complete the notice of withdrawal in the Office of the Registrar, 105 Main Building. For information on refunds, refer to "Tuition and Expenses."

Upon approval of the withdrawal, the University enters a grade of W for each course in which the student was registered. If a student drops out of the University without following the procedure described above, a grade of F is recorded for each course.

The credit for any course or examination will be forfeited if the student interrupts his or her program of study for five years or more.

The University reserves the right to require the withdrawal of any student when academic performance, health status, or general conduct may be judged clearly detrimental to the best interests of either the student or the University community.

In the case of a medical leave of absence, clearance from the University Health Center is required prior to readmission.

Notre Dame NetID Student Policy

The University of Notre Dame NetID accounts and related services are intended for faculty, staff, and currently enrolled students. "A student must register and enroll at the dates and times announced by the Registrar" (Academic Code 4.1). A student who fails to enroll by the announced date will forfeit the right to access his or her NetID account and related services. University computing resources supplied by way of the NetID are normally available to a student for up to 60 days after his or her graduation date. A student granted a leave-of-absence would normally retain access to University computing services for up to two semesters. A student who is separated from the University due to an academic suspension, academic dismissal, or withdrawal will no longer have access to University computing services, unless an extension has been approved by the dean of his or her college. A student attending Notre Dame for the summer only, with a nondegree seeking status will normally retain access to University computing service for up to 60 days after the August graduation date. A student who is separated from the University for other reasons, will no longer have access to University computing services.

Registration and Courses**Maximal Registration**

During each semester of the academic year, a graduate student should not register for more than 12 credit hours of graduate courses, i.e., the 60000 through 90000-level courses. In the summer session, a graduate student should not register for more than 10 credit hours.

Course Numbers

Courses numbered 60000 – 69999 are typically first-level graduate courses into which qualified advanced undergraduates may be admitted with the permission of the instructor and the approval of the chair. Courses numbered 70000 and above are advanced graduate courses open only to those who have completed the undergraduate and graduate prerequisites.

The advanced undergraduate courses numbered 40000 – 59999 may, with the approval of the department chair and the Graduate School, be taken to satisfy up to 10 hours of graduate credit requirements. Departments may place additional constraints on the use of 40000-level courses to meet their degree requirements.

No graduate credit is allowed for courses below the 40000 level.

Changes in Student Class Schedule

A student may add courses only during the first seven class days of the semester. A student may add courses after this time only on recommendation of the department and with approval of the Graduate School.

A student may drop courses during the first seven class days of the semester. To drop a course after this period and up to the midsemester point (see the Graduate School calendar for the exact date), a student must have the approval of the chair of the department offering the course, of his or her adviser, and of the Graduate School; however, no tuition adjustment will be made after the seventh class day of the semester. A course may be dropped after the midsemester point only in cases of serious physical or mental illness. Courses dropped after this date will be posted on the student's permanent record with the grade of W.

A course taken for credit can be changed to an audit course after the midsemester point only in cases of serious physical or mental illness.

Graduate Grades

Listed below are graduate grades and the corresponding number of quality points per credit hour.

A	4
A-	3.667
B+	3.333
B	3
B-	2.667
C+	2.333
C	2
F	0
I	0 (Until Incomplete is removed)
NR	Not reported
S	0 Satisfactory
U	0 Unsatisfactory
V	0 Auditor (graduate students only)
W	0 Discontinued with permission

Quality point values are used to compute the student's G.P.A. The G.P.A. is the ratio of accumulated earned quality points to the accumulated earned semester credit hours. G.P.A. computation takes into account only those grades earned in Notre Dame graduate courses by students with graduate status at Notre Dame. For courses taken in a department or college in the University but outside the Graduate School, or taken outside the University, the grade will not be included in the G.P.A. computation.

The grades of C- and D are not awarded in the Graduate School.

A student receives the temporary grade of I when, for acceptable reasons, he or she has not completed the requirements for a 500- or higher-level graduate course within the semester or summer session. No grade of I can be given for courses below the 500 level or to graduating students in the final semester or final summer session of a terminal degree program.

The student then must complete the course work for a grade prior to the beginning of the final examination period of the next semester in which the student is enrolled. If a student receives an I for a summer session course, he or she must complete the course work for a grade before the final examination period begins for the next semester or summer session (whichever comes first) in which the student is enrolled.

The University temporarily computes this grade as the equivalent of an F in calculating the G.P.A. When the student fulfills the above requirements, the I is replaced by the new grade. Should the student not complete the course work as required, the I remains on the academic record and is computed in the G.P.A. as equivalent to an F.

The department and the Graduate School will review a student who receives more than one I in a semester or an I in two or more consecutive semesters, to determine his or her eligibility for continued support and enrollment.

The grades of S and U are used in courses without semester credit hours, as well as in research courses, departmental seminars, colloquia, workshops, directed studies, field education, and skills courses. These courses, if given the grade of S, do figure in a student's earned semester credit-hour total but do not figure in the computation of the G.P.A. A grade of U will not count toward the student's earned semester credit-hour total, nor will it figure in the computation of the G.P.A.

The grade of V has neither quality-point nor credit-hour value. It is the only grade available to the registered auditor who requests at the beginning of the semester that it be made part of his or her permanent record and who attends the course throughout the entire semester. The grade of V cannot be changed to a credit-earning grade.

The grade of W is given for a course that a student is allowed to drop after the midsemester point.

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Examinations

Unexcused absence from a scheduled final examination results in an F. An absence excused in advance results in an I (incomplete).

Grade Reports

Beginning with final grades for the fall 2003 semester, the Office of the Registrar will no longer mail a paper copy of grades unless a copy is requested. Grade information is available to students on Irish-Link (a secure Web-based service). The Printed Grade Report Request form is available from the Office of the Registrar Web site at <http://registrar.nd.edu>.

Transfer Credits

A department may accept course work completed at another accredited university toward meeting its degree requirements. A student may transfer credits earned at another accredited university only if: (1) the student is in degree status at Notre Dame; (2) the courses taken are graduate courses appropriate to the Notre Dame graduate program and the student had graduate student status when he or she took these courses; (3) the courses were completed within a five-year period prior to admission to a graduate degree program at Notre Dame or while enrolled in a graduate degree program at Notre Dame; (4) grades of B (3.0 on 4.0 scale) or better were achieved; and (5) the transfer is recommended by the department chair and approved by the Graduate School.

These five requirements also apply to the transfer of credits earned in another program at Notre Dame.

The University considers a request for credit transfer only after a student has completed one semester in a Notre Dame graduate degree program and before the semester in which the graduate degree is conferred. The university of origin must submit two transcripts directly to the Notre Dame Graduate School. Credits not earned on the semester system, such as trimester and quarter-hour credits, will be transferred on a pro rata basis.

A student transferring from an unfinished master's program may not transfer more than six semester credit hours into either a Notre Dame master's or Ph.D. program.

If the student has completed a master's or Ph.D. program, he or she may transfer up to nine semester credit hours to a Notre Dame master's program and up to 24 semester-credit hours to a Notre Dame Ph.D. program.

Occasionally, a student may need to do dissertation research at another institution. Normally, the student would register for the appropriate number of credit hours of research at Notre Dame. If the student does not enroll at Notre Dame and expects to count research hours earned elsewhere toward the Notre Dame degree, the student must have the approval of the department and the Graduate School in advance. The University requires similar prior approval for formal courses taken elsewhere and applied to the degree program. Twenty-four credit hours, including

research credit hours, is the maximum acceptable for transfer into a Notre Dame doctoral program.

No grades of transferred courses are included in the student's G.P.A.

Academic Integrity

Integrity in scholarship and research is an essential characteristic of our academic life and social structure in the University. Any activity that compromises the pursuit of truth and the advancement of knowledge besmirches the intellectual effort and may undermine confidence in the academic enterprise. A commitment to honesty is expected in all academic endeavors, and this should be continuously emphasized to students, research assistants, associates, and colleagues by mentors and academic leaders.

The procedures for ensuring academic integrity in the Graduate School are distinct from those in the Undergraduate Code of Honor.

Violations of academic integrity may occur in classroom work and related academic functions or in research/scholarship endeavors. Classroom-type misconduct includes the use of information obtained from another student's paper during an examination, plagiarism, submission of work written by someone else, falsification of data, etc. Violation of integrity in research/scholarship is deliberate fabrication, falsification, or plagiarism in proposing, performing, or reporting research or other deliberate misrepresentation in proposing, conducting, reporting, or reviewing research. Misconduct does not include errors of judgment, errors in recording, selection, or analysis of data, differences in opinions involving interpretation, or conduct unrelated to the research process. Misconduct includes practices that materially and adversely affect the integrity of scholarship and research.

Any person who has reason to believe that a violation of this policy has occurred shall discuss it on a confidential basis with the department chair or director of the appropriate institute. If a perceived conflict of interest exists between the chair/director and the accused, the next highest academic officer shall be notified of the charge. The chair/director shall evaluate the allegation promptly. If it is determined that there is no substantial basis for the charge, then the matter may be dismissed with the fact of dismissal being made known to the complainant and to the accused if he or she is aware of the accusation. A written summary of charges, findings, and actions shall be forwarded to the vice president for graduate studies and research as a matter of documentation. Otherwise, the chair will select an impartial panel consisting of three members, one of whom may be a graduate student, to investigate the matter. The chair will inform the accused of the charges. The panel will determine initially whether to proceed directly to a hearing to further investigate the case, or to dismiss the charges. If the panel decides to proceed directly to a hearing, the hearing will be held within

10 days of the original notification. If the panel decides that further investigation is necessary, it shall immediately notify the chair. If it decides that a hearing is not warranted, all information gathered for this investigation will be destroyed. The utmost care will be taken to minimize any negative consequence to the accused.

The accused party must be given the opportunity to respond to any and all allegations and supporting evidence at the hearing. The response will be made to the appointed panel. The panel will make a final judgment, recommend appropriate disciplinary action, and report to the chair in writing. The report will include all of the pertinent documentation and will be presented within 30 days after meeting with the accused. Copies of the report are to be made available to the accused, the chair, and the vice president. If a violation is judged to have occurred, this might be grounds for dismissal from the University; research/scholarship violations might be reported to the sponsor of the research effort (e.g., NSF, NIH, Lilly Foundation, etc.), if appropriate.

If the student chooses to appeal, he or she must address the appeal in writing to the vice president for graduate studies and research within 10 days. The student has the right to appear before the vice president or his or her delegate. The vice president may decide to appoint an ad hoc committee to handle this appeal, if deemed necessary.

Violations of academic integrity by individuals who are not students are governed by different rules; students who are working on externally sponsored programs may also be covered by sponsor-mandated rules. Contact Dr. Richard A. Hilliard, director of research compliance, (574) 631-5386, for further information.

Academic Counselor

The vice president for graduate studies and research has appointed an academic counselor in the Graduate School to be available to graduate students who want to confidentially discuss problems they are having in their programs. The counselor can help a student decide how to resolve the problem. The Graduate School's academic counselor is Dr. Barbara M. Turpin, associate dean.

Grievance and Appeal Procedures

Students follow the grievance and appeal procedures of the department in which they are studying. Where department procedures are not clear, students contact the department chair and/or the director of graduate studies. Appeals beyond the department are made directly to the vice president for graduate studies and research/dean of the Graduate School. Students may seek advice from the associate dean of the Graduate School who serves as academic counselor before beginning a formal process within the department or an appeal to the vice president/dean.

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Requirements for the Master's Degree

In addition to the following Graduate School requirements, individual departments may have higher standards. Students are expected to know their departmental requirements.

Credit Hours

The number of semester credit hours of course work for the master's degree is specified by the student's department. Students in a research program must also complete the research requirements of the department. (See also "Transfer Credits," above.)

Residency

The minimum residency requirement for the master's degree is registration in full-time status for one semester during the academic year or for one summer session.

Foreign Language Requirement

The Graduate School does not require foreign language reading proficiency for the master's degree. However, some departments do have this requirement. Students should consult their departments concerning this requirement.

Degree Eligibility

Failure to complete all requirements for the master's degree within five years results in forfeiture of degree eligibility.

A master's program that is pursued during the summer and the academic year must also be completed within five years.

A student attending summer session only must complete all requirements within seven years.

Thesis Directors

Each student is assigned an adviser from the time of enrollment. This may initially be the director of graduate studies, but an individual adviser or thesis director will be chosen as soon as practicable, following the department's policies.

Advisers and thesis directors are normally chosen from the teaching and research faculty of the student's department. There also may be one codirector chosen from the faculty outside (or within) the student's department. In exceptional cases, a department may choose a thesis director from the Notre Dame teaching and research faculty outside the student's department. Arrangements for extra-departmental directors or codirectors must be consistent with departmental policies and must be approved by the Graduate School.

Master's Examination

By the end of the term following completion of the course work required by the department, the degree candidate must have taken an oral and/or written master's examination demonstrating mastery in

his or her field. Failure in either one or both parts of the examination results in automatic forfeiture of degree eligibility, unless the department recommends a retake. If a retake is recommended, it must be completed by the end of the following semester. The Graduate School allows only one retake of the master's examination.

Some departments have an equivalent requirement in lieu of the master's examination. Students are advised to be cognizant of their respective departmental requirements with regard to the master's examination or its substitute.

A doctoral student may receive the master's degree without taking the master's examination on the recommendation of the department and completion of (a) the course work required by the department for the master's degree and (b) all written parts of the doctoral candidacy or Ph.D. qualifying examination. Departments may have additional criteria or may choose not to offer a master's degree in this manner; students should consult the departmental guidelines.

Admission to Candidacy

To qualify for admission to candidacy, a student must be in a master's degree program. He or she must have been enrolled in the program without interruption and must maintain a minimum cumulative G.P.A. of 3.0 in approved course work. A student who seeks admission to candidacy in a research master's program must also demonstrate research capability and receive departmental approval of his or her thesis proposal.

Admission to candidacy is a prerequisite to receiving any graduate degree. *It is the student's responsibility to apply for admission by submitting the appropriate form to the Graduate School office through the department chair. The applicable deadline is published in the Graduate School calendar.*

Thesis Requirement

The thesis is the distinctive requirement of the research master's program. With the approval of his or her adviser, the student proposes a thesis topic for departmental approval. The approved topic is researched and the results presented under the supervision of a thesis director.

The thesis director indicates final approval of the thesis and its readiness for the readers by signing the thesis. The candidate then delivers the number of signed copies of the completed thesis required by the department to the department chair. These copies are distributed to the two official readers appointed by the department. Readers are appointed from among the regular teaching and research faculty of the student's department. The appointment of a reader from outside the student's department must have the Graduate School's prior approval. The thesis director may not be one of the official readers. Each reader must unconditionally approve the thesis and the department should promptly report the results to the Graduate School.

Submitting the Thesis

The format of the thesis should follow the guidelines published in the Graduate School's *Guide for Formatting and Submitting Dissertations and Theses*, available at the Graduate School office and on the Graduate School Web site at <http://graduateschool.nd.edu>.

When the thesis is given to the readers, the candidate should also give a complete copy to the Graduate School office for a preliminary review of the format. This copy may be submitted electronically as a PDF or delivered as a printed document.

After the readers approve the thesis and any necessary changes have been made, the candidate must then present the final version of the thesis to the Graduate School for final approval and submission on or before the date specified in the Graduate School calendar. Candidates should be cognizant of deadlines for graduation established by the Graduate School and the department.

The thesis may be submitted either in electronic (PDF) form or in printed manuscript form. Only the official submission will be accepted by the Graduate School.

To submit the thesis electronically, the candidate must upload one complete PDF copy to the Hesburgh Library's Electronic Dissertation and Thesis database, and provide three signed title pages and any other necessary forms to the Graduate School.

To submit printed copies of the thesis, the candidate must present two clean copies, each signed by the thesis director. The candidate pays the binding costs for the two official copies required by the Graduate School.

Candidates must check with their departments for any additions to the Graduate School requirements.

Should a candidate and adviser decide to microfilm a thesis, information concerning the ProQuest Information and Learning Master's Publishing Program may be obtained from the Graduate School office.

Requirements for the Doctor of Philosophy Degree

The goal of the University in its Ph.D. programs is to develop productive scholarship and professional competence in its students. In addition to a broad acquaintance with the historical and contemporary state of learning, the University encourages its students and faculty to make contributions to the advancement of their respective fields.

In addition to the following Graduate School requirements, individual departments may require higher standards. Students are expected to know their department's requirements.

ACADEMIC REGULATIONS

Credit Hours

The number of semester credit hours of formal courses, directed studies, and research is specified by the student's department. (See also, "Transfer Credits," above.)

Residency

The minimum residency requirement for the Ph.D. degree is full-time status for four consecutive semesters (may include the summer session).

Foreign Language Requirement

This requirement varies from department to department, in both the choice of language and the degree of proficiency required. Students should consult their department concerning this requirement.

Award of Master's Degree to Doctoral Students

A doctoral student may receive the master's degree without taking the master's examination on the recommendation of the department and completion of: (a) the course work required by the department for the master's degree and (b) all written parts of the doctoral candidacy or Ph.D. qualifying examination. Departments may have additional criteria, or may choose not to offer a master's degree in this manner; students should consult the departmental guidelines.

Degree Eligibility

The student must fulfill all doctoral requirements, including the dissertation and its defense, within eight years from the time of matriculation. Failure to complete any of the Graduate School or departmental requirements within the prescribed period results in forfeiture of degree eligibility.

Advisers and Dissertation Directors

Each student is assigned an adviser from the time of enrollment. This may initially be the director of graduate studies, but an individual adviser or dissertation director will be chosen as soon as practicable, following the department's policies.

Advisers and dissertation directors are normally chosen from the teaching-and-research faculty of the student's department. There also may be one codirector chosen from the faculty outside (or within) the student's department. In exceptional cases, a department may choose a dissertation director from the Notre Dame teaching and research faculty outside the student's department. Arrangements for extra-departmental directors or codirectors must be consistent with departmental policies and must be approved by the Graduate School.

Candidacy Examination

The candidacy examination should be passed, and the dissertation proposal approved (if the approval process is not part of the candidacy exam), by the end of the student's eighth semester of enrollment. The examination consists of two parts: a written component and an oral component. The written part of the examination normally precedes the oral

part. It is designed, scheduled, and administered by the department. The oral part of the examination is normally taken after the completion of the course work requirement. The oral part, among other things, tests the student's readiness for advanced research in the more specialized area(s) of his or her field. In total, the examination should be comprehensive. Successful passage indicates that, in the judgment of the faculty, the student has an adequate knowledge of the basic literature, problems, and methods of his or her field. If the proposal defense is part of the oral, it should be a defense of a proposal and not of a completed dissertation.

A board of at least four voting members nominated by the department and appointed by the Graduate School administers the oral part of the examination. Normally, this board has the same membership as the student's dissertation committee. Board members are chosen from the teaching and research faculty of the student's department. The Graduate School should be consulted before the department or the student invites a faculty member outside the student's department to be a board member.

A faculty member appointed by the Graduate School from a department other than the student's department chairs the examination board. This chair represents the Graduate School and does not vote. After completion of the examination, the chair calls for a discussion followed by a vote of the examiners. On a board of four, three votes are required to pass. If a department chooses to have five members, four votes are required to pass. The chair should, before the examination begins, ask the student's adviser to confirm departmental regulations for conduct of the examination and voting procedures. The chair sends a written report of the overall quality of the oral examination and the results of the voting immediately to the Graduate School.

In case of failure in either or both parts of the doctoral candidacy examination, the department chair, on the recommendation of a majority of the examiners, may authorize a retake of the examination if this is permitted by departmental regulations. An authorization for retake must be approved by the Graduate School. A second failure results in forfeiture of degree eligibility and is recorded on the student's permanent record.

Admission to Candidacy

Admission to candidacy is a prerequisite to receiving any graduate degree. To qualify for admission to doctoral candidacy, a student must:

1. be in a doctoral program;
2. have been continuously enrolled in the program without withdrawal;
3. complete the departmental course work requirement with a cumulative average of 3.0 or better;
4. pass the written and oral parts of the doctoral candidacy examination, and have the dissertation proposal approved (if this is not part of the candidacy exam) by the end of the eighth semester of enrollment.

It is the responsibility of the student to apply for candidacy admission by submitting the appropriate form to the Graduate School office through the department chair.

The Dissertation

In continuing consultation with the dissertation director, the candidate explores research areas in his or her field to formulate a dissertation proposal. The methods of approval of the dissertation proposal are determined by the individual departments.

The department chair or director of graduate studies will appoint a dissertation committee consisting of the dissertation director and three readers. Normally, the committee is drawn from the membership of the student's oral candidacy board. The Graduate School must be consulted before the department invites a committee member from outside the teaching and research faculty of the candidate's department.

The candidate delivers typed copies of the finished dissertation, signed by the director, to the department chair for distribution to the three readers.

At the same time, the candidate should also give a complete copy to the Graduate School, where it will be reviewed for compliance with the Graduate School style manual. (See "Submitting the Dissertation" below.)

Readers normally have two to four weeks to read the dissertation, decide whether it is ready to be defended, and so indicate on the appropriate form to the Graduate School. Reader approval of the dissertation for defense does not imply reader agreement or support; it implies reader acknowledgment that the dissertation is an academically sound and defensible scholarly product. Only a dissertation that has been unanimously approved for defense by the three readers may be defended.

Even though the dissertation has been approved for defense, revisions may be required. If defects in the dissertation come to light at the defense, the candidate may be asked to revise the dissertation before it is accepted by the Graduate School and the degree is conferred. In that case, it will be the responsibility of the dissertation director, or such person as the committee may appoint, to report to the Graduate School that such revisions have been completed satisfactorily.

Defense of the Dissertation

In defending the dissertation, the doctoral candidate supports its claims, procedures, and results. The defense is the traditional instrument that enables the candidate to explore with the dissertation committee the dissertation's substantive and methodological force. In this way, the candidate and the committee confirm the candidate's scholarly grasp of the chosen research area.

The format of the defense is determined by the department with the Graduate School's approval. The defense is chaired by a faculty member who is appointed by the Graduate School from a department other than the candidate's department. This chair represents the Graduate School and does not vote. After the examination

is completed, the chair calls for a discussion followed by a vote of the dissertation committee. At least three votes out of four will be required to pass a candidate. The chair sends a written report of the overall quality of the defense and the voting results immediately to the Graduate School.

In case of failure of the defense, on the recommendation of a majority of the examiners, another opportunity to defend may be authorized if this is permitted by departmental regulations. An authorization for a second defense must be approved by the Graduate School. A second failure results in forfeiture of degree eligibility and is recorded on the candidate's permanent record.

Submitting the Dissertation

To receive the degree at the next commencement, the doctoral candidate who has successfully defended his or her dissertation must submit it to the Graduate School on or before the deadline published in the Graduate School calendar. Candidates should be cognizant of deadlines for graduation established by the Graduate School and the department.

To be accepted by the Graduate School, the dissertation should be prepared according to the formatting guidelines published in the Graduate School's *Guide for Formatting and Submitting Dissertations and Theses*, even if the candidate has previously published the substance of the dissertation in scholarly journals. The guide is available at the Graduate School office and on the Graduate School Web site at <http://graduateschool.nd.edu>.

When the dissertation is given to the readers, the candidate should also give a complete copy to the Graduate School, where it will be reviewed for compliance with the style manual. This copy may be submitted electronically as a PDF or delivered as a printed document.

After successfully defending the dissertation and making any necessary changes, the candidate must present the document to the Graduate School for final approval and submission.

The dissertation may be submitted either in electronic (PDF) form or in printed manuscript form. Only the official submission will be accepted by the Graduate School.

The candidate may submit the dissertation electronically by uploading one complete PDF copy to the Hesburgh Library's Electronic Dissertation and Thesis database, and providing three signed title pages and any other necessary forms to the Graduate School.

Alternatively, the candidate may present two clean, printed copies of the dissertation, each signed by the dissertation director. The candidate pays the binding costs for the two official copies required by the Graduate School.

The Graduate Council requires that all doctoral dissertations be microfilmed by ProQuest Information

and Learning. In addition to any other required forms or surveys, the candidate must submit a completed Microfilming Agreement form to the Graduate School's dissertation editor, who handles this publication requirement for the candidate.

One-of-a Kind (OAK) Ph.D. Program

It is possible at Notre Dame for an exceptional student to pursue a Ph.D. program with a particular faculty member in a department that does not offer the doctoral degree. Admission to such a program is rare and is reserved only for the most exceptional students.

The One-of-a-Kind (OAK) Ph.D. is conferred in the field of study agreed to by the student, the mentor, the chair of the home department, the dean of the college, the dean of the Graduate School, and the final dissertation committee. The name given to the field of study may not overlap with a field already covered by an existing Ph.D. program at the University without approval from that department's chair.

Program of Study

As with other Ph.D. programs, an OAK program includes course work, exam preparation culminating in a qualifying examination, and research culminating in a dissertation.

Courses within the home department usually include an additional directed studies component. An OAK student also gains experience as a teaching apprentice in at least one advanced undergraduate class or as an independent instructor.

Primary responsibility for advising rests with the designated faculty adviser, who is responsible for organizing a program of study and the appropriate examination and dissertation committees. The dissertation committee will include at least two members from Ph.D.-granting departments in neighboring fields at Notre Dame.

Admission

Admission requires a master's degree and is based on an evaluation of the following:

- undergraduate and graduate G.P.A.
- GRE scores
- letters of recommendation
- appropriate language skills
- a detailed statement of purpose
- a well-defined program of study
- compatibility of intentions with potential mentors and resources at Notre Dame
- compatibility of intentions with the research profile and academic record of the faculty mentor
- the likelihood of eventual placement in the field

Admission standards are exceptionally high, and a prospective OAK student must be approved, in turn, by the department chair in consultation with his/her

colleagues; the college dean in consultation with a college OAK advisory committee; and the dean of the Graduate School in consultation with a Graduate School OAK advisory committee.

Financial Information

Tuition and Expenses

Please note: The following tuition, fees, housing, and living costs are for the academic year 2005–2006. Prospective applicants and students are urged to find out the exact costs at the time of application or registration.

Tuition

For the full-time graduate student, the tuition for the academic year 2006–2007 is \$33,260. Tuition for the part-time student is \$1,822 per semester credit hour.

In the academic year, the normal charge for an audited course is one-half the current credit-hour fee. However, a full-time graduate student may audit a course, or courses, without charge. The Graduate School determines the definition of full-time.

In the summer session, there is no free audited course. Any course taken or audited in the summer session will be charged the full price.

Library and Athletic Facilities. In addition to the cost of instruction, tuition charges cover the use of the library and athletic facilities other than the golf course and the ice rink, on which a nominal fee is assessed.

Fees

- Nonrefundable application fee: \$50 (\$35 if submitted by December 1 for admission to the following fall semester)
- Technology Fee: \$250*
- Health Center Access Fee: \$100**
- Graduate Student Activity Fee: \$55

* *The technology fee provides partial funding for the University's enterprise-wide technology infrastructure, which provides all students access to the Internet, e-mail, course ware, campus clusters, ResNet, and a wide array of the latest software. This fee provides for the growth in student services, such as course and degree requirements, Web Registration, and value-added Internet-related capabilities. The \$250 fee will be assessed at \$125 per semester. This fee is not charged to graduate students receiving a full tuition scholarship.*

** *The health center access fee provides students access to all services at the University Health Center and University Counseling Center, including 24-hour medical care and counseling/mental health assistance, and alcohol and drug education programs, as well as health education and wellness programs. This fee provides partial funding to address increasing student health and wellness needs, along with funding to maintain health facilities. The \$100 fee will be assessed at \$50 per semester.*

FINANCIAL INFORMATION

Financial Arrangements

Tuition and fees, as well as any required deposits, are payable in advance at the beginning of each semester. Please note that Notre Dame does not accept credit cards for payment of tuition and fees. Tuition and/or fees not covered by scholarship are the responsibility of the student.

A student may not register for a new semester or receive transcripts, certificates, diploma, or any information regarding his or her academic record until all prior accounts have been settled in full.

Withdrawal Regulations

Any graduate, law, MBA,* or undergraduate student who at any time within the school year wishes to withdraw from the University should contact the Office of the Registrar. To avoid failure in all classes for the semester and in order to receive any financial adjustment, the withdrawing student must obtain the appropriate clearance from the dean of his or her college and from the assistant vice president for residence life.

On the first day of classes, a full tuition credit will be made. Following the first day of classes, the tuition fee is subject to a prorated adjustment/credit if the student: (1) withdraws voluntarily for any reason on or before the last day for course discontinuance at the University; or (2) is suspended, dismissed, or involuntarily withdrawn by the University, for any reason, on or before the last day for course discontinuance at the University; or (3) is later obliged to withdraw because of protracted illness; or (4) withdraws involuntarily at any time because of military service, provided no credit is received for the classes from which the student is forced to withdraw.

Upon return of the student forced to withdraw for military service, the University will allow him or her credit for that portion of tuition charged for the semester in which he or she withdrew and did not receive academic credit.

Room and board charges will be adjusted/credited on a prorated basis throughout the entire semester.

Students receiving University and/or Federal Title IV financial assistance who withdraw from the University within the first sixty percent (60%) of the semester are not entitled to the use or benefit of University and/or Federal Title IV funds beyond their withdrawal date. Such funds shall be returned promptly to the entity that issued them, on a pro rata basis, and will be reflected on the student's University account.

This withdrawal regulation may change subject to federal regulations. Examples of the application of the tuition credit calculation are available from the Office of Student Accounts upon request.

** Executive MBA students are subject to a different Withdrawal Regulation and Tuition Credit Calculation, both of which may be obtained from the Executive MBA Program.*

Housing and Residence Life

Phone: (574) 631-5878
Web: <http://orlh.nd.edu>

University housing for married, families and single students is available on or adjacent to the campus.

Accommodations for students with families are available in University Village, a complex of 100 two-bedroom apartments with washer/dryer, renting for \$465—\$710 per month, excluding electricity and phone. The Cripe Street Apartments, 24 one-bedroom units, are available from \$570 per month, excluding electricity and phone. A deposit of one month's rent is required.

Accommodations for approximately 140 full-time, degree-seeking single graduate men and women are available in the 36-unit O'Hara-Grace Graduate Residence adjacent to the campus. Each apartment has a kitchen, one-and-one-half baths, living, and bedroom accommodations for four students. Many general and departmental activities are held in Wilson Commons, a center for graduate students located next to the townhouses. The student must take out an individual nine-month contract for \$2,780, plus \$445 for utilities. The Fischer Graduate Housing apartment complex offers apartments with a kitchen, one full bath, and living and bedroom accommodations for two single students. The student must take out an individual nine-month contract for \$3,585, plus \$535 for utilities. A deposit of \$300 is required for either of these graduate housing options. Housing charges are due and payable by the semester; however, payroll deductions may be set up for any student receiving a stipend. This is handled at the Office of Student Accounts, 100 Main Building, (574) 631-7113.

Rates for off-campus apartments and houses range from \$300 to \$1,500 per month. Listings of available off-campus accommodations may be obtained directly from the Office of Residence Life and Housing Web site.

Accident and Sickness Insurance

Phone: (574) 631-6114
Web: <http://www.nd.edu/~uhs>

Notre Dame requires all international and degree-seeking graduate students to have health insurance coverage.

At the beginning of each academic year, the opportunity is provided to show proof of personal health insurance coverage. In the event such proof is not presented, the student will be automatically enrolled in the University-sponsored plan, and the charge for the premium will be placed on the student's account. The last date a graduate or international student may be waived from the University Student Insurance Plan is September 15, 2006.

Information regarding the University-sponsored plan is mailed to the student's home address in July. Additional information is available in University Health Services by contacting the Office of Insurance and Accounts at (574) 631-6114 or referring to the UHS Web site: <http://www.nd.edu/~uhs>.

The cost of the premium for the 2006–2007 academic year (effective August 15, 2006, to August 15, 2007) is (depending on the plan):

Option 1

Student	\$ 1,310
Spouse	\$ 6,483
One Child	\$ 2,508
All Children	\$ 4,460
Spouse and All Children	\$10,274

Option 2

Spouse	\$3,308
All Children	\$1,747
Spouse and All Children	\$4,515

The Office of Student Accounts will offer students receiving a stipend from the University the option of paying the premium through deductions from the academic year salary checks.

Worker's Compensation Insurance

Students injured while performing assigned duties in University laboratories are covered by worker's compensation insurance as if they were Notre Dame employees. During a period of temporary inability to perform duties as a result of such injuries, workers compensation provides for continuation of 66.6% (to state limits) of usual income after seven days have passed. Income beyond the limits set by workers compensation is subject to the discretion of department chairs where support is from funds allocated by the Graduate School. Income beyond workers compensation is subject to the discretion of principal investigators and the guidelines of external sponsors where support is from funds provided by research grants.

Travel Accident Insurance

Students injured while traveling to conferences or on other University business which has been approved by the student's department chair are covered by Notre Dame travel accident insurance. Compensation in set amounts is available for death or loss of arms or legs. Medical expenses in excess of other insurance are paid up to a maximum dollar amount.

University Travel Policy

Reimbursement for students traveling to conferences or on other University business is contingent on the availability of resources and the source of funding. Support from a department budget is subject to University travel policy; support from a research grant is subject to funding guidelines for the grant; support from the Graduate Student Union is subject to the travel guidelines in place in any given year.

FINANCIAL INFORMATION

Graduate School Student Health Insurance Subsidy Program

The Graduate School has a program to subsidize the purchase of University-sponsored student health insurance. The subsidy for 2006–2007 is \$350. The insurer for the student health insurance policy is Mega Life and Health Insurance Company.

Eligibility

The subsidy will be available to degree-seeking students in the Graduate School who purchase the University-sponsored policy (Mega), and who receive a full 9-month stipend from the Graduate School, from a faculty research grant, or from funds supporting stipends within a department.

A full stipend is defined as the unit amount or more for a GA stipend that is spelled out in the allotment sheets that each program receives. Some programs have no line item for GA stipends. In such cases, a full stipend is on average at least \$10,500/academic year for master's programs or \$15,000/academic year for doctoral programs.

Students who have not purchased the Mega policy are not eligible for the subsidy.

The Graduate School pays the entire premium for multi-year university fellowship winners.

Procedure

No application for the subsidy is required. University Health Services will send a list of students who have purchased the Mega policy to the Graduate School. The Graduate School will then submit a list of students eligible to receive the subsidy to the Office of Student Accounts. Student Accounts will credit the subsidy to each student's account.

Tax Obligation

Because students receiving a stipend are not classified as employees of the University, the health insurance subsidy is a taxable benefit. In this case, however, it is regarded as 'taxable but not reportable.' The University will not withhold money from a student's pay, nor will it report the subsidy to the Internal Revenue Service. Students who receive the subsidy are obligated to report it on their tax returns.

Further Information

Questions about the subsidy program should be directed to Terry Akai, Associate Dean of the Graduate School

Financial Support

Exact amounts for the following aid will vary with the type of support and the department. Exact figures can be obtained from the particular department. Initiation and continuation of financial support depends on the student's maintaining good academic standing. Initiation and continuation of the following support programs require no specific application to either the department or the Graduate School.

Application

First-time applicants who indicate a need for financial support on the application for admission will be considered by the departmental admissions committee.

To ensure consideration for support, a first-time applicant must submit a completed application, including letters of recommendation, transcripts, and Graduate Record Examination scores (both general and Subject Test if the latter is required by the department), by the program's application deadline preceding the fall for which the applicant seeks admission. Any international applicant must also submit a score from the Test of English as a Foreign Language (TOEFL).

Only full-time, degree-seeking students in residence at the University are eligible for support. Recipients of financial support such as assistantships or fellowships usually may not accept additional appointments. Rare exceptions are made only on the recommendation of the respective department.

Council of Graduate Schools Policy on Accepted Offers of Admission

In accordance with a resolution passed by the Council of Graduate Schools in the United States, the following policy is in effect:

By accepting an offer of financial aid (such as a graduate scholarship, fellowship, traineeship, or assistantship) for the next academic year, the enrolled or prospective graduate student completes an agreement that both the student and graduate school expect to honor. When a student accepts an offer before April 15 and subsequently desires to withdraw, the student may submit a written resignation for the appointment at any time through April 15. However, an acceptance given or left in force after April 15 commits the student not to accept another offer without first obtaining a written release from the institution to which a commitment has been made. Similarly, an offer made by an institution after April 15 is conditional on presentation by the student of a written release from any previously accepted offer. It is further agreed by the institutions and organizations subscribing to this resolution that a copy of the resolution should accompany every scholarship, fellowship, traineeship, and assistantship offer.

Categories of Support

The University offers three types of support: fellowships, assistantships, and tuition scholarships. Students may receive one type of support or a combination of types.

Fellowships

Fellowships provide a tuition scholarship and a stipend for full-time study by students admitted to graduate programs. The department provides tuition and stipend support for the student in good standing once the fellowship expires.

Applicants for admission are automatically considered by their academic department for all of the following University, endowed, and contributed fellowships.

University Fellowships

The Graduate School awards 12-month, five-year *Lilly Presidential Fellowships* to highly qualified first-time applicants, who may be nominated for the awards by departmental admissions committees. Teaching assistance may be required in the second, third, and fifth years of the fellowship.

The *Arthur J. Schmitt* and *Lilly Presidential Fellowships* are four-year fellowships awarded to graduate students entering a program in science or engineering. Both fellowships require U.S. citizenship.

First- and Dissertation-Year Fellowships

Several departments offer one-year fellowships for full-time graduate studies and research toward the doctoral degree.

In addition to the fellowships named above, talented students from underrepresented groups, including African Americans, Asian Americans, Hispanics, and Native Americans, also may be nominated for a variety of two-year fellowships, among them the *Coca Cola Company*, *McGuire*, *Liberal Arts*, and *University Endowed Fellowships*. U.S. citizenship is required. For the McGuire Fellowships, provided by the contributions of Mr. and Mrs. Thomas M. McGuire, special consideration is given to African American students studying for a master's degree. Highly qualified African American, Asian American, Native American, and Hispanic students accepted to any program in the humanities or social sciences are eligible for University Endowed Fellowships.

Contributed and Endowed Fellowships

Several fellowships funded by private contributions and income from endowments are awarded annually by individual academic departments.

Abrams Fellowship, begun in 1994, funds a graduate student in the humanities or social sciences.

The Michael J. Birck Fellowship in Electrical Engineering, established in 1982 by Michael J. Birck of Lisle, Illinois, provides assistance to graduate students in the field of telecommunications.

The Bond-Montedonico Graduate Fellowships in Architecture, begun in 1985, assist graduate students in architecture.

The Wendell F. Bueche Fellowships support graduate students in engineering.

FINANCIAL INFORMATION

The Joseph Z. Burgee and Joseph Z. Burgee Jr. Memorial Fellowship, initiated by John H. Burgee in 1984, provides a stipend for an exceptional graduate student in the master's program in the School of Architecture.

The Joseph and Virginia Corasaniti Fellowship, begun in 1988 by Martin G. Knott, provides a stipend to a graduate student in architecture. Special consideration is given to female applicants of Italian descent.

The Donald K. Dorini Fellowships provide 12-month stipends to graduate students in mechanical engineering who are studying hydronics.

The Fitzpatrick Fellowship, endowed by Edward B. Fitzpatrick in 1987, supports the studies of a graduate student in engineering.

The Raymond Jones Fellowship supports graduate students in philosophy.

The Walter W. and Margaret C. Jones Fellowship supports students in engineering.

The Roy and Joan Laughlin Fellowship is unrestricted in its support of graduate students at Notre Dame since 1989.

The Rev. J. David Max Memorial Fund, since 1978, has supported clerics who are studying liturgy in the Department of Theology.

The McCloskey Fellowships, endowed by Thomas D. McCloskey, fund graduate students in the Kroc Institute for International Peace Studies.

The Bayer Predoctoral and Postdoctoral Fellowships, contributed by Klaus H. Risse, chief executive officer of Bayer Inc., fund researchers in the Center for Environmental Science and Technology.

The Navari Fellowship, endowed by Rudolf M. Navari, M.D., supports a graduate student in biological sciences.

The Nolen Fellowship, endowed by James A. Nolen III in 1983, provides stipends for graduate students in architecture.

The Warner-Lambert Fellowships support graduate students in the College of Science.

The George M. Wolf Graduate Fellowships, installed in 1989, support graduate students in the Department of Chemistry and Biochemistry.

The Bernard and Helen Voll Fellowship funds graduate students who are studying ethics.

Fellowship Consortia

The University is an active institutional member of the following fellowship programs:

The National Consortium for Graduate Degrees for Minorities in Engineering and Science (GEM), the central office of which is located at the University of Notre Dame, offers financial aid and paid summer

internships to assist minority students in obtaining a master's degree in engineering.

The National Physical Science Consortium provides multi-year fellowships to graduate students in physics, chemistry, and engineering.

The Latin American Scholarship Program of American Universities (LASPAU) offers scholarships for U.S. graduate study to promising Latin American and Caribbean students and faculty.

Non-University Fellowships

Graduate students have been quite successful in earning National Science Foundation, Mellon, Fulbright, and other highly competitive extramural awards. An online, searchable database is available to access many graduate and postdoctoral fellowships and grants.

Fellowship programs in the departments of biological sciences and psychology are supported by the National Institutes of Health and in the departments of biological sciences and chemical engineering by the Department of Education.

Assistantships

Graduate Assistantships

Graduate assistantships are available for qualified students in all doctoral programs.

Research Assistantships

Research assistantships provide support to qualified recipients under research programs sponsored by government, industry, or private agencies.

Tuition Scholarships

The University offers full or partial tuition scholarships to students qualifying on the basis of merit.

International Tuition Scholarships

Established by the University in 1985, these tuition scholarships are available to eligible international students for graduate study.

The Army ROTC Two-year Program

Phone: (574) 631-6986 or 631-4656,
(800) UND-ARMY
Web: <http://www.nd.edu/~army/>

Graduate students who have two years of education remaining may apply for the two-year contract program in the Army ROTC program. Graduate students are also eligible for scholarship benefits in some cases.

Administered by the Department of Military Science of the University of Notre Dame, this program requires successful completion of the two-year undergraduate ROTC basic course or the equivalent six-week summer camp at Fort Knox, Kentucky. The Army pays for travel to and from summer camp and the student is paid while at camp. Advanced placement may also be awarded to qualifying veterans. This is then followed by two years of advanced course ROTC. While participating in the program a student will receive a personal expense allowance.

Upon completion, the student is awarded a commission in the United States Army and serves from three months to four years of active duty according to the needs of the service and the student's desires. Options also are available for commissioned service in the Army Reserve or the Army National Guard. Application for entrance into the program should be made to the Military Science Department.

Employment and Loans

Office of Financial Aid

Telephone: (574) 631-6436
Fax: (574) 631-6899
E-mail: finaid@nd.edu
Web: <http://financialaid.nd.edu>

In addition to the student support programs described above, students may apply for federal financial aid opportunities, which include student loans and campus employment. The Office of Financial Aid, located in 115 Main Building, administers all loan and employment eligibility. Please note that while the Office of Financial Aid administers employment opportunities, graduate student employment is also subject to approval by the Graduate School.

In order to be eligible for federal student assistance, a student must be a U.S. citizen, permanent resident, or eligible noncitizen. In general, students must be classified as degree seeking to participate in the federal aid programs and be enrolled at least half-time. The Free Application for Federal Student Aid (FAFSA) is the annual application that must be completed and forwarded to the processing center, listing Notre Dame (Federal School Code 001840) in the appropriate section. Priority processing consideration will occur for those applicants submitting the FAFSA by February 28 for the following fall semester. Applicants should be prepared to submit a signed photocopy of their federal income tax returns and W-2 forms directly to the Financial Aid Office upon request.

Standards of Progress

Recipients of federal financial aid must comply with the standards of progress set by their respective departments for their particular programs of study. When failure to maintain progress results in the possible loss of federal aid eligibility, the Office of Financial Aid will notify students in writing. Appeals indicating any mitigating circumstances must be made in writing to the associate director of financial aid.

Federal Stafford Loan

The terms of the need-based Subsidized Federal Stafford Loan Program require that the student borrower repay, with interest, this source of financial assistance. This program is referred to as "subsidized" because of the interest subsidy being paid by the federal government to the lender while the student is enrolled in school as well as during the six-month grace period following enrollment.

FINANCIAL INFORMATION

The terms of the non-need-based Unsubsidized Federal Stafford Loan Program require that the borrower repay, with interest, this source of financial assistance. This program is referred to as “unsubsidized” because the federal government is not paying the in-school interest to the lender while the student is enrolled in school. Interest on Unsubsidized Stafford Loans begins to accrue after disbursement of the loan funds; however, the student may choose to have the payment of the interest deferred during enrollment and later capitalized (added to the principal) at the time repayment begins.

The following is a list of additional terms of the Subsidized and Unsubsidized Stafford Loan, subject to revision by federal law: three percent origination fee and up to one percent insurance fee; variable interest rate during repayment not to exceed 8.25 percent; repayment begins six months after the student ceases to be enrolled in school on at least a half-time basis and generally extends over a 10-year period; annual subsidized borrowing limit is \$8,500; annual unsubsidized borrowing limit is \$18,500 minus subsidized eligibility; aggregate subsidized/unsubsidized borrowing limit is \$138,500.

The amount a student may borrow from the Stafford Loan Program may be limited by other financial assistance received by the student. Financial assistance includes, but is not limited to, the following: fellowships, assistantships, University scholarships, tuition remissions, all types of grants, residence hall appointments, campus employment, and any loan received under the auspices of the Higher Education Act as amended. Should a student's eligibility be impacted at any time during the loan period, the Stafford Loan will be subject to adjustment. All eligibility changes will be reported to the student's lender.

Federal Perkins Loan

The Federal Perkins Loan is a need-based loan made by the University to assist graduate students experiencing financial hardship. The Perkins Loan Program requires that the student borrower repay, with interest, this source of financial assistance. The following are some additional terms, subject to revision by federal law, of the Perkins Loan: no origination or insurance fee; five percent interest rate; interest and repayment begin nine months after the student ceases to be enrolled in school on at least a half-time basis and generally extends over a 10-year period; annual borrowing limit is \$6,000; aggregate borrowing limit is \$40,000.

The Notre Dame Loan

The University of Notre Dame offers a privately financed student loan program in cooperation with Citibank and its Student Loan Corporation (SLC), a long-term provider of higher education financing programs.

Benefits of this competitively priced alternative loan program include:

Low Interest Rate. Variable interest rate, adjusted quarterly, based upon the 91-day T-bill plus 2.25 percent.

No Loan Fees. “No loan fees” means you get 100 percent of the money you borrow. There are no origination or insurance fees—fees other student loans typically charge.

Cosigner Option. Graduate, law, and graduate business students who have established a sufficient positive credit history may apply without a creditworthy cosigner. Students with no credit history will need to have a creditworthy cosigner in order to apply. International students (who are not U.S. citizens or permanent residents) must apply with a creditworthy U.S. cosigner.

No Payment. While in School. Repayment of accrued interest and principal begins six months after the student ceases to be enrolled in school, not to exceed seven years from the first disbursement of the first loan, and generally extends up to 15 years.

Loan Limits. Eligible students may borrow up to the total cost of attendance less any other financial aid that is awarded.

Students considering both the Stafford Loan (subsidized or unsubsidized) and the Notre Dame Loan are strongly encouraged to also consider using Citibank as their Stafford Loan lender, assuming that they have not previously borrowed from another lender. For ease during the repayment period, provisions have been made for such borrowers to have one billing statement sent by Citibank's Student Loan Corporation, thus providing one monthly repayment process for both loans.

Additional information and an application for the Notre Dame Loan for graduate, law, and graduate business students are available at <http://www.nd.edu/~finaid/graduate/loans/ndl.shtml>, from the Office of Financial Aid, or from Citibank Student Loans at (888) 812-3479.

Student Employment

Many graduate students working on campus are employed on assistantship agreements directly with their academic departments. Other campus jobs may also be available and are posted on the job board at <http://studentemployment.nd.edu>.

Research Opportunities and Support

Office of Research

Telephone: (574) 631-7432
Web: <http://www.nd.edu/~research/>

University policies on research and other sponsored programs are maintained on the Web site of the Graduate School Office of Research at http://www.nd.edu/~research/Pol_Proc/toc.html.

Graduate Student Union Conference Presentation Grant Program

Awards from the Graduate Student Union (GSU) will subsidize, in part, expenses incurred by graduate students for presenting the results of original research at professional conferences. This program was formerly known as the Gordon Travel Grant Program. All graduate students who are enrolled in the Graduate School and are members of the GSU are eligible. Applicants must attend the conference before applying to the grant. For more information, please visit the GSU web site at <http://www.gsu.nd.edu>.

Graduate Student Research Support

The Joseph F. Downes Memorial Fund was established in 1973 to assist graduate students with costs associated with attendance at workshops and seminars.

The Farabaugh Fund, established in 1990, provides funds for graduate research in alcohol and drug abuse.

Retirement Research Foundation Thomas Kirby Memorial Grant supports student research in aging and retirement.

The Albert Zahm Research Travel Fund subsidizes, in part, travel expenses incurred by graduate students for purposes directly related to their research. First priority will be accorded doctoral students who have been admitted to candidacy and whose research is the basis for their dissertation. Research master's degree students who have completed all requirements except the thesis will receive second priority.

Oak Ridge Associated Universities

Web: <http://www.orau.org>

Since 1992, students and faculty of the University of Notre Dame have benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 96 colleges and universities and a contractor for the U.S. Department of Energy (DOE) located in Oak Ridge, Tennessee. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship, and research appointments; and to organize research alliances among its members.

For more information about ORAU and its programs, contact Michael Edwards assistant vice president for graduate studies and research at Notre Dame (574) 631-3072, or Monnie E. Champion, ORAU corporate secretary, at (865) 576-3306; or visit the ORAU home page.

Postdoctoral Scholars

Telephone: (574) 631-7283

Web: <http://www.nd.edu/~postdoc/>

Postdoctoral Scholar is a University status distinct from faculty or student status. Appointments are made by the Graduate School for all academic units of the University.

The paragraphs below provide summary information on each of the major appointment categories.

Research Associates

Appointments to non-faculty research positions with the title Senior Research Associate, Postdoctoral Research Associate, or Research Associate are made by the Graduate School in departments, institutes, and centers throughout the University. The length of appointment varies but is normally for one year; renewal is upon mutual agreement between the appointee and the faculty adviser. Research associates receive salary and substantial benefits. Application should be made directly to the faculty member with whom the applicant wishes to pursue studies.

Teaching Scholars

Appointments to non-faculty teaching positions with the title Teaching Scholar are made by the Graduate School in departments throughout the University. The length of appointment is normally for one year; renewal is upon mutual agreement between the appointee and the chair/director of the appointing unit. Teaching scholars receive salary and substantial benefits. Application should be made directly to the chair/director of the appropriate unit.

Visiting Scholars

Appointments to non-faculty research positions with the title Visiting Scholar are made by the Graduate School in departments, institutes, and centers throughout the University. The length of appointment varies but is normally for a semester or a year; renewal is upon mutual agreement between the appointee and the chair/director of the appointing unit. Visiting scholars receive no salary and only limited benefits. Application should be made directly to the chair/director of the appropriate unit.

Research Visitors

The Graduate School appoints students enrolled in graduate or undergraduate degree programs at other universities to research positions with the title Research Visitor for the purpose of using University libraries or consulting with a faculty member. The length of appointment varies but is normally for a semester or a year. Research visitors occasionally receive a stipend, but there are no benefits. Application should be made directly to the faculty member the student wishes to consult, or to the chair of the appropriate department.

University Resources and Policies

Academic Resources

University Libraries

Telephone: (574) 631-6258

Web: <http://www.nd.edu/~ndllibs>

The University Libraries' system consists of 11 libraries, which house most of the books, journals, manuscripts, and other non-book library materials available on the campus. Currently, the collections contain nearly 3 million volumes, more than 3 million microform units, more than 3,000 electronic titles, and over 20,800 audiovisual items to support the teaching and research programs. In the past year, the libraries added over 59,475 print volumes in addition to those in other formats and received about 11,200 serial titles.

Through the Notre Dame Web site, users have immediate access to the University Libraries' catalog, an array of electronic periodical indexes and full-text documents, and professionally developed subject guides to local and Internet-based resources. From their computers, users may request individualized reference assistance, place Interlibrary Loan requests, suggest titles for purchase, and recall or renew charged materials.

The Theodore M. Hesburgh Library, a 14-story structure, serves as the main library and its collections are of primary interest to the students and faculty of the College of Arts and Letters and the Mendoza College of Business. The tower also contains the University Archives; the Medieval Institute Library, with the Frank M. Folsom Ambrosiana Microfilm and Photographic Collection, and the Anastos Byzantine Collection; the Mark K. Davis Drawings Collection; and the Jacques Martain Center.

Orientation sessions are presented by the library staff at the start of each semester and the summer session and are available to interested students and faculty.

A limited number of closed carrels are available to advanced graduate students upon application to their academic departments. Lokmobiles, a type of locker on wheels, are also available to graduate students upon application to the Circulation Desk.

The Thomas Mahaffey, Jr. Business Information Center, located in the Mendoza College of Business, is an innovative, primarily electronic facility supporting existing and emerging programs and research. This state-of-the-art facility is equipped with 32 individual workstations and one group learning area (providing handicapped access and fully equipped for instructional support), and it provides access to and assistance in the use of a broad range of bibliographic, numerical, full-text and graphic databases in business and related disciplines.

The Kellogg/Kroc Information Center is located in 318 Hesburgh Center for International Studies and supports its work in international studies.

The Art Slide Library, located in 110 O'Shaughnessy Hall, became a branch library in July 2002. Created to support the Art, Art History and Design Department, the Art Slide Library provides photographic images for teaching, research, student slide presentations and historical documentation. The slide collection consists of approximately 230,000 slides available to all University faculty, students and visiting patrons. Web sites have been created to support the art history courses. An in-house database facilitates access to the collection for teaching and research purposes.

The remaining seven libraries were established to meet the teaching and research needs of the College of Engineering, the College of Science, the School of Architecture, and the Law School. These libraries generally contain the more recent literature and the Hesburgh Library retains the older materials.

The Architecture Library, located in Bond Hall, has a collection of over 27,540 volumes and over 91 currently received paper journals and five e-journals pertaining to various aspects of architecture.

The Chemistry/Physics Library, located in 231 Nieuwland Science Hall, maintains a collection of some 40,956 volumes and currently receives about 59 paper journals and 934 e-journals in all fields of chemistry and physics. It can provide database searches and bibliographic instruction.

The Engineering Library, located on the first floor of the Fitzpatrick Hall of Engineering, has a collection of 50,179 volumes and approximately 25,000 microform units and receives over 270 paper journals and about 1,450 e-journals related to engineering. The facility provides database searches as well as bibliographic instruction.

The Life Sciences Library, located on the first floor of the Paul V. Galvin Life Sciences Center, houses an estimated 26,000 volumes and receives approximately 329 print journals and 921 e-journals in the fields of biology, life sciences, and medicine. It offers database searching and bibliographic instruction.

The Mathematics Library, located in 001 Hayes-Healey Center, has a collection estimated at 49,085 volumes and subscribes to about 168 paper journals and 373 e-journals, which deal with all areas of pure and applied mathematics.

The Radiation Chemistry Data Center, located in 105 Radiation Research Building, has a collection of approximately 4,810 volumes and receives 7 paper journals and 20 e-journals in radiation chemistry. It serves many of the information service needs of the radiation chemical community throughout the United States and abroad.

UNIVERSITY RESOURCES AND POLICIES

Although it is not administratively a part of the University Libraries' system, the Kresge Law Library, located in the Law School, is available for use by all students, faculty, and staff. It has a collection of over 612,000 books and microform equivalents of law and law-related material and subscribes to more than 6,500 serial publications.

The University, along with more than 208 major universities, colleges, and research libraries, maintains a membership in the Center for Research Libraries, which has access to over 3.5 million volumes of materials and 1.5 million microforms important to research. The University Libraries were elected to the Association of Research Libraries in 1962.

Information Technologies

Telephone: (574) 631-5600

Web: <http://oit.nd.edu>

The Office of Information Technologies (OIT) supports 11 public-access computer clusters around the campus, plus one in the Hesburgh Library for the exclusive use of graduate students. These clusters provide access to almost 600 computers, running Macintosh, Windows, and UNIX operating systems, and high-quality printers for all students, faculty, and staff. Five clusters are usually open 24 hours every day. The OIT employs student consultants to help support these facilities. For more information about the Notre Dame computer clusters, go to <http://oit.nd.edu/helpdesk>.

The clusters, academic and most administrative buildings, and the residence halls are linked to a fiber-based campus network that provides access to a number of Notre Dame resources, as well as the Internet. Standard services include access to electronic mail and the World Wide Web. Notre Dame provides direct Ethernet connections to the campus network to graduate students in Fischer and O'Hara-Grace graduate student residences. Ethernet connections are available in Hesburgh Library carrels by request and a cluster of networked computers is available in the married student housing community center. In addition to the locations listed above, all students have access to ResNet connections in LaFortune Student Center, DeBartolo Interactionary Area, and the second floor of the Hesburgh Library. Students with wireless-capable computers also can connect to University computing resources via Nomad, Notre Dame's wireless network that serves many of buildings and the public areas throughout the campus.

Many support services are provided by the OIT. Computers can be purchased in the OIT Solutions Center, Notre Dame's on-campus computer store, on the first floor of the Information Technology Center. Students, faculty, and staff can purchase computers and printers at educational discounts. The Solutions Center also provides a variety of software at educational discount prices. See <http://solution.nd.edu> for more information about the OIT Solutions Center.

The OIT Help Desk is located in Room 111 of the Information Technology Center. The Help Desk provides answers to usage questions, diagnosis of problems, and problem resolution, and is open Monday through Friday from 8:00 a.m. to 5:00 p.m. See <http://oit.nd.edu/helpdesk/> for more information about the Help Desk.

Educational Technologists and Services offers computer-related, noncredit daytime courses to staff, faculty, and the students of the Notre Dame, Saint Mary's, and Holy Cross communities. The classes cover a wide range of applications in both Windows and Macintosh, and are free of charge. For more information on these and other training programs, see <http://oit.nd.edu/training>.

The OIT maintains a High Performance Computing Cluster (HPCC) to provide a parallel computing environment for computationally intensive work and research. Some primary users of the HPCC include Chemistry, the Radiation Lab, Center for Applied Mathematics, Computer Science and Engineering, and the Theoretical Solid State Electrophysics Research Group. The University community also has access to national super-computing and data resource facilities. More information about the HPCC can be found at <http://www.nd.edu/~hpcc>.

The Media Resource Library in DeBartolo Hall includes video and other multimedia items for use in classes. The Media library also assists in locating and ordering new titles. The Media Resource Library is located on the first floor of DeBartolo Hall in Room 115. Please contact Roberta McMahon at (574) 631-5934.

DeBartolo Hall, the University's high-technology classroom building, has 42 permanent computers on podia for class presentations. Two classrooms have a computer on each student desk for collaborative work. Media-On-Call, a fiber-optic video delivery system, provides media to all classrooms in DeBartolo and the Mendoza College of Business complex. In addition to the shared facilities of the OIT, specific colleges have their own facilities.

Anyone using Notre Dame computers and networking resources is responsible for observing the policies set forth in the document G0001 *Responsible Use of Information Technologies at Notre Dame*. The full text of this policy is available from the Help Desk or online at the Web page: <http://www.nd.edu/~doc/G0001.html>.

Institute for Scholarship in the Liberal Arts

Telephone: (574) 631-5730

Web: <http://www.nd.edu/~isla>

The goal of the Institute for Scholarship in the Liberal Arts (ISLA) is to help build, sustain, and renew a distinguished faculty in the arts, humanities, and social sciences, and to enhance the intellectual life on campus. ISLA does this in several ways.

ISLA provides grants for faculty research, travel to international conferences, curriculum development, publication subventions, and miscellaneous research expenses.

The institute is the college's clearinghouse for information, advice, and assistance in finding and obtaining grant funds for any academic purpose. Institute staff assist faculty in several ways: advising faculty regarding the content of grant proposals; assisting in the preparation of proposal budgets; critiquing draft proposals; and ushering proposals through the administrative review process. In support of this effort, ISLA maintains a grant reference library that includes computerized grant search databases, and hosts several grant proposal workshops during the year.

The institute offers a variety of other faculty development activities, such as workshops on academic writing and publishing with an academic press.

Interdisciplinary and Specialized Research Institutes

In pursuance of its public service commitment, the University, assisted by various private foundations and federal agencies, maintains several interdisciplinary and specialized research institutes.

University institutes, centers, and special programs include:

- Alliance for Catholic Education
- Center for Applied Mathematics
- Center for Asian Studies
- Center for Astrophysics
- Center for Catalysis and Reaction Engineering
- Center for Civil and Human Rights
- Center for Environmental Science and Technology
- Center for Ethics and Culture
- Center for Ethics and Religious Values in Business
- Center for Family Studies
- Center for Flow Physics and Control
- Center for Molecularly Engineered Materials
- Center for Nano Science and Technology
- Center for Orphan Drug Development
- Center for Philosophy of Religion
- Center for Research in Banking
- Center for Social Concerns
- Center for Tropical Disease Research and Training
- Center for U.S.-Japanese Business Studies
- Center for Zebrafish Research
- Cushwa Center for the Study of American Catholicism
- Ecumenical Institute (Jerusalem)
- Erasmus Institute
- Fanning Center for Business Communication
- Freimann Life Science Center
- Gigot Center for Entrepreneurial Studies
- Hank University of Notre Dame Environmental Research Center (UNDERC)
- Hessert Laboratory for Aerospace Research

UNIVERSITY RESOURCES AND POLICIES

Higgins Labor Research Center
 Institute for Church Life
 Institute for Educational Initiatives
 Institute for Latino Studies
 Interdisciplinary Center for the Study of
 Biocomplexity
 Keck Center for Transgene Research
 Kellogg Institute for International Studies
 Keough Institute for Irish Studies
 Kroc Institute for International
 Peace Studies
 Laboratory for Image and Signal Analysis
 Lizzadro Magnetic Resonance Center
 LOBUND Laboratory
 Maritain Center
 Marital Therapy and Research Center
 Medieval Institute
 Mendelson Center for Sports,
 Character, and Community
 Multinational Management Program
 Nanovic Institute for European Studies
 Nuclear Structure Laboratory
 Philosophic Institute
 Radiation Laboratory
 Reilly Center for Science, Technology
 and Values
 South Bend Center for Medical Education
 Walther Cancer Research Center
 White Center for Law and Government

Those centers with particular relevance for graduate education are described in the "Centers, Institutes, and Laboratories" section of this *Bulletin*.

Inter-University Visitation Program

The Midwest Catholic Graduate Schools (MCGS) is a consortium of the Catholic universities of the Midwest that have significant doctoral programs. In addition to Notre Dame, the members are Loyola University of Chicago, Marquette University, and Saint Louis University.

A degree-seeking graduate student at an MCGS university, after initiating a program of studies at the "home university," may with appropriate approvals take course work or pursue research at one of the other three institutions ("host universities") as a visiting student. Procedures have been introduced to facilitate such visits. The student registers at both the home and the host universities. Tuition is assessed at the home university at its rate. Registration entries and final grades are forwarded from the host to the home university for listing on the student's permanent record.

Inter-university visitation makes it possible for students to take advantage of courses or research opportunities offered by the other three institutions that might not be readily available at the home university. Thus, the program expands the choices available to MCGS students for shaping a degree program.

Interested students should review the graduate bulletins and class schedules of the host universities and consult with their advisers and major-field directors.

To participate, a student must complete an "Application for Inter-university Visitation" and secure the necessary approvals from the home institution. Then the graduate dean of the host university must approve the visitation. Finally, an "Intra-MCGS Enrollment Form" must be completed for each course to be taken at the host institution.

Participation is restricted to those fields of study that are under the academic jurisdiction of the graduate deans at both the home and the host institutions. A degree-seeking student must first have completed at least the equivalent of one full semester at the home university. No more than nine credit/semester hours of courses from host institutions can form part of a degree program at the home institution. Interested students may obtain further information and application forms from the Graduate School, 502 Main Building. Nondegree or transient students at the home institution may not participate in inter-university visitation.

Kaneb Center for Teaching and Learning

Telephone: (574) 631-9146
 Web: <http://kaneb.nd.edu>

The John A. Kaneb Center for Teaching and Learning provides the means for faculty and graduate teaching assistants (TAs) to hone the art of teaching that has characterized a Notre Dame education over the years. Located in DeBartholomeo Hall, the Kaneb Center serves faculty as they evaluate and improve their teaching and provides programs for TAs to help them develop their teaching skills and function effectively in their teaching roles. The center also helps faculty and TAs use new or existing technology.

Upon completing a series of five or more TA workshops on teaching, TAs receive a "Striving for Excellence in Teaching" certificate.

In collaboration with departments, colleges, and other University units, the center provides analysis and critiques of classroom instruction, assistance with departmental and college planning, assistance in developing teaching techniques, and University-wide stimulation for reflection on teaching and learning.

The Snite Museum of Art

Telephone: (574) 631-5466
 Web: <http://www.nd.edu/~sniteart>

A recent assessment by peer art museum directors determined that the Snite Museum of Art features collections that place it among the finest university art museums in the nation.

The Mesoamerican collection highlight is the comprehensive, exceptional holdings of works of the Olmecs, the earliest Mexican civilization.

The Kress Study Collection has been the foundation for developing Italian Renaissance art, which includes rare works by Bedoli and Ghirlandaio. The

Baroque collection highlights works by Claude, Bloemaert, Coypel, and van Ruisdael. Selections from the Feddersen Collection of 70 notable Rembrandt van Rijn etchings are exhibited frequently; and, the 18th-century collection includes such masters as Boucher, Vigée-Lebrun, Reynolds, Conca, and de Mura.

The critically acclaimed John D. Reilly Collection of Old Master to 19th-century drawings includes examples by Tintoretto, Tiepolo, Oudry, Fragonard, Ingres, Géricault, Millet, and Degas. The Noah and Muriel Butkin Collection of 19th-Century French Art is the foundation of one of the museum's major strengths, featuring paintings and sculptures by Corot, Boudin, Couture, Courbet, Carpeaux, Rodin and Gérome.

The Decorative and Design Arts Gallery spans the 18th through 20th centuries and exhibits early porcelains from Sèvres and Meissen. Exceptional ceramics, furniture, glass, and silver pieces represent both the Arts and Crafts and Art Nouveau styles of the 19th century in addition to the Art Deco and Bauhaus modern movements. Twentieth-century-designed pieces by Wright, Stickley, Tiffany, and Hoffman are also on view.

The Janos Scholz Collection of 19th-Century European Photography contains some 5,500 images of persons and places taken during the first 40 years of camera use.

Native American art focuses on early 19th-century Plains Indian-painted war records and costumes; it also features Mimbres and Anasazi painted ceramics from the prehistoric Southwest.

The American collection has 19th-century landscapes by Durand and Inness and portraits by Eakins, Sargent, and Chase. Among highlights of the West and the Southwest regions are paintings by Higgins, Ufer, Russell, and Remington.

Traditional works of African art such as textiles, masks, and sculptures are in the collection.

Twentieth-century styles and movements are seen in paintings by Miro, O'Keeffe, Avery, Glackens, Pearlstein, and Scully. Modern sculptures by Barlach, Zorach, Cornell, Calder, and Rickey complement the paintings and drawings.

Croatian-American sculptor Ivan Mestrovic, who taught at Notre Dame from 1955 until his death in 1962, created many works that remain on campus. Major pieces can be seen in the museum, at the Eck Visitor Center, and the Basilica of the Sacred Heart.

Loan exhibitions from major museums and private collections, in addition to exhibitions mounted by the Snite, are offered periodically in the O'Shaughnessy Galleries, as is the annual exhibition of student art by candidates for M.F.A. and B.F.A. degrees. Special events and programs include lectures, recitals, films, and symposia held in the 304-seat Annenberg Auditorium and in the galleries.

UNIVERSITY RESOURCES AND POLICIES

Other Facilities and Services**Campus Ministry**

Telephone: (574) 631-7800
 Web: <http://www.nd.edu/-ministry>

Notre Dame is a Catholic institution, which extends a welcome and our desire to be of service to students of all denominations and faith traditions.

Through the programs offered by Campus Ministry, we hope to offer opportunities for students to deepen their faith, to develop a spirituality that will serve them well as adult believers, and to discuss the religious and ethical aspects of questions that are essential for all of us.

Pastoral needs of graduate students are met in a variety of ways. Liturgies, prayer services, retreats, and spiritual counseling are available through personnel at University Village and at the Fischer-O'Hara-Grace Graduate Residences as well as through the offices of Campus Ministry. There is a chapel at Fischer Graduate Residences for the use of graduate students with daily and Sunday Masses and opportunities for sacramental reconciliation.

Campus Ministry offers programs in marriage preparation and family life, retreats, faith sharing, sacramental preparation, and pastoral counseling. It coordinates liturgies in the Basilica of the Sacred Heart and in the residence hall chapels. Graduate students are welcome to participate in these celebrations and to serve as Eucharistic ministers, lectors, or members of the Notre Dame liturgical choirs and music groups. Campus Ministry prepares a listing of all Catholic Masses offered each week at the Basilica of the Sacred Heart and in the residence halls. In addition to this, lists of local Protestant churches, as well as synagogues and mosques, are mailed to all graduate students at the beginning of the academic year with times of services and telephone numbers to call for transportation.

Campus Ministry offices are located in the Coleman-Morse Center and in 103 Hesburgh Library Concourse.

Campus Security

Telephone: (574) 631-8338
 Non-Emergency: (574) 631-5555
 On-Campus Emergency: 911
 Web: <http://www.nd.edu/-ndspd>

The security of all members of the campus community is of paramount concern to the University of Notre Dame. On the Notre Dame Security/Parking Department website, you will find crime bulletins, suggestions regarding crime prevention strategies and important policy information about emergency procedures, reporting of crimes, law enforcement services on campus, and information about support services for victims of sexual assault.

Child Care

Telephone: (574) 631-3344

An on-campus childcare center for the children of faculty, staff, and students was opened at Notre Dame in 1994. The Early Childhood Development Center (ECDC) provides a play-oriented learning curriculum that fosters a child's understanding of self, others, the world, and problem solving. Literature, creative dramatics, music, play, and art are integrated into the daily schedule. The six-classroom center is staffed by 20 full-time employees, including six lead teachers who hold at least a bachelor's degree. Notre Dame and Saint Mary's College students serve as part-time teacher-assistants.

The program serves children ages two to six during the school year and two to nine in the summer. A number of full- and part-time schedules are offered to meet varying family needs, and the weekly cost of the program is tied to family income. ECDC also has operated a childcare program at nearby Saint Mary's for 28 years.

Call for more information or to get on the waiting list.

Disability Services

Telephone: (574) 631-7157 (voice),
 (574) 631-7173 (TTY)
 Web: <http://www.nd.edu/-osd>

Disability Services provides a variety of services to ensure that qualified students with disabilities have access to the programs and facilities of the University. Services do not lower course standards or alter essential degree requirements, but instead give students the opportunity to demonstrate their academic abilities. Students can initiate a request for services by registering with the Sara Bea Learning Center for Students with Disabilities and providing information that documents their disability.

While the services or accommodations provided depend on the student's disability and course or program, some of the services that have been used include extended time on exams and/or separate testing rooms; textbooks in a variety of formats, such as large print, Braille, cassette tape, and computer disk; readers, note takers, and academic aides; screening and referral for diagnostic testing for a learning disability or attention deficit disorder; housing modifications; and hearing amplification equipment. The Sara Bea Learning Center also has a room in the library with CCTV, an Arkenstone Reader, and a Braille printer for student use.

For more information on services or to receive a copy of the University of Notre Dame Policies and Procedures for Students and Applicants with Disabilities, please contact: Scott Howland, Coordinator, Disability Services, Sara Bea Learning Center for Students with Disabilities, Notre Dame, IN 46556; E-mail: showland@nd.edu.

Food Services

Phone: (574) 631-5000
 Web: <http://food.nd.edu>

All graduate students, whether they live on campus or off campus, may purchase meal plans for the University dining halls. A variety of options are available in 2004–2005. Students may pick from 10 different meal plans providing a variety that can meet any schedule and any budget.

For added flexibility, students may also choose from our Domer Dollar or Flex Point programs. Each option allows for greater flexibility, safety, and convenience because the student never has to carry cash to dine in any of Food Services' operations. Visit the Card Services Office Web page to learn more about meal plans, Flex Points, and Domer Dollars (http://food.nd.edu/on_campus_students/services/idcard.php) or call the Card Services Office at the South Dining Hall: (574) 631-7814.

Graduate School Career Services

Telephone: (574) 631-5200
 Web: <http://careercenter.nd.edu>

The Career Center at Notre Dame offers students diverse and comprehensive services, including individual advising and counseling, dossier and credential file services, career assessment inventory testing, group workshops, videotape mock interviews, and more.

Programs of particular relevance to graduate students include

- Preparing your curriculum vitae
- Job search strategies for Ph.D.s in industry
- Improve your presentation skills
- Learn to network effectively

In addition to a wide variety of reference materials available in its Flanner Hall offices, the center also provides an online resource, Go IRISH (Internet, Recruiting, Interviewing, Scheduling, Hotlink), that allows students to pursue internships, sign up for interviews, and research careers.

Health Services

Telephone: (574) 631-7497/7567
 Web: <http://www.nd.edu/-uhs/uhs.html>

The University Health Center provides comprehensive treatment of illness and injuries to all students enrolled at the University. The services provided include an ambulatory clinic, pharmacy, laboratory, x-ray facilities, and an inpatient unit. Allergy and travel immunization services are also provided.

There is no fee to see the University physicians or nurses. Students must pay for prescriptions, over-the-counter medications, supplies, and specially prescribed treatments/procedures. A statement of the charges for services rendered will be provided at time of service or mailed to the student, enabling them

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to file for personal insurance reimbursement. Most charges are covered under the University-sponsored student insurance plan, and the Health Center clerical staff files those claims.

The ambulatory clinic services are available on a walk-in or scheduled basis. Allergy and immunization shots must be scheduled. Referrals are made to local physicians for consultation and treatment of special cases. Inpatient beds are available for students during the fall and spring semesters when prescribed by a University physician.

Registered nurses provide 24-hour-per-day care. There are no inpatient room and board fees for on-campus students. Off-campus students pay a nominal inpatient room and board fee. All inpatient students pay for their laboratory tests, medications, and treatments.

Laboratory services are provided on site through a satellite facility of the South Bend Medical Foundation, a large local laboratory that also serves the local hospitals.

In case of emergency, the University Security Department provides for transportation of students to local hospitals. Local ambulance services are readily available. Transportation to local physicians' offices for care that is not an emergency is provided by Health Services if a University physician has referred the patient. Hours of transportation are limited to 12:15 p.m. to 5 p.m., Monday through Friday, during the academic year when the University is in session.

All student health records are kept confidential. No information is released to anyone, including parents and University authorities, without the student's prior permission. In the event of emergency requiring hospitalization, when it is impossible to obtain a student's permission, a University physician or the hospital will notify a parent or legal guardian.

International Student Services and Activities

Telephone: (574) 631-3825
Web: <http://www.nd.edu/-issa>

The University of Notre Dame's international student body is made up of 900 students from over 100 countries. The campus community benefits from this diversity through opportunities to learn about other cultures, the sharing of experiences, the promotion of intercultural understanding, and the chance to practice other languages. Many of the services and programs that enhance international educational exchange are offered through International Student Services and Activities (ISSA). This office strives to create a supportive atmosphere where students can live and learn effectively. The office also promotes international programs as a means of stimulating cross-cultural understanding and interest within the campus and community.

Services and programs offered include the International Orientation Program, Family Friendship Program, International Resource Bureau, annual International Week, international club advising, community outreach, general advising, counseling, and referral.

Since many international graduate students bring their families with them to Notre Dame, ISSA tries to meet their needs as well. For example, English as a Second Language classes are offered to spouses of degree-seeking international students, and an International Women's Club offers support and activities to the wives of all international students and scholars throughout the year.

International Student Services and Activities is located in Room 204 LaFortune Student Center. A separate Office of Foreign Student Visas is located at 121 Main Building and advises international students and scholars with nonimmigrant status.

Multicultural Student Programs and Services

Telephone: (574) 631-6841
Web: <http://www.nd.edu/-mmps>

The Multicultural Student Programs and Services office encourages and supports traditionally under-represented students in using all academic and leadership opportunities at the University. The office focuses on student leadership development skills, provides networks for internships and summer research positions, and offers diversity and multicultural educational programming for the entire campus. While working with 20 ethnic organizations, Multicultural Student Programs and Services collaborates with other academic and student affairs departments, the Student Union Board, and Student Government to ensure representation of the total student body in programming efforts.

In conjunction with Student Affairs, the office sponsors an annual fine arts lecture series, which addresses various issues impacting people of color. This series serves as a medium to begin dialogue on commonalities, differences, and interests. Another major programming effort is the First Friday luncheon held to permit faculty, administrators, and undergraduate and graduate students an opportunity to interact in an informal atmosphere. The MSPS Building Bridges Program provides first-year students with mentors who are faculty, administrators, upperclass MSPS scholars, and upperclassmen. The participants are exposed to career and graduate school initiatives, scholarships, and University awards. For further information, contact the office in the Intercultural Center, 210 La Fortune Student Center.

Parking

Telephone: (574) 631-5053
Web: <http://www.nd.edu/-ndspd/parking.html>

Students must register vehicles operated or parked on campus. Information about traffic and parking regulations and vehicle registration is available from the Parking Services office, Hammes Mowbray Hall.

University Counseling Center

Telephone: (574) 631-7336
Web: <http://www.nd.edu/-ucc>

The University Counseling Center (UCC) offers professional individual and group counseling services for degree-seeking students. The UCC is devoted to meeting student needs and assisting with their problems and concerns. These concerns might include interpersonal relationships, personal growth and well-being, stress management, self-esteem and confidence, social/sexual difficulties, performance enhancement, time management, life and career planning, academic difficulties, sexual assault, anxiety, depression, alcohol/drug abuse, and eating disorders. The UCC also offers services especially for graduate students. Every fall and spring the UCC offers a graduate student therapy group that meets on a weekly basis. In addition, the UCC staff are available to present workshops and programs for graduate school departments and student groups, such as programs for the Graduate Student Union's Health and Wellness Fair.

The UCC is staffed by licensed clinical psychologists, counseling psychologists, an addiction specialist, clinical social workers, and pre-doctoral interns and counselors who are supervised by professional psychologists, a consulting psychiatrist, and a consulting nutritionist. The UCC operates under an ethical and legal code of strict confidentiality.

The UCC also provides consultation to the University community. Faculty and staff as well as students may consult with the UCC staff in regard to situations related to students and student-life problems. For non-emergency questions or concerns about students, faculty and staff may call UCC's "Warm Line" service at 631-7336 from 9:00 - 5:00 p.m. Monday through Friday. We offer this service to encourage faculty and staff to think about calling our staff when concerned about a student before an emergency arises. However, for cases of immediate crisis, twenty-four hour emergency service is also available by calling 631-7336 and asking to speak to the emergency on-call therapist.

Professional services are usually by appointment and can be arranged either in person or by telephone. Services at the UCC are offered on a minimal fee scale of \$4 per session. Students are offered unlimited credit and can defer payment. If fees still pose a problem, arrangements will be made. There is no charge for the initial appointment. The center is open from 9:00 a.m. to 5:00 p.m., Monday through Friday.

UNIVERSITY RESOURCES AND POLICIES

For information or an appointment call 631-7336. The UCC web site contains on-line self help brochures, current events, and tips for making referrals: <http://www.nd.edu/~ucc>.

Policies on Harassment and Other Aspects of Student Life

Sexual and discriminatory harassment and harassment in general are prohibited by the University. Definitions and policies regarding all forms of harassment and other aspects of student life and behavior are described in the Graduate and Professional Student Handbook, which contains the University's description of student life policies and procedures for advanced-degree students. The codes, rules, regulations, and policies that establish the official parameters for student life at Notre Dame are contained in the handbook. Unless otherwise noted, the policies and procedures in the handbook apply to all graduate and professional students, whether the behavior occurs on or off campus. The handbook may be obtained from the Office of Residence Life and Housing, located at 305 Main Building, and is available from the Office of Residence Life and Housing Web site at <http://orlh.nd.edu>.

Centers and Institutes

Alliance for Catholic Education

Academic Director:

Thomas Doyle, Ph.D., *Professional Specialist*

Telephone: (574) 631-7052
 Fax: (574) 631-7939
 Location: 112 Badin Hall
 E-mail: acc.1@nd.edu
 Web: <http://www.nd.edu/~ace>

The Alliance for Catholic Education (ACE) seeks to develop a corps of highly motivated and committed young educators to meet the needs of our country's most underserved elementary and secondary schools.

To carry out its core teaching mission, ACE recruits talented graduates from a broad variety of undergraduate disciplines, representing a diverse set of backgrounds and experiences, and provides an intensive two-year service experience encompassing professional development, community life, and spiritual growth. These three components are at the heart of the ACE initiative. They aim to provide excellence in education and to maximize opportunities for personal and professional growth for program participants.

ACE teachers undergo an intensive teacher education in Notre Dame's master of education program under the direction of Thomas Doyle. The ACE professional training spans two years and integrates graduate-level course work with an immersion experience in teaching. During the two summers after admission to the program, ACE teachers live and study together at the University of Notre Dame. The summer sessions combine an innovative teaching curriculum taught by seasoned practitioners and select faculty from the University of Notre Dame as well as from other major universities with supervised field experience in both the public and Catholic elementary schools of South Bend, Indiana, and in the Upward Bound Program at Notre Dame.

At the completion of the summer training component, ACE teachers travel to underresourced parochial schools of the Southeast and Southwest to serve as full-time teachers during the regular school year. In addition to the support of mentor-teachers in the parochial schools where they teach, all ACE teachers are brought together once during the school

year in a retreat setting to deepen and enhance their commitment to becoming professional educators. Upon completion of two years in the ACE program, participants will have fulfilled the requirements for a master of education degree and will have provided an urgently needed presence in the lives of our nation's school children.

In addition to a fully funded graduate program, ACE participants receive a modest monthly stipend, medical insurance, travel reimbursement, and an educational award of \$4,725 from the Corporation for National Service.

Begun in 1994, ACE currently has over 150 recent graduates from the University of Notre Dame and Saint Mary's College, as well as a number of other select colleges and universities. These graduates teach in over 100 parochial schools throughout the urban and rural Southern United States.

Center for Applied Mathematics

Director:

Andrew Sommese, *the Duncan Professor of Mathematics*

Telephone: (574) 631-8660
 Fax: (574) 631-6579
 Location: 262 HurleyHall
 E-mail: cam@nd.edu
 Web: <http://www.nd.edu/~cam>

The Center for Applied Mathematics was established to enhance interdisciplinary use of applied mathematics and to provide support for faculty and student research. The center promotes interaction and cooperation among the Notre Dame researchers using mathematics in a variety of disciplines spanning engineering and science and including business and social sciences. It also helps in faculty development by acting as a University source of information on new mathematical concepts and methods essential for developing and carrying out innovative and timely interdisciplinary research at Notre Dame. The center works closely with the interested departments to formulate, establish, and help coordinate the applied mathematics courses at the University.

The primary activities of the center are as follows:

1. Sponsor lecture series and seminars for faculty and graduate students.
2. Sponsor short and long term faculty visitors working in interdisciplinary research projects in applied mathematics.
3. Support student research by providing fellowships to a limited number of graduate students designated as center fellows; also by providing summer fellowships to a limited number of graduate and undergraduate students.
4. Sponsor an annual research workshop for graduate students.
5. Promote interdisciplinary research groups and help secure funding for research.
6. Give institutional recognition to members of the Notre Dame faculty doing research in applied mathematics.

Center for Astrophysics

Director:

Grant J. Mathews, *Professor of Physics*

Telephone: (574) 631-6919
 Fax: (574) 631-5952
 Location: 225 Nieuwland
 E-mail: astro@nd.edu
 Web: <http://www.nd.edu/~astro>

The Center for Astrophysics at Notre Dame University (CANDU) provides a synergistic focal point for various faculty research interests under the common theme of "astrophysical and cosmological origins" and encourages collaborations both within and beyond the University community.

The national and international visibility of Notre Dame within the astrophysics community has steadily increased in recent years, with world-renowned programs in theoretical/observational cosmology, nuclear astrophysics, cosmic-ray physics, dark matter searches, solar system formation, and extra-solar planet searches. In addition, Notre Dame has made a commitment to the Large Binocular Telescope (LBT) international collaboration. When completed, the LBT will be the largest telescope in the world on a single mount. It will provide image resolution as much as 10 times better than the Hubble Space Telescope.

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Research activities of the center focus on cross-disciplinary efforts to explore outstanding scientific questions concerning the origin and evolution of astrophysical phenomena. In addition to the specific scientific missions outlined below, CANDU acts as a cross-disciplinary focal point for interactions among scholars with related interests in other departments such as mathematics, history, philosophy, and the Program of Liberal Studies. Two specific areas of research/collaboration targeted by CANDU fall under the headings of astrophysical and cosmological origins.

Cosmological origins includes topics such as the origin and structure of the universe, the big bang, primordial nucleosynthesis, cosmic background radiation studies, measurements of cosmological expansion rate, age, and matter content, the origin and evolution of galaxies, space-time geometry, and historical, philosophical, and theological foundations.

Astrophysical origins is concerned with the origin of stars and the formation of extra-solar planetary systems, origin and evolution of the elements in stars and supernovae, origin of cosmic rays, gamma-ray bursts, astrophysical neutrinos, and gravity waves.

The center encompasses a broad range of academic interests and is a focal point for undergraduate and graduate research projects. It provides fellowship support for both undergraduate and graduate students, and it also acts as a forum for public outreach and invited lecture series, providing a unique academic environment for intellectual progress.

Another activity of the center is to provide and develop space-based missions. The center is currently developing a NASA mission to detect Earth-mass planets orbiting other stars through an innovative gravitational lensing technique. This will also detect supernovae at large distances, providing a means to measure the age and acceleration of the universe.

Other significant facilities of CANDU include access to the Vatican Telescope; telescope facilities at Mt. Stromlo, Australia, and in South Africa; the Notre Dame nuclear accelerator laboratory; and the Notre Dame Project GRAND cosmic air shower array.

Center for Environmental Science and Technology

Director:

Patricia A. Maurice, *Associate Professor of Civil Engineering and Geological Sciences*

Telephone: (574) 631-8376
 Fax: (574) 631-6940
 Location: 152A Fitzpatrick Hall
 E-mail: cest.1@nd.edu
 Web: <http://www.nd.edu/~cest>

The Center for Environmental Science and Technology, established in 1987, conducts basic scientific and engineering research that involves faculty from all divisions of the Graduate School. The center serves as a focal point for the promotion and encouragement of the following activities:

1. Conduct basic research in pollution control that combines microbiology, biochemistry, physical chemistry, geochemistry, mathematics, and physics with engineering.
2. Educate undergraduate and graduate science and engineering students to the need for and methods of science-based environmental research.
3. Develop innovative technologies grounded in sound scientific principles for application to environmental problems.
4. Develop interdisciplinary teams to apply cutting-edge technologies to real world problems in many areas of national and international concern.

As a cooperative effort between the Colleges of Engineering and Science, the center fosters interdisciplinary environmental research and education by providing cutting-edge analytical technologies needed to address environmental problems. The goals of the center are to develop a truly comprehensive research and educational program, and to ensure that students obtain basic scientific knowledge needed to address current and future pollution control problems.

Students connected with the center are either enrolled in a degree program in one of the participating departments (e.g., biological sciences, chemical engineering, chemistry and biochemistry, civil engineering and geological sciences, mathematics, physics, or anthropology) or visiting from another institution. The center supports students through the Bayer endowment for predoctoral and postdoctoral fellowships, in addition to various internship opportunities.

Center for Flow Physics and Control

Director:

Thomas C. Corke, *the Clark Professor of Aerospace and Mechanical Engineering*

Telephone: (574) 631-7007
 E-mail: flowpac@nd.edu
 Web: <http://www.nd.edu/~flowpac>

The University of Notre Dame has a long tradition of achievement in experimental fluid dynamics and aerodynamics that dates back to 1882, with the development of one of the earliest wind tunnels in the United States. Since 1943, contributions to aircraft technology from Notre Dame's Aerospace Engineering Laboratory have been recognized world wide through its development of low-turbulence, subsonic, transonic, and supersonic, smoke-visualization wind tunnels. These unique wind tunnels continue to support new research, and form the nucleus of the other new facilities.

As an outgrowth of this long tradition, the Center for Flow Physics and Control was formed in 2001. Research funding comes from a broad number of government agencies, including all branches of the Department of Defense (Army, Air Force and Navy); DARPA; and NASA Langley, Ames, Glenn, and Dryden Research Centers. A general theme of research that bridges this group involves flow diagnostics, prediction, and control. A combination of basic research is aimed at verifying or developing theories for fluid dynamic behavior, and the application of theory towards controlling flows. The work has involved a multitude of flow fields including laminar and turbulent boundary layers, jets, shear layers, and wakes at incompressible and compressible Mach numbers. The applications have included transition control, drag reduction, mixing, flow-induced vibration, and acoustics.

In addition to experiments, the center continues a long tradition of theoretical and computational fluid dynamics (CFD) and modeling of complex flows. The combination of these elements in a single site is a particular strength of the group.

The facilities in the center are primarily located in the Hessert Laboratory for Aerospace Research. This is a modern 40,000-square-foot building that includes laboratories, computer facilities, fully staffed machine and electronics shops, faculty and student offices, and conference and meeting rooms.

The research facilities include numerous high-quality subsonic, transonic, and supersonic wind tunnels, as well as specialty facilities such as a high-speed heated anechoic jet facility, an anechoic open-jet wind tunnel, and an atmospheric boundary layer wind tunnel. Specialized laboratories focus on particle dynamics, optical measurements, digital time-series acquisition and image processing, and computational fluid dynamics.

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Research in the center is broken into five areas—aero-optics, aero-acoustics, fluid-structure interactions, multiphase flows, and intelligent flow control—and involves faculty in the departments of aerospace and mechanical engineering, electrical engineering, civil engineering and geological sciences, computer science and engineering, and mathematics.

Advisers from industry provide intellectual feedback and industrial teaming.

Center for Global Health and Infectious Diseases

Director:

Frank H. Collins, *the George and Winifred Clark Professor of Biological Sciences*

Telephone: (574) 631-8045
 Fax: (574) 631-3996
 Location: 315 Galvin Life Sciences
 E-mail: CTDRT.1@nd.edu
 Web: <http://ctdrt.bio.nd.edu>

The Center for Global Health and Infectious Diseases (CGHID) is an administrative structure at the University of Notre Dame that brings together a diverse group of faculty, staff and students from several different colleges and departments in the University whose research and teaching is focused on human pathogens and their invertebrate and vertebrate vectors, the diseases caused by these organisms, and the impact of these diseases on human society. Members of CGHID are concerned in particular with the impact of infectious diseases in less developed parts of the world, and research interests of center members range from biomedical science to issues of human rights. Center members also work on new and emerging infectious diseases of importance in the United States, especially those like West Nile encephalitis and Lyme disease whose public health impact is significantly influenced by human impacts on the environment. Among the diseases studied at CGHID are malaria, toxoplasmosis, tuberculosis, lymphatic filariasis, leishmaniasis, dengue, and West Nile encephalitis. Many faculty work specifically on arthropod vectors, particularly mosquito vectors of arboviruses, filarial worms, and malaria parasites, tick vectors of the Lyme disease spirochete, and sand fly vectors of *Leishmania* parasites. Examples of some of the areas of research interest among center faculty include:

- Biology of Intracellular Pathogens
- Genomics and Integrative Research
- Tools for Genetic Engineering of Vectors and Pathogens
- Population and Evolutionary Genetics
- Rational Drug Design
- Interdisciplinary Approaches to Global Health

Faculty in CGHID receive support from major federal funding agencies such as the NIH, NSF, DOD, and USDA, from private foundations like John D. and Catherine T. MacArthur Foundation, Ellison

Medical Foundation, Burroughs Wellcome Fund, and the Bill and Melinda Gates Foundation, from international funding bodies like the World Health Organization, from pharmaceutical industries, from the state of Indiana, from the University of Notre Dame, and from private benefactors. The center has sponsored a number of program grants, including the a Gates Foundation lymphatic filariasis elimination program in Haiti, a NIAID Tropical Disease Research Unit grant, and an NIH Training Grant in Experimental Parasitology and Vector Biology that has trained graduate students and postdoctoral fellows for more than three decades.

Center for Molecularly Engineered Materials

Director:

Paul J. McGinn, *Professor, Department of Chemical and Biomolecular Engineering*

Telephone: (574) 631-6151
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 Location: 178 Fitzpatrick Hall
 E-mail: cmem@nd.edu
 Web: <http://www.nd.edu/~cmem>

Materials engineered at the molecular level offer tremendous potential for new technological applications, especially in key industries such as aerospace, automotive, biomaterials, chemicals, defense, electronics, energy, metals, and telecommunications.

The Center for Molecularly Engineered Materials actively explores multidisciplinary fundamental concepts in materials science and engineering, with emphasis on the study of materials at the molecular level. At Notre Dame, it is the primary interdisciplinary unit dedicated to the molecular-level design, synthesis, characterization, and development of advanced materials.

The center's objective is to utilize molecular-level engineering of materials to explore promising technological applications in a variety of fields ranging from catalysts, adsorbents, and sensors to fuel cells, biomaterials, and nanomagnetism. An important focus of the center is integrating materials engineering over length scales from the molecular up to macroscopic dimensions so as to have maximum utility. A key goal is to serve as a national resource for exploring long-range molecular-level materials engineering concepts for applications that would otherwise not be possible due to the near-term focus of the commercial sector.

The aim is to develop materials and systems whose structure and components exhibit novel and significantly improved physical, chemical, and biological properties, phenomena, and processes, due to their molecular-scale design and engineering. Included among the areas of emphasis are the synthesis and characterization of new materials with features on the molecular scale, experimental studies and mathematical modeling, and advanced processing

techniques. For example, molecular-level synthesis and assembly methods will result in chemical/biological sensors with improved accuracy and sensitivity that can rapidly test large quantities of food for bacterial contaminants or airborne toxins; novel catalyst structures that provide both an ideal chemical environment on the molecular scale and the optimal macrostructure for efficient high-volume chemical, petroleum, and pharmaceutical processing; significant improvements in semiconductor interfaces for solar energy conversion; environmentally benign corrosion inhibitors; and better sensors and controls to increase efficiency in manufacturing.

The center integrates interdisciplinary research groups in catalysis and reaction processes, electrochemical interfaces and processes, nanostructured materials, advanced processing techniques, and biology inspired materials. It includes researchers from several departments in the Colleges of Engineering and Science and the Radiation Laboratory. The thrust activities are synergistically planned, coordinated, and executed so as to provide a coherent approach to targeted and evolving concepts.

Center for Nano Science and Technology

Director:

Wolfgang Porod, *the Frank M. Freimann Professor of Electrical Engineering*

Telephone: (574) 631-6376
 Fax: (574) 631-4773
 Location: 203 Cushing Hall
 E-mail: ndnano@nd.edu
 Web: <http://www.nd.edu/~ndnano>

Research conducted in the Center for Nano Science and Technology entails the study of small device structures and device-related phenomena on a spatial scale of less than one-tenth of a micron—that is, one thousandth the diameter of a human hair. The center integrates research programs in molecular- and semiconductor-based nanostructures, device concepts and modeling, nanofabrication, electrical and optical characterization, and integrated systems-level design to address common application goals.

The center comprises a multidisciplinary collaboration of faculty from the departments of electrical engineering, computer science and engineering, chemistry and biochemistry, and physics who are exploring fundamental concepts and issues in nano science and developing unique engineering applications using principles of nano science. The center was established on a base of 15 years of faculty research and educational development at Notre Dame in nano science and technology.

At present, center faculty are engaged in such initiatives as quantum-based devices and architectures; high-speed resonant-tunneling devices and circuits; photonic integrated circuits; the interaction of biological systems with nanostructures; and the design and fabrication of microelectromechanical systems.

CENTERS AND INSTITUTES

In addition to training students for immediate participation in nano science and technology and preparing them to be productive and extremely competitive in the future marketplace, the center also allows faculty to conduct avant-garde research and provides industry leaders with a forum, a "think tank," to explore long-range ideas. Involvement with industrial technologists also benefits students by providing experience in working with the commercial sector.

Keck Foundation Initiative

The W.M. Keck Foundation Initiative on "Integrated Nanoelectronics: Information Processing at the Molecular Level" is a major research program within the Center for Nano Science and Technology.

This initiative explores the use of nanoelectronics in developing radically different approaches to information processing. The research aims to combine novel device concepts with both fundamental fabrication issues in physics and chemistry and higher-level integration issues of systems, architectures, and algorithms. This initiative builds on the notion of Quantum-Dot Cellular Automata (QCA), a concept developed at Notre Dame, which is based on encoding binary information through the charge configuration of quantum-dot cells.

Facilities

(<http://www.nd.edu/~ndnano/research.htm>)

The center has excellent on-site research facilities and capabilities. These include nano-lithography and scanning tunneling microscopy; nanodevice and circuit fabrication; nano-optical characterization including femtosecond optics and near-field scanning optical microscopy; electrical characterization at helium temperatures and in 10 T magnetic fields; 50 GHz high-speed circuit analysis; and device and circuit simulation and modeling. In recent years, federal grants received to support research in nano science and technology total approximately \$10 million.

Center for Philosophy of Religion

Director:

Thomas P. Flint, *Professor of Philosophy*

Telephone: (574) 631-7339

Location: 418 Malloy Hall

E-mail: cprelig.1@nd.edu

Web: <http://www.nd.edu/~cprelig>

The Center for Philosophy of Religion was established at Notre Dame in 1976. Although operating in close association with the Department of Philosophy, it is not a degree-granting institution. Its aim is to advance the understanding of religion and religious belief and to promote and advance a specifically Christian and theistic approach to some of the main topics and problems of philosophy.

In pursuit of these goals, the center sponsors several different sorts of activities. First, it offers stipendiary fellowships on a competitive basis to scholars who then

come to Notre Dame to work on projects in philosophy of religion and Christian philosophy. It also extends nonstipendiary resident fellowships to scholars who are on sabbatical leave and would like to come to Notre Dame to work on a topic in Christian philosophy or philosophy of religion; such fellows receive guest faculty status and secretarial services.

The center periodically sponsors conferences and lectureships on selected issues.

The center also publishes a series of volumes that includes conference proceedings and monographs. The center will address its subject from within a posture that is committed and Christian; its perspective (though not necessarily that of its fellows and lecturers) is that of the committed believer, rather than one of artificial neutrality.

Charles and Margaret Hall Cushwa Center for the Study of American Catholicism

Director:

Timothy Matovina, *Associate Professor
of Theology*

Telephone: (574) 631-5441

Fax: (574) 631-8471

Location: 1135 Flanner Hall

E-mail: cushwa.1@nd.edu

Web: <http://www.nd.edu/~cushwa>

The Cushwa Center for the Study of American Catholicism is widely recognized as the leading center for the historical study of Roman Catholicism in the United States.

Cushwa Center seminars, conferences, and research projects, many of which produce scholarly volumes or popular educational publications, engage a national body of historians and colleagues from theology, women's studies, sociology, ethnic studies, religious studies, American studies, and English. The center also provides resources and critical commentary for media coverage of U.S. Catholicism and collaborates with church leaders and pastoral workers to enhance the vitality of Catholic life in the United States. In all aspects of its mission—research, teaching and faculty development, and public service—the Cushwa Center seeks interdisciplinary and ecumenical cooperation.

Events

The Cushwa Center sponsors a number of programs that promote the study of American Catholicism:

Twice a year, the American Catholic Studies Seminar brings scholars from across the country to present papers at Notre Dame. Published in a working paper format, these essays are made available to the public for the cost of duplication.

Once a year a prominent scholar in the field of American Catholic studies delivers a Cushwa Center Lecture.

The Notre Dame Seminar in American Religion is a semiannual gathering of historians of American religion and other scholars who meet to discuss a recent book published in the field. The author of the book is present for the seminar.

The Cushwa Center sponsors a conference each spring, covering topics such as: Catholicism in Twentieth Century America, U.S. Hispanic Catholicism, African American Catholicism, and Catholicism in International and Comparative Contexts.

Publications and Research

The Cushwa Center's American Catholic Studies Newsletter, published twice a year, reviews the latest scholarship in the field. It also features personal news items and provides information on archival holdings pertinent to the study of U.S. Catholicism.

In conjunction with the university of Notre Dame Press, the Cushwa Center publishes two book series: *Notre Dame Studies in American Catholicism* and *The Irish in America*. The fourteen books published to date in these series, as well as the center's specialized studies of the growth of Hispanic Catholicism in the United States and the history of Catholic parish life, have helped to build the Cushwa Center's reputation. Increasingly, the center is also earning recognition for important interdisciplinary research in American religion and culture, the experiences of women in religious history, the impact of the Second Vatican Council on the American Catholic community, and the Catholic presences and diverse religious practices of U.S. Catholic men and women in the twentieth century.

Research travel grants, offered annually, assist scholars who wish to use Notre Dame's library and archival collection in Catholic Americana.

The center also administers a Hibernian Research Award and a program of lectures, publications, and conferences related to the Irish American experience. These activities are funded by an endowment from the Ancient Order of Hibernians.

Twentieth Century Project

Initiated in 1997, "Catholicism in Twentieth Century America" seeks to integrate the experiences and contributions of Catholics more fully into the narratives of American history. Faculty and dissertation fellows participated in one of three working groups: Public Presences, Catholic Women, and Catholic Practices and Identity. Several completed manuscripts from the project have been published in a new publication series, *Catholicism in Twentieth Century America*, which is under the general editorship of Scott Appleby and sponsored by the Cushwa Center and Cornell University Press.

CENTERS AND INSTITUTES

**Devers Program
in Dante Studies***The Albert J. Ravarino Director:*

Theodore J. Cachey Jr., *Chair and Professor of Italian Language and Literature*

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The William and Katherine Devers Program in Dante Studies supports rare book acquisitions in the John A. Zahm, C.S.C., Dante Collection, as well as teaching and research about Dante across the humanities curriculum, in particular in the medieval and Italian studies areas, through the sponsorship of conferences, fellowships, lecture series, seminars, and visiting professorships. It also sponsors print and electronic publications of scholarly research through the Devers Series in Dante Studies, published by the University of Notre Dame Press, and as a founding member of the ItalNet Consortium for the creation of scholarly internet resources in the Italian studies area. The Devers Program also funds an annual program of research and travel grants for faculty and students.

Erasmus Institute*Director:*

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The Erasmus Institute, an international Catholic center for advanced studies at the University of Notre Dame, fosters mainstream academic research drawing on the intellectual traditions of the Abrahamic faiths. Founded in 1997, the institute serves scholars who are applying the resources of Christian, Jewish, and Muslim thought to currently important topics in the humanities, social sciences, law, and arts. That rich cultural legacy clearly bears on much present-day scholarly inquiry apart from the disciplines of theology and religious studies. In political science, for example, the just war theory, which draws heavily on Catholic thinkers beginning with Augustine, is as important to many secular theorists and strategists as to their Christian colleagues. Among the projects that the Erasmus Institute has supported are a study of the role of Catholicism in shaping indigenous historical memory in early colonial Peru (Sabine MacCormack, University of Michigan), a project on the appropriation and adaptation of Pauline representations of Jews and women in the construction of Christian identity in early English literature (Lisa Lampert, University of California, San Diego), and a study of Emerson between the idealism of Jonathan Edwards and the pragmatism of William James (Roger Lundin,

Wheaton College). Though concerned primarily with the Catholic intellectual heritage, the institute supports complementary research deriving from other Christian intellectual traditions as well as from Jewish and Islamic ones. It invites the participation of scholars without regard to religious belief.

By encouraging work of this sort, the institute hopes, on the one hand, to enrich our common academic efforts with neglected assets and, on the other, to strengthen ties between the church's intellectual life and that of the academy. In so doing, the institute seeks to promote scholarship of high quality, reflecting a broad array of interests, without aligning itself with any ideological perspective.

International in the scope of its mission, the Erasmus Institute offers residential fellowships at its center on the campus of the University of Notre Dame for scholars at the faculty, postdoctoral, and dissertation stages. It also arranges summer seminars for graduate students and faculty.

**Hessert Laboratory for
Aerospace Research***Director:*

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The Hessert Laboratory for Aerospace Research is a building dedicated in 1991, which houses a variety of specialized experimental research facilities, graduate students, and faculty. The laboratory is primarily used by faculty and students in the Department of Aerospace and Mechanical Engineering, and is the home for the Center for Flow Physics and Control.

The Main Laboratory contains a wide variety of research wind tunnels. These include indraft subsonic tunnels, indraft and blowdown transonic and supersonic tunnels, an anechoic wind tunnel, an atmospheric wind tunnel, and a closed circuit water tunnel. These wind tunnel facilities are supported by data acquisition and instrumentation including laser doppler anemometry, particle image velocimetry, hot-wire anemometry, and force balance capabilities for both subsonic and supersonic flows. These facilities are currently being used to perform research in areas of flow stability, and turbulence transition, high angle of attack and high lift aerodynamics, bluff body flows, aero-acoustics, fluid-structure interactions, and aero-optics.

The laboratory also contains a number of specialized facilities including those for the study of the dynamics of solid and liquid particles, the development of aero-optic measurement techniques, and the

control of fluid instabilities. The Hessert Laboratory is used for a variety of graduate and undergraduate educational programs including experimental measurements. All of the research and educational activities are supported by fully staffed electronics and machine shops.

**Indiana University School of
Medicine – South Bend***Director:*

Rudolph M. Navari, M.D., *Associate Dean, College of Science*

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The Indiana University School of Medicine – SB (IUSM – SB) is one of eight centers for medical education in the Indiana University Medical School system. The center offers the first- and second-year program in medicine and participates in programs leading to a master's and a doctoral degree in biomedically oriented sciences in conjunction with the Notre Dame Graduate School.

Although all students in the center's programs are registered in the University of Notre Dame, admission to the medical program is a function of the Indiana University Medical School, and applications should be directed to its admissions office. Admission to biomedical graduate programs is a joint function of the center and the several cooperating departments of the Graduate School. Application for these programs should be made to the Office of Graduate Admissions.

At present, biomedically oriented graduate programs in which the center plays a conspicuous role are offered in the areas of human anatomy, human physiology, and neuroscience. The student's major adviser for these programs is chosen from the center faculty, and the student's committee is composed of faculty from the center and the appropriate graduate departments.

A unique M.D./Ph.D. program is available to outstanding students. These students are admitted simultaneously to the Indiana University School of Medicine and the University of Notre Dame Graduate School. The M.D./Ph.D. program is described in the Division of Science section of this *Bulletin*.

Students interested in this program should contact the office of the director, IUSM – SB. Other graduate students may take courses in the center subject to approval of the course instructor, the center director, and the home department of the student, and subject to the availability of space in the desired course.

CENTERS AND INSTITUTES

Institute for Church Life*Executive Director:*

John Cavadini, Ph.D., *Chair and Associate Professor of Theology*

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The Institute for Church Life (ICL) exists as an integral component of the University's larger mission of teaching, research, and service to society and to the Church. Through its resources, projects, and affiliate centers the institute reaches out to the whole spectrum of Church leaders—its bishops, clergy, religious, and laity—to provide training and service as well as opportunities for spiritual rejuvenation and personal growth.

In this work, the institute seeks to embody the spirit and mandate of the Second Vatican Council, to implement a mission of transforming the Church and society in light of the Gospel, and to renew the theological, ministerial, pastoral, catechetical, and liturgical traditions of the Church. In part, the institute's efforts are realized through its ongoing collaboration with the Center for Pastoral Liturgy, the Center for Social Concerns, NDVI (the Notre Dame Vocation Initiative), STEP (Satellite Theological Education Program), and the academic departments and schools of Notre Dame, especially the Department of Theology.

For more than 25 years, ICL has provided distinguished leadership through its publications, training sessions, service to episcopal and national organizations, involvement in social concerns, research, and educational programs. Guided by its executive committee, ICL is expanding its programs and initiatives for the special needs of a Church at the beginning of the new millennium.

As a bridge between the University and the Church, ICL links programs and personnel on campus with Church leaders, University graduates, and others who are concerned with the development of vital communities of faith. Further, ICL hopes to serve as a catalyst for cooperation among a variety of entities and agencies within the University and within the Church.

Components of the Institute for Church Life

The Center for Pastoral Liturgy is concerned primarily with the pastoral dimensions of the reform of liturgy that express and shape the religious experience of people. Bringing together a variety of resources, the center's staff provides educational programs on the liturgy and pastoral life to assist parishes and dioceses with renewal of worship. The center also sponsors an annual conference at Notre Dame as well

as regional conferences, and publishes a newsletter, Assembly, and books on various aspects of worship. Established in 1971, the Notre Dame Center for Pastoral Liturgy was designated by the bishops in the United States as an official liturgical center.

The Center for Social Concerns offers programs aimed at raising the consciousness of students, faculty, staff, and alumni/ae to social, cultural, and justice issues in our society. Experiences in the South Bend area, throughout the United States, and internationally are developed for participating students and enhanced with course work, readings, and discussion. The staff also works with faculty to assist them in incorporating into their courses information about justice issues, as well as experiential and community-based service learning models appropriate to their courses. The center staff invites the discussion of self-initiated social justice, service, and leadership opportunities with interested graduate students.

Retreats International (RI), a professional organization serving the larger retreat movement, provides the structure and format for networking and collaboration among its some 360 member retreat centers and houses of prayer. RI also gathers and publishes significant data pertinent to retreat/renewal ministry, and publishes various monographs on topics of interest to those involved. Retreats International conducts the Institute for Adult Spiritual Renewal on the Notre Dame campus that attracts more than 500 persons involved in many church ministries.

The Satellite Theological Education Program (STEP) provides quality theological education to pastoral ministers and other adult Catholics from dioceses across the country. The primary services STEP provides are designed to assist dioceses enhance catechetical, ministry formation, and adult education programs through online courses ("eCourses"). STEP eCourses are conducted entirely online via the Internet with the adult learner in mind, taking advantage of the flexibility this medium allows to bring the resources of Notre Dame to dioceses and parishioners from across the country. Beginning with the fall 2004 semester, STEP will assist the Theology Department with the development and delivery of online courses for credit as part of the department's M.A. program.

Vocare, the Notre Dame Vocation Initiative, was established to help students "understand their future work in light of their faith commitments and provide talented young people with opportunities to explore ministry, either lay or ordained, as their life's work." Vocare intends to foster a sense of vocation in a broad range of youth, from high-school students to young adults who have graduated from college. It has three component programs, one directed to Notre Dame students and faculty, another to high-school youth, and the third to Notre Dame graduates as they make the transitions into careers.

Institute for Educational Initiatives*Director:*

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In its mission to improve the education of all youth, particularly the disadvantaged, the Institute for Educational Initiatives conducts four programs designed to address specific educational goals. These are the Program on the Social Organization of Schools, the Alliance for Catholic Education (ACE), the Mendelson Center for Sports, Character, and Community. Through the research and teaching of these programs, the institute seeks to contribute to the revitalization of American education and, consistent with Notre Dame's mission as a Catholic university, to benefit parochial education in a special way.

The Program on the Social Organization of Schools conducts basic and applied research on school and the learning process. Researchers study the formal and informal organization of schools, the curriculum, teacher practices, and student social relationships in an effort to determine how these factors interact with student background and ability to affect student learning. Special attention is given to the study of Catholic schools, particularly in reference to the education of at-risk students.

The Alliance for Catholic Education seeks to develop a corps of highly motivated and committed young educators to meet the needs of our country's most underserved elementary and secondary schools. ACE teachers undergo an intensive teacher education program that spans two years and integrates graduate-level course work with an immersion experience in teaching. The ACE program also seeks to influence and support Catholic education through educational outreach. Outreach activities include support for mentoring and tutoring in the South Bend area schools, summer institutes for Catholic school superintendents, assistance for foundations interested in educational issues, and partnerships with teacher-service programs at other colleges and universities.

The Mendelson Center for Sports, Character and Community encourages sport participants, sport organizations, sports leaders, and educational institutions that sponsor sport programs to embody values and behaviors that promote holistic human development and social justice. In recognition of the importance of sport in contemporary society and culture, the center conducts research on the relationship between sport and broader culture, exploring both the possibilities and the limitations of sport's contributions to a more just and compassionate world. It also develops and offers educational opportunities for those involved in sport and holds a biennial conference. The center also houses the Institute for Coaching and Education.

CENTERS AND INSTITUTES

Institute for Latino Studies*Director:*

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The Institute for Latino Studies was founded in 1999 to advance knowledge and understanding of the Latino experience in the United States. Building upon the outstanding intellectual tradition of Julián Samora (professor in the Department of Sociology, 1959–1985), the institute fosters interdisciplinary study, research and outreach in Latino studies as a vital component of the University's mission. The institute promotes and develops Latino-focused scholarship by working with students, faculty, and fellows to create a University-wide academic program, including an undergraduate minor in Latino studies. Its Galería América offers exhibitions and special programs on Latino art, and the Julián Samora Library and Archives provide resources for study and reflection.

The institute conducts research in areas central to our nation's future through five programs:

The Inter-University Program for Latino Research (IUPLR) is a nationwide consortium of 16 Latino centers for which the institute serves as headquarters. IUPLR is also an official Census Information Center and disseminates census information and analysis to its consortium members and the public.

Latino Ecclesial and Pastoral Concerns addresses pastoral issues and theological questions in the Catholic context and works closely with the Department of Theology.

Border and Inter-American Affairs explores points of intersection between the interests of U.S. Latinos and the populations of their countries of origin.

The Center for the Study of Latino Religion conducts ecumenically focused research on the impact of religion on the political, social, cultural, and educational life of U.S. Latinos.

The Metropolitan Chicago Initiative oversees research and community-outreach projects focusing on the status of Latino families and neighborhoods and ways to improve their health, education, and well-being.

Institute for Structure and Nuclear Astrophysics*Director:*

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For more than 50 years, the University of Notre Dame has supported an active research program in the fields of low and medium energy experimental nuclear physics. This rich history continues today within the Institute for Structure and Nuclear Astrophysics (ISNAP).

Funded by the National Science Foundation, ISNAP is a three-accelerator laboratory with a broad program in low-energy nuclear physics. The research emphasis is on nuclear astrophysics, weak interactions and fundamental symmetries, nuclear structure, and nuclear reactions with radioactive nuclear beams (RIBs). The experimental work, which focuses on studying the impact of various aspects of nuclear structure on understanding the origin of the elements from stellar evolution to explosive scenarios, is carried out at the FN, KN, and JN Van de Graaff Accelerators at ISNAP's Nuclear Structure Laboratory.

Physics research in nuclear structure is focused on studies of dynamics, deformations, and bulk nuclear properties. Dynamics of nuclei include studies of behavior as wide ranging as vibrational motion associated with tidal waves on the surface of the nucleus to giant resonances and rotational motion including chiral rotations as well as superdeformations. Understanding nuclear dynamics has many implications from the most fundamental issues related to nuclear forces to probing incompressibility of nuclear matter and therefore the properties of neutron stars. Theoretical approaches of many body quantum systems can also be applied more generally to mesoscopic systems or clusters of atoms, and quantum dots.

A pioneering focus in ISNAP has been the development and application of short-lived radioactive beams, and the associated study of the structure and reactions of nuclei at the very limits of particle stability. This includes investigations of the recently discovered "neutron halo" nuclei, exotic systems in which a cloud of nearly pure neutron matter at very low density surrounds a normal nuclear core. These nuclei can be a key for the onset of explosive nucleosynthesis mechanisms such as the r-process.

Measurements of nuclear reaction rates and decay processes at stellar temperatures and densities comprise a strong part of the experimental effort in nuclear astrophysics. The goal is to understand the origin and distribution of the elements in the universe. Research is directed towards simulating stellar

nucleosynthesis in the laboratory, understanding late stellar evolution and explosive nucleosynthesis in novae and supernovae, and explaining the origin of the very high luminosity observed in stellar x-ray bursts.

Developing accelerator mass spectrometry techniques for a range of applications from oceanography to astrophysics is a new research focus of our laboratory. Accelerator mass spectrometry has traditionally been used to detect environment tracers at or below their natural abundance level with extremely high sensitivity. We seek to advance and exploit this technique at the local facilities for identifying new radioactive noble gas probes of oceanography and for the study of low cross-section nuclear reactions, which are important in stellar evolution.

Interdisciplinary Center for the Study of Biocomplexity*Director:*

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Concurrent Professor of Physics*

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Biocomplexity is the study of the complex structures and behaviors that arise from the interaction of biological entities (molecules, cells, or organisms). While physical and chemical processes give rise to a great variety of spatial and temporal structures, the complexity of even the simplest biological phenomena is infinitely richer.

Members of the University of Notre Dame Interdisciplinary Center for the Study of Biocomplexity (ICSB) come from eight departments from the schools of science and engineering and are working together to meld physical, mathematical, and computational approaches with those of modern biology to understand this complexity in a quantitative and predictive way.

The main goal of the ICSB is to develop comprehensive multiscale models of cell and tissue organization and their relation to development. We address three scales of structure starting from the level of genetic control networks and including at the subcellular level, molecular machines and cytoskeletal and protein networks. At the cell level we emphasize cell polarity and cell-cell interactions. At the supercellular level our studies include the aggregation of cells into tissues and tissues into organs.

All ICSB projects combine quantitative experiments and computer simulation and build on the mutually complementary strength of the researchers at Notre Dame with the support from collaborators at Indiana University and other institutions. Projects currently under way within the center include:

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1. Modeling organogenesis and tissue development, including the mechanical properties of tissues.
2. Modeling biological networks at the molecular level, including gene regulation pathways, transport and mechanical interactions in the cytoskeleton and intra- and inter-cell signaling networks.
3. Modeling cellular dynamic, including the mechanical properties of cells.
4. Population dynamics and ecological system

The ICSB also conducts international workshops essential to its training mission. Thus far ICSB has organized six such Biocomplexity Workshops, including "Multiscale Modeling in Biology," held in August of 2003, at the University of Notre Dame.

Joint Institute for Nuclear Astrophysics

Director:

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The Joint Institute for Nuclear Astrophysics (JINA) — a National Science Foundation (NSF) Physics Frontier Center — at the University of Notre Dame, Michigan State University, and the University of Chicago provides an intellectual center for the field of nuclear astrophysics with the goal to enable swift communication and to stimulate collaborations across field boundaries. Nuclear astrophysics focuses on questions at the interface between nuclear physics and astrophysics. It addresses the role of nuclear reaction processes as an engine of stellar evolution and attempts to find answers to the fundamental questions of the origin of the elements found today throughout the universe.

Because of the extreme nature of the stellar conditions, an understanding of these nuclear processes poses an enormous challenge to both nuclear theorists and experimentalists. Advances in experimental nuclear astrophysics now allow physicists to simulate and investigate many stellar processes in the laboratory. These studies require a wide range of techniques and facilities. They include innovative methods to measure the extremely slow reactions in the interiors of stars, as well as new facilities to produce the very same exotic, short-lived nuclei that come to existence in the extreme environments of stellar explosions. While JINA researchers are leading and/or collaborating in these kinds of experiments, they also seek to combine the experimental results with detailed theoretical simulations of rapid hydrodynamic processes in stellar evolution and stellar explosions. Through a broad collaboration with research centers at the

Universities of Arizona and California, this interdisciplinary approach will drive further advances in the field through the development of new computational techniques. To move toward these advances, JINA will also organize a series of goal oriented workshops and conferences to offer the opportunity for the national and international research community to discuss the experimental, theoretical and observational results on a regular basis.

JINA also offers extensive training and outreach programs from kindergarten through graduate study to inform about the rapidly emerging scientific results and to stimulate interest for future generations of students and researchers in the field.

W.M. Keck Center for Transgene Research

Director:

Francis J. Castellino, *the Kleiderer-Pezold Professor of Biochemistry*

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The W.M. Keck Center for Transgene Research employs innovative genetic technology to study human diseases that involve blood clotting, anti-clotting, and clot-dissolving systems and related inflammatory processes, such as heart disease, atherosclerosis, infection, and cancer. Established in 1997, the center brings together research in transgenic manipulations both locally, and with other laboratories around the world that possess special expertise in characterizing the genetically altered animals. The director's own laboratory at Notre Dame is considered among the foremost worldwide conducting basic biochemical and genetic research on blood clotting processes.

In establishing this sophisticated cutting-edge technology at Notre Dame, the center hopes to better understand how clotting systems function in a living organism, and how they relate to inflammatory processes at the gene level, in this case mouse models of disease. In transgene research, scientists alter genetic material in a very precise manner in an animal's embryo, either by adding, deleting, or exchanging certain genes in the few cells of the newly formed embryo. This changes the animal in every cell in its body, for its entire life span, and the changes will be handed down to future generations.

By breeding animals with differently altered genes, Notre Dame researchers expect to get a clearer view of the complex interplay of all genes involved in particular diseases. They are attempting to determine how these coagulation proteins function in a living organism; if the cells have some backup mechanism

for clotting and clot dissolving; and if there are other processes within the animal, such as inflammation, atherogenesis (production of degenerative changes in arterial walls), tumorigenesis (production of tumors), spread of infection, and metastasis (the spread of malignant tumors), for example, that are affected as well.

Kellogg Institute for International Studies

Director:

Scott Mainwaring, *Eugene Conley Professor of Political Science*

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The Helen Kellogg Institute for International Studies promotes comparative international studies. Each year, Kellogg hosts about 15 residential visiting fellows and guest scholars from the United States and abroad. The institute also comprises about 60 faculty fellows, coming from numerous departments and other units around Notre Dame. It awards individual support for research to faculty and graduate students, and internships and grants to undergraduates. In support of intellectual exchange, Kellogg schedules a twice-weekly speaker series, conferences, round tables, current affairs panels and cultural events, and it disseminates research through publications. Through these activities, Kellogg fosters interdisciplinary, comparative social science research on contemporary political, economic, social, and religious issues in international affairs.

The institute emphasizes five major themes: *democratization and the quality of democracy; growth and development; public policies for social justice; religion and the Catholic Church; and social movements and organized civil society.*

The institute promotes research that is germane to major issues in the contemporary world, and its research on democracy attracts worldwide attention. Similarly, Kellogg's research on public policies seeks to influence not only academic debates, but also public policy discussions.

Kellogg researchers place special emphasis on Latin America, reflecting both the region's importance to the United States and Notre Dame's longstanding ties there. Despite its prominence on the institute's research agenda, Latin America does not command exclusive attention. Over time, Kellogg has fostered a growing range of research on other regions of the world while retaining the Latin American emphasis for which it is best known. Researchers at the institute seek thematic comparisons with Europe, Asia, and Africa.

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From the outset, the institute has attempted to build bridges in innovative ways between the United States and Latin America and other regions, actively seeking balanced participation between its U.S. and foreign scholars. The institute collaborates with foreign social science centers in joint research projects and sponsors a continual interchange of ideas with scholars from Latin America and the world over.

Working groups provide a forum for thematically focused discussion among-fellows, visitors, outside speakers, graduate students, and the University community. These groups provide an opportunity for scholars to define and explore emerging research themes, shape the field of comparative international study, and even influence public policy choices.

Research Support for Graduate Students Kellogg plays an active role in support of graduate training without awarding degrees itself. The institute encourages graduate student involvement in research projects, working groups, and in its seminars and lectures. Many graduate students work as teaching assistants to professors who teach undergraduate courses. Regular interaction with Kellogg fellows, visiting fellows, and international conference participants keeps students abreast of international developments and the latest research trends.

Kellogg supplements departmental fellowships to attract Ph.D. students from Latin America, awarding a stipend of \$5,000 for each of five years to outstanding candidates.

Financial assistance to other graduate students includes Foreign Language and Area Studies (FLAS) fellowships, seed money grants, and dissertation fellowships to support various stages of field research or the writing of doctoral dissertations. These grants have funded initial research in many countries and have helped graduate students to obtain external support at a later date. The winners of these competitive awards in 2003 included doctoral candidates working on topics such as re-examining the nuclear proliferation puzzle, political finance and party organizations in federal systems, and Catholic revival in a Chinese village.

For more information about dissertation fellowships and seed money grants for Notre Dame graduate students or about the supplemental fellowships for graduate students from Latin America, please contact Academic Coordinator Holly Rivers at (574) 631-6023 or hrivers@nd.edu. For FLAS award information, contact Assistant Program Manager Juliana de Sousa Solis, at (574) 631-8523 or jdesousa@nd.edu. Also, see our Web site under Grants/Awards.

The Kellogg/Kroc Information Center (<http://www.nd.edu/~kic>) maintains a small collection focused on current events, including working papers, newsletters, and reference sources. Access to numerous electronic resources, including indices and full-text databases, is also available through the center.

Keough-Naughton Institute for Irish Studies

Director:

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The Keough-Naughton Institute for Irish Studies is an interdisciplinary project devoted to teaching and research in Irish culture, primarily in the English and Irish languages, and in all its internal and external relations. These relations include not only specific connections and comparisons with other cultures, but also recognitions, at both theoretical and empirical levels, of the various ways in which this field of study can be organized and illuminated in the light of contemporary theory. Ireland has an extraordinary tradition in literature (in both the Irish and English languages), a unique historical position in relation to British and European historical development, and an influence, disproportionate to its size, on the history of the United States.

On the Notre Dame campus, the Keough-Naughton Institute hosts major conferences, which have included special conferences on the Famine and on the Great Irish Rebellion of 1798, cosponsored by the Irish government; a conference entitled "Partition and Memory: Ireland, India and Palestine," cosponsored by the United States Institute for Peace; the American Society for Eighteenth-Century Studies; and North American Celtic Studies Association national meetings. In April 2005, the institute hosted the national meeting of the American Conference of Irish Studies.

Graduate students in Irish studies are encouraged to participate in the regular bi-weekly faculty-graduate on-campus seminar series and in graduate workshops. Recent speakers have included Benedict Anderson, Ciaran Carson, Elizabeth Cullingford, Seamus Deane, John McGahern, Katie Trumpener, Marjorie Howe and David Lloyd.

The month-long Irish Seminar is held in Dublin, Ireland, every summer at the Notre Dame Keough Centre in Newman House. The Irish Seminar attracts participants from universities worldwide to participate in discussion and debate with major figures, including recent guests Seamus Heaney, Nuala Ó Faoláin, Stephen Rea and Edna O'Brien.

Funded opportunities allow students to participate in the Irish Seminar or advance their knowledge of Irish by studying in a joint program at the National University of Ireland (NUI)-Galway.

The core faculty in Irish studies at Notre Dame includes members of the departments of English, History, and Classics. The core faculty is also regularly supplemented by visiting scholars who come as fellows of the Keough Institute. Recent visiting

professors have included Angela Bourke of University College Dublin, Thomas Bartlett of University College Dublin, Ciaran Brady of Trinity College Dublin, Joseph Cleary of St. Patrick's College-NUI, Terry Eagleton of Oxford University, Maud Ellman of Cambridge University, John Kelly of Oxford University and Margaret O'Callahan of Queen's University Belfast. Through the National Endowment for the Humanities, the Keough Institute also awards an annual fellowship to a visiting scholar to concentrate on research and writing while in residence.

The University's Hesburgh Library sustains advanced research in all areas of Irish Studies. Its rare special collections include the A. A. Luce Berkeley Collection, the William B. Todd Burke Collection, the 1798 Irish Rebellion and Act of Union Collection, the Grattan Collection of Irish Pamphlets, the O'Neill Collection of Irish Music, the Keough Vienken Collection of Swift, the David J. Butler Collection of Irish Maps, collections relating to eighteenth-century drama, the Abbey Theatre and the Cuala Press, and the massive Herbert Allen Keough Eighteenth-Century Microfilm Collection with over 200,000 eighteenth-century books, broadsides and other printed materials. Recent acquisitions include major collections in Irish language materials, the Goldsmith Kress Collection in Economic Literature and, through the new Irish Fiction Initiative and Smurfit Fund, the Loeber Collection of Irish Fiction. Containing many rare eighteenth- and nineteenth-century works, the Loeber collection is the most comprehensive collection of Irish fiction in the world. Through major funding from the National Endowment for the Humanities and the ongoing Medieval Literature Initiative, the Notre Dame Medieval Institute in the Hesburgh Library also contains substantial collections that support Irish studies.

A graduate program in Irish language and literature may be pursued through the Ph.D. program in literature, and Irish studies through a doctoral program in English or history.

Joan B. Kroc Institute for International Peace Studies

Director:

R. Scott Appleby, *the John M. Regan Jr. Director and Professor of History*

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The Kroc Institute is founded on the belief that peace is inseparable from the resolution of violent conflicts and the promotion of social justice and equitable development. This comprehensive understanding of peace is rooted in the Catholic social tradition, a broadly ecumenical tradition of moral wisdom that stresses the necessity for justice in bringing about peace.

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The institute's mission embraces both the prevention of violence or war, sometimes called "negative peace," and the building of cooperative, just relations between people, or "positive peace." Among the many college and university programs in peace and conflict studies, the Kroc Institute is a leader in addressing the political, cultural, religious, social, and economic factors that lay the foundation for positive peace.

The institute pursues its mission through innovative, interdisciplinary educational programs on the graduate and undergraduate levels. To foster research on peace, the institute sponsors visiting fellows, working groups, conferences, and guest lectures by scholars, policymakers, and peace practitioners. The institute publishes a semiannual Peace Colloquy, a series of occasional papers, and policy briefs on current issues.

Themes

The Kroc Institute's educational and research programs are organized around four themes:

The role of international norms and institutions in peacemaking. Institute faculty and students search for ways to make intergovernmental organizations and other international institutions more effective and representative, and to increase compliance with fundamental norms of peace and human rights.

The impact of religious, philosophical, and cultural influences on peace. Through teaching and research, the institute explores the ethics of the use of force, the ways in which the world's religious traditions foment violence or encourage peace, the practice of nonviolence, the importance of philosophies of global justice, and the ingredients of cultures of peace.

The dynamics of intergroup conflict and conflict transformation. Students and faculty explore multidisciplinary understanding of the conditions that give rise to violent conflicts in order to identify local and international responses able to transform conflicts and encourage peacebuilding. All of the institute's conflict studies incorporate cross-cultural examination of key issues.

The promotion of social, economic, and environmental justice. Students and faculty interested in social change examine the role of individuals, non-governmental organizations, commercial enterprises, and states, in sustainable economic development and respect for human rights, and conflict transformation.

With more than 300 alumni from 70 countries around the world, the Kroc network of Notre Dame peacemakers is beginning to exert a truly uplifting influence in many local communities, in transnational civil society, and in policymaking circles. Approximately half of the institute's graduates pursue further graduate education, either in their home countries or in doctoral or professional programs in the United States, before accepting employment in intergovernmental and nongovernmental organizations or

conducting peace research and education in academic institutions at home or worldwide. Graduates have also taken leadership roles in government agencies, church-sponsored international development and humanitarian projects, research institutes, and other peacemaking efforts around the globe.

For a description of the master of arts program in peace studies, please refer to the Division of Social Sciences section of this Bulletin.

Medieval Institute

Director:

Thomas F. X. Noble, *the Robert M. Conway Director of the Medieval Institute and Professor of History*

Telephone: (574) 631-6603
 Fax: (574) 631-8644
 Location: 715 Hesburgh Library
 E-mail: medinst@nd.edu
 Web: <http://www.nd.edu/~medinst/>

The Medieval Institute, established in 1946 and located on the seventh floor of the Hesburgh Library, is a center of research and advanced instruction in the civilization of the Middle Ages, with particular strengths in religious and intellectual history, Mediterranean civilization, Old and Middle English, medieval Latin, theology and philosophy, Dante studies, medieval musicology, and liturgy. The graduate studies curriculum combines programmatic interdisciplinary course work, training in the technical skills of medieval studies, and linguistic preparation.

The institute's library contains more than 95,000 volumes and various collections of pamphlets, reprints, and photographic materials. The reference collection contains major primary source collections, bibliographic and reference materials, catalogues, journals, and indexes.

The institute's library has long held extensive collections relevant to the Latin culture of the Middle Ages. Holdings in the history of medieval education are unrivalled in North America. Recently, the institute has enlarged its focus to include vernacular and Latin literatures, musicology, liturgy, medieval Judaism and Islam, and art history. Microfilms of more than 3,000 medieval manuscripts from European libraries and a collection of more than 200 facsimiles of medieval seals supplement this collection. Over the years the institute has accumulated a valuable collection of medieval manuscripts, incunabula, and other manuscripts, and rare books that are preserved in the Department of Special Collections. Also found there is the John Augustus Zahm, C.S.C., Dante Collection containing early and rare editions and an extensive and valuable set of literary studies of the *Divine Comedy* from the 19th and early 20th centuries. Recently, the institute acquired 90 medieval coins, likewise housed in Special Collections.

What sets Notre Dame's institute apart is its convenient gathering in one place of most of the printed materials essential to medieval studies. The Reading Room holds major dictionaries, bibliographical guides, reference works, and primary source collections. The Astrik L. Gabriel Universities Collection in a separate room offers remarkable resources, both published and unpublished, for the history of medieval universities. The institute's Paleography Room contains an extraordinary collection of catalogues, facsimiles, and reference tools to assist research on manuscripts.

Research in the institute is also supported by the University's Milton V. Anastos Collection in Byzantine studies, which has extensive holdings in the intellectual history of the Byzantine empire.

The Frank M. Folsom Ambrosiana Microfilm and Photographic Collection consists of microfilms of the 12,000 medieval and Renaissance manuscripts held in the Biblioteca Ambrosiana in Milan. The collection also contains about 50,000 photographs and negatives of miniatures and illuminated initials from the manuscripts, supplemented by some 15,000 color slides. The Mary Davis Drawings Collection contains photographs, negatives, and color slides of the 8,000 drawings in the Ambrosiana. The institute purchases all volumes related to the Ambrosiana materials and maintains a bibliography of all citations to Ambrosiana manuscripts.

The institute regularly sponsors major conferences and hosts a variety of guest lectures and seminars every year. In fall 2002, the institute inaugurated the Conway Lectures, an annual series of three lectures delivered by a distinguished medievalist and published under institute auspices.

For a description of the Master of Medieval Studies and Doctor of Philosophy programs in medieval studies, please refer to the Division of Humanities section of this *Bulletin*.

Nanovic Institute for European Studies

Director:

James McAdams, *the William M. Scholl Professor of International Affairs*

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 Fax: (574) 631-3569
 Location: 211 Brownson Hall
 E-mail: nanovic@nd.edu
 Web: <http://www.nd.edu/~nanovic>

The Nanovic Institute has been at the intellectual crossroads of European studies at Notre Dame since its founding in 1993. The institute has particular interest in the ideas, institutions, and values that have shaped the European experience over the past two centuries. Through grants and program support, the institute seeks to bring together faculty and students

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with interests in both the humanities and the social sciences. By focusing on issues of importance to Europeans today—the nation-state and beyond, liberalism and its critics, secularism in the contemporary world, and the ongoing crisis of modernity—the Nanovic Institute provides an interdisciplinary home for fields of inquiry as wide-ranging as theology, politics, philosophy, literature, history, and the arts.

The Nanovic Institute's many faculty fellows organize campus events (including conferences, lectures, and film series) to promote European studies at Notre Dame. Comprehensive grant programs for students and faculty support research and teaching. The institute directly involved in Notre Dame's growing activities in Europe and the University's mission in this crucial region of the world.

Radiation Laboratory

Director:

Ian Carmichael, *Professor of Chemistry and Biochemistry*

Telephone: (574) 631-6163
 Fax: (574) 631-8068
 E-mail: dani@nd.edu
 Web: <http://rad.nd.edu>

The Radiation Laboratory is a University institute and a government-owned facility of the U.S. Department of Energy, a member of the network of national laboratories spread across the country. The mission of the laboratory is to study chemical reactions initiated by light or ionizing radiation. Such studies provide the fundamental underpinnings for energy science and technology development in areas as diverse as solar energy conversion, nuclear energy, and environmental management. Because of its broad applicability, research in the laboratory is frequently the subject of interdisciplinary projects involving faculty and students in various areas of science and engineering.

The Radiation Laboratory's research programs are principally conducted by members of the University's faculty aided by students of all levels, postdoctoral fellows, and visiting scholars from around the world. Several members of the laboratory faculty are also professors in academic departments. Scientists at the Radiation Laboratory conduct research in collaboration with faculty members. Graduate students are accepted as members of the laboratory on recommendation by their faculty and Radiation Laboratory research advisers. Graduate students frequently are supported financially by Radiation Laboratory research fellowships during the development of their doctoral dissertations.

The Radiation Laboratory operates from its own building that houses many special facilities developed for the study of the effects of light and radiation. Three electron accelerators are housed in underground vaults adjacent to the main laboratory building. These accelerators include an 8-mil-

lion-electron-volt (MeV) linear accelerator used to study chemical and physical processes occurring at nanosecond or longer times; a 2 MeV Van de Graaff accelerator used in studies of Raman spectroscopy of short-lived radicals and electronically excited molecules; and a 3 MeV Van de Graaff dedicated to studies of electron spin resonance of intermediates produced during radiation chemical processes. In addition, the laboratory has three cobalt sources (⁶⁰Co) for irradiation rated at sixteen, four, and one kilocuries.

Studies with visible and ultraviolet light are carried out using many different types of light sources. These include several nitrogen lasers, dye lasers, excimer lasers, and high-intensity YAG lasers capable of producing light pulses as short as 10-11 sec, for irradiation in the visible and ultraviolet regions. Facilities are available for study of radiation processes at high pressures and very low temperatures. Analytical facilities include various types of spectrophotometers, electron-spin-resonance (ESR) spectrometers, a Raman spectrograph for time-resolved studies, high-resolution Raman spectrograph/microscope, spectrofluorimeter and fluorescence lifetime apparatus, gas and liquid chromatographs, capillary electrophoresis, an ion chromatograph, a mass spectrometer, a differential scanning calorimeter, a Fourier-transform infrared spectrometer, light-scattering and electrochemical apparatus, and other similar types of equipment. A state-of-the-art Atomic Force Microscope operates in the laboratory to characterize materials on the nanometer scale and near-field-scanning microscopy capabilities are currently under development. A transmission electron microscope is also available at the Rad Lab. Computer facilities support research programs in theoretical chemistry and kinetic modeling. The laboratory operates its own glass, electronics, graphics, and machine shops.

The Radiation Laboratory is home to the Radiation Chemistry Data Center, which provides the international scientific, engineering, and industrial communities with bibliographic and numeric databases on topics of importance to the fundamentals of energy generation and environmental management.

John J. Reilly Center for Science, Technology, and Values

Director:

Gerald P. McKenny, *Associate Professor of Theology*

Telephone: (800) 813-2304
 Fax: (574) 631-3985
 Location: 346 O'Shaughnessy Hall
 Web: <http://www.nd.edu/~reilly>

The John J. Reilly Center for Science, Technology, and Values is committed to advancing the understanding of science and technology as human, knowledge-producing endeavors, and the variety of ways these rapidly changing institutions have an impact upon and are affected by society at large.

In keeping with the University's mission as a pre-eminent Catholic university, the center seeks to make a distinctive contribution to the humanistic understanding of science and technology. It supports outstanding scholarship in the fields of science and technology studies. Through conferences and publications emphasizing the complementary roles of scientific, technological, ethical, and theological perspectives, it facilitates broad public dissemination of outstanding work reflecting these viewpoints. Within the Notre Dame community, the center endeavors to foster a greater awareness of the significance and complexity of interactions among science, technology, and society.

Activities pursued at the center fall under the headings of academic programs and research (including support of conferences and publications).

Academic Programs

The Reilly Center provides administrative support and a campus "home base" for three very different educational programs:

The *Graduate Program in History and Philosophy of Science (HPS)*, established in 1989, offers courses of study leading to both the M.A. and Ph.D. degrees. It provides advanced training primarily for students intent on a career of teaching and scholarship at the college and university level. The program relies on the expertise of more than 20 faculty representing six University departments, making it one of the larger research groups in this field in the United States.

The undergraduate *Minor Program in Science, Technology, and Values (STV)* is available to all undergraduates at the University regardless of their major field of study. Courses are organized around such themes as technology and public policy, history and philosophy of medicine, science and religion, environmental science and ethics, biotechnology and society, and medical ethics.

The *Five-Year, Double Degree Program in Arts and Letters/Engineering* enables students to earn two undergraduate degrees in 10 semesters of course work. It provides a select group of students the opportunity to combine the values of an intensive liberal arts education with their professional training in engineering.

Research: Conferences, Lectures, and Publications

The center regularly brings to campus distinguished speakers to lecture on topics relevant to the interests of students and faculty involved in all of its academic programs. This includes a major speaker series in the History and Philosophy of Science (HPS), bringing to campus eight or more well-known scholars every year. The center also sponsors activities and lectures specifically devoted to applied science and technology and to their social and ethical implications. Issues pertaining to risk assessment, the environmental crisis, current issues in biotechnology, medical ethics,

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and science and religion have all been the subject of lectures or panel discussions recently, as have computer ethics and nuclear weapons control.

Over the years, the Reilly Center and HPS Program have cosponsored several major academic conferences. The most recent events have included "The Need for a New Economics of Science," which examined the changing economic relations of science and funded research; a major international conference held on "Galileo and the Church;" and a joint conference on science and values, cosponsored by the HPS programs at Notre Dame and the University of Bielefeld (Germany). Proceedings of major conferences are made available as volumes in the series *Studies in Science and the Humanities from the Reilly Center*, published through the University of Notre Dame Press. In addition, smaller conferences are sponsored on an occasional basis.

Walther Cancer Research Center

Director:

Rudolph M. Navari, M.D., *Associate Dean,
College of Science*

Telephone: (574) 631-9931

Fax: (574) 631-4939

Location: 250 Nieuwland Science Hall

E-mail: wcc@nd.edu

Web: <http://cancerresearch.nd.edu>

The Walther Cancer Research Center is a collaboration between the University of Notre Dame and the Walther Cancer Institute, a private nonprofit research organization affiliated with major universities and medical institutions. The Walther Cancer Center's activities include a wide variety of specific areas including cell biology, biochemistry, drug design, clinical oncology, and patient care. The center emphasizes collaboration and communication among its members in order to maximize the transfer of information between the laboratory and the clinic.

The specific objectives of the research center at the University involve four major areas of investigation: the molecular biology and gene targeting program, the cell biology and cell signaling program, drug design and development, and clinical oncology.

The molecular biology and gene targeting program utilizes transgene technology to develop mice with either delayed expression or expression of mutated forms of proteins. These technologies permit the study of the relative contribution of components of the coagulation and fibrinolytic systems in various stages of cancer and methods to potentially identify new therapeutic regimens.

The cell biology and cell signaling program studies the mechanisms and regulation of cell proliferation, cell motility, angiogenesis, apoptosis, and transformation. Using a variety of cancer cell culture systems and techniques, an *in vitro* assessment of cell proliferation, cell death, invasion, and migration is carried out with an emphasis on the biology of hormone-dependent cancers, experimental therapeutics, and hormone resistance.

The drug design and development program investigates the synthesis and the structural details of various potential chemotherapeutic agents as well as their interaction with biological receptors at the molecular level. The structural characterization is accomplished using high-field nuclear magnetic resonance mass spectroscopy and X-ray crystallographic techniques.

The clinical oncology program studies the doctor-patient relationship with the goal of improving communication in the areas of truth telling, confidentiality, informed consent, decision making, and end-of-life care. Current studies include the development of an educational intervention for patients with a new cancer diagnosis, the development of new antiemetics, antibiotic use in hospice care, and palliative care.

The 21 faculty in the Walther Cancer Center are members of the departments of biological sciences and chemistry and biochemistry.

The School of Architecture

The School of Architecture

Dean:

Michael Lykoudis

Director of Graduate Studies:

Philip Bess

Telephone: (574) 631-6137

Fax: (574) 631-8486

Location: 110 Bond Hall

E-mail: arch@nd.edu

Web: <http://www.nd.edu/~arch>

The Program of Studies

The Notre Dame School of Architecture welcomes all students who meet the entrance requirements and are willing to engage the professional and intellectual premises of the graduate program's emphases in traditional architecture and urbanism. The intellectual foundation of the graduate curriculum is the University of Notre Dame's world-view, which supports the Architecture School's commitment to learning the crafts and critically examining and extending the discourses of classical architecture, vernacular building and traditional European and American urbanism. The curriculum fosters design that is classical in spirit and form, that gives physical expression to and supports good human communities, that is environmentally sustainable, that is based on and extends the best traditions of architecture and urbanism, and that challenges and responds to the exigencies of contemporary practice.

The School of Architecture currently offers three paths of graduate study that each lead to one of two graduate degrees:

- Path A, a four-semester course of study leading to the master of architectural design and urbanism (M.ADU) post-professional degree;
- Path B, a four-semester course of study leading to a two-year master of architecture (M.Arch) N.A.A.B.-accredited professional degree; and
- Path C, a six-semester course of study leading to a three-year master of architecture (M.Arch) N.A.A.B.-accredited professional degree.

The studio course sequence of the final three semesters of each path "track" with one another, i.e., Path A, B and C students take studios with each other in their final three semesters. Each path requires the student to do an independent terminal design project in his or her final semester, and to select a concentration in either classical architecture or urban design in the two semesters prior. All students spend one of those two concentration semesters in Rome, depending upon which concentration they select.

Students choosing to concentrate in classical architecture spend extensive time in both South Bend and Rome on studio projects and ancillary course work that develop their knowledge of and ability to participate in the 2,500-year old tradition of western classical architecture descending from Greece and Rome.

Students choosing to concentrate in urban design likewise spend time in South Bend and Rome — and travel extensively to other towns and cities as well — learning in their design studios the formal principles of good urban design, and being introduced to the political, legal and cultural frameworks of contemporary traditional urban design through studio-based community design charrettes.

An independent semester-long terminal design project is required of all students in their final semester. This project provides an opportunity for students to design in a variety of scales and contexts of their own choosing, in which contemporary architectural issues are explored in projects that require the student to synthesize their academic experience. M.Arch student projects may include an urban design component, but must include the in-depth design of a building.

Path A: The Master of Architectural Design and Urbanism (M.ADU) Post-professional Degree

The two-year master of architectural design and urbanism post-professional degree is intended for students who already hold an accredited professional degree and are seeking to further develop their design skills and critical thinking in the disciplines of classical architecture and traditional urban design. The studio course work consists of a foundational first semester spent in South Bend introducing students to classical architectural design, urban prin-

ciples and history, and the history of Rome; followed by two semesters of studio work (one in Rome) in the student's selected concentration, followed by an independent terminal design project in the student's fourth semester. Forty-five credit hours are required for graduation, and M.ADU students are limited to 12 credit hours per semester. M.ADU students also serve as teaching assistants in undergraduate courses during their three semesters in South Bend, for which they receive a stipend,

Although Path A leads to a post-professional degree, and although Notre Dame encourages and accepts applications from foreign students with professional degrees in their home country, foreign applicants should note that the master of architectural design and urbanism (M.ADU) degree does not permit persons lacking an N.A.A.B.-accredited degree to sit for the Architectural Registration Examination (A.R.E.) in the United States.

Paths B and C: The Master of Architecture (M.Arch) Professional Degree

The National Architectural Accrediting Board (N.A.A.B.) requires all schools offering professional degree programs in architecture to publish the following statement:

In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (N.A.A.B.), which is the sole agency authorized to accredit US professional degree programs in architecture, recognizes three types of degrees: the bachelor of architecture, the masters of architecture and the doctor of architecture. A program may be granted a six-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards.

Masters degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

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Path B: Two-year M.Arch

Notre Dame's two-year master of architecture degree is intended for students entering the University of Notre Dame with a four-year pre-professional degree in architecture who are seeking a professional graduate degree that focuses upon classical architecture and traditional urbanism. Studio course work is identical to that of the two-year Path A M.ADU program, with a foundational first semester spent in South Bend, followed by two semesters of studio work (one in Rome) in the student's selected concentration, followed by a terminal design project in the student's fourth semester. Required studio and seminar courses are supplemented by other courses needed to meet the N.A.A.B.'s substantive curricular requirements for accredited professional architecture degree programs, which will vary from student to student depending upon their undergraduate architectural education. Approximately 60 credit hours are required for graduation, and the normal course load for Path B / two-year M.Arch students is 15 credit hours per semester.

Path C: Three-year M.Arch

The three-year master of architecture professional degree is intended for students entering the University of Notre Dame with a four-year undergraduate degree in a field other than architecture. An intensive three-semester sequence of studio, history, theory and technology courses prepare students for the final three semester concentration / terminal design project sequence described above. Ninety-six credit hours are required for graduation, including a normal load of 18 credit hours each of the first three semesters.

Degree Requirements

As described above, degree requirements include various studio and theory courses in Paths A, B and C; as well as various ancillary history and technology courses for Paths B and C. Minimum credit hour requirements for Paths A, B and C are indicated below, as well as the anticipated time to complete them:

- Path A: M.ADU
45 credit hours (48 max); two years
- Path B: M.Arch
60 credit hours; two years
- Path C: M.Arch
96 credit hours; three years

Application

All applications to the Notre Dame graduate programs in architecture must be done on line. In addition to the Notre Dame Graduate School's requirements for application, the following documents are also to be submitted:

- Letters of Recommendation: for those applicants with practice experience in architecture, a minimum of one letter of recommendation from a registered practicing architect is required in addition to

the references required by the Graduate School.

- Portfolio: all applicants must submit a portfolio of their work from academic experience, from independent projects, and/or from practice. The portfolio size should be a maximum 11 x 14 inches and should include only reproductions, not originals. Candidates submitting portfolios in excess of 11 x 14 inches will not be considered.

A visit to the campus and a personal interview are encouraged. The School of Architecture's graduate studies committee conducts interviews.

Completed applications and all admission requirements except the portfolio should be directed to the Office of Graduate Admissions, and are due on February 1st for admission in the fall of that same year. Portfolios only (with self-addressed return package and sufficient return postage, if return of portfolio is desired) should be directed to:

Graduate Studies Committee
School of Architecture, 110 Bond Hall
University of Notre Dame
Notre Dame, IN 46556-5652

Financial Support

Candidates in the M.ADU program receive financial support in the form of full tuition scholarships and stipends in the form of graduate assistantships and fellowships including the Bond-Montedonico Fellowship program, the Joseph Z. Burgee and Joseph Z. Burgee Jr. Fellowship program, the James A. Nolen Jr. Fellowship, and the Joseph M. and Virginia L. Corasaniti Architecture Fellowship. Teaching or research requirements for M.ADU students receiving stipends comprise a minimum of three out of four semesters, and average 15 hours per week during the academic semester. M.Arch students are eligible for financial aid in the form of partial tuition scholarships, loans, and work study. Path C students are not permitted to have work study jobs during their first year of study.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

Required Courses

60211. Architectural History I / Pre-Renaissance (3-3-0)

A survey of architectural history from the Egyptian, Greek, and Roman civilizations to Europe during the Romanesque and Gothic periods. Each period is studied in relation to physical determinants, such as climate, materials, technology, and geography, and historical determinants such as economics, religion, politics, society, and culture.

60221. Architectural History II / Post Renaissance (3-3-0)

This course continues the history survey, beginning with Renaissance and Baroque Europe, continuing to the 18th and 19th centuries in Europe and the United States, to the world-wide impact of the Modern Movement and late 20th-century reactions to it.

60411. Building Technology I / Masonry and Timber (3-3-0)

Qualitative and quantitative principles of traditional building assembly and detailing in masonry and timber.

60421. Building Technology II / Concrete, Steel and Glass (3-3-0)

Qualitative and quantitative principles of modern building assembly and detailing in concrete, steel and glass.

60431. Environmental Systems I / Acoustics and Illumination (3-3-0)

Principles of acoustics, illumination, electrical and signal systems, with emphasis on architectural applications.

60511. Structures I / Introduction to Structures (3-3-0)

Basic principles of building structures with a focus on statics. General topics include structural stability, dynamics and lateral loads, structure types, and materials. Computational subjects involve vectors and forces, torque, shear, bending moments, spanning conditions, beams, columns, funicular structures, arches, and domes.

60521. Structures II / Concrete (3-3-0)

Prerequisite: ARCH 60511. The study of concrete structures. Studies include beams, columns, frames, shear walls and connections. Subjects include reinforcement, material properties, seismic design, foundations, and building codes.

61021. Introduction to CAD (3-0-4)

Instruction in analysis and representation of architectural form through the medium of the computer, including drafting and three-dimensional modeling.

61111. Architectural Design I (6-0-12)

Part one of a required two-semester studio sequence introducing all three-year M.Arch students to the grammar, syntax, and composition of classical architecture and the latter's relationship to tectonics, expression, and urbanism.

61121. Architectural Design II (6-0-12)

Part two of a required two-semester studio sequence introducing all three-year M.Arch students to the grammar, syntax, and composition of classical architecture and the latter's relationship to tectonics, expression, and urbanism.

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67611. Special Studies: Comparative Urbanism
(3-3-0)

Comparison of the evolution of the physical characteristics of Rome and Beijing.

70211. History of Rome
(3-3-0)

A history of Rome from its origins through the Republic and Empire, its ongoing character as the spiritual and administrative center of European Christendom, and its role as the capital of modern Italy, with special attention to the relationship between its political and religious history and its formal order.

70311. Urban Elements and Principles
(3-3-0)

A required theory course for all graduate students entailing a broad survey, both typological and historical, of the physical characteristics of traditional western cities and their development; with special emphasis upon urban form as a cooperative human artifact embodying particular cultural values and ideals.

71111. Elements and Principles of Classical Architecture
(6-0-8)

A required first design studio for all M.ADU and two-year M.Arch students, introducing them to the grammar, syntax, and composition of classical architecture and the latter's relationship to tectonics, expression, and urbanism.

71141. Classical Architecture I
(6-0-12-)

Part one of a two-studio sequence for students concentrating in classical architecture, in projects that explore in detail selected elements and aspects of classical architecture.

71142. Urban Design I
(6-0-12) – Rome

Part one of a two-studio sequence for students concentrating in urban design, in projects that focus in detail upon the formal elements of traditional European urbanism; with a visiting critic, in Rome.

73321. Architectural Treatises
(3-3-0)

Consideration of the theoretical and practical background of traditional architecture through a careful reading both of primary theoretical sources (including Vitruvius, Alberti, Serlio, Palladio, Vignola, Claude Perrault, and others) as well as influential pattern books; and the pertinence of both to contemporary architectural discourse and practice.

73322. Italian Urbanism
(6-3-6) – Rome

A six-credit drawing and theory course centered upon outdoor, on-site analyses and documentation of both prototypical and exceptional urban conditions in Rome and elsewhere in Italy. Analytical work to be documented by a combination of measured drawings, sketchbook, watercolor and photographic records of sites visited in Rome and on multiple field trips.

80711. Professional Practice
(3-3-0)

Lectures and assignments covering professional services, marketing, economics of practice, programming, design drawing development, contracts and project management.

81119. Thesis Preparation and Design
(3-0-3)

Preparatory analyses, precedents, and data required to begin the design thesis.

81129. Design Thesis
(6-6-0)

Culminating design studio in the master's program. Students individually select their thesis and thesis director. Thesis is defended and presented to faculty and student body in a final review.

87119. Thesis Prep II
(3-3-0)

Fundamentals of design thesis, including organization of material, research methods and procedures, and formation of theoretical argument and relationship to the design process.

Faculty

Robert L. Amico, *Professor*. B.Arch., Univ. of Illinois, 1961; M.Arch., Harvard Univ., 1965. (1978)

Philip Bess, *Director of Graduate Studies and Professor*. B.A. Whittier College, 1973; M.T.S. Harvard Divinity School, 1976; M.Arch., Univ. of Virginia, 1981 (2004)

Robert Brandt, *Professional Specialist*. B.S., Univ. of Southern Indiana, 1986; M.F.A., Indiana State Univ., 1989. (1992)

Rev. Richard S. Bullene, C.S.C., *Assistant Dean and Associate Professional Specialist*. B.S., Univ. of Notre Dame, 1976; M.S., Univ. of Pennsylvania, 1992; Ph.D., *ibid.*, 1994. (1993)

Norman A. Crowe, *Professor*. B.Arch., Univ. of Oregon, 1964; M.Arch., Cornell Univ., 1970. (1974)

Alan DeFrees, *Associate Professional Specialist*. B.S., Univ. of Notre Dame, 1974. (1996)

Victor Deupi, *Assistant Professor*. B.S., Arch., Univ. of Virginia, 1986; M.Arch., Yale Univ., 1989; Ph.D.Arch., Univ. of Pennsylvania, 1999. (1999)

Dennis P. Doordan, *Chair, Professor of Architecture and concurrent Professor of Art, Art History, and Design*. B.A., Stanford Univ., 1973; M.A., Columbia Univ., 1976; M.Phil., *ibid.*, 1978; Ph.D., *ibid.*, 1983. (1990)

Richard Economakis, *Associate Professor*. B.Arch., Cornell Univ., 1983; M.A., *ibid.*, 1996. (1996)

Barbara Kenda, *Assistant Professor*. B.Arch., Univ. of Ljubljana, 1989; M.Arch., Cornell Univ., 1992; M.S., Univ. of Pennsylvania, 1995; Ph.D.Arch., *ibid.*, 1998. (2000)

Michael N. Lykoudis, *Dean and Professor*. B.Arch., Cornell Univ., 1979; M.Arch., Univ. of Illinois, 1983. (1991)

David Mayernik, *Visiting Assistant Professor*. B.Arch., Univ. of Notre Dame, 1983.

Ettore Maria Mazzola, *Visiting Assistant Professor*, Dipl. di Laurea, Univ. degli Studi, La Sapienza, Roma, 1992. (2001)

Richard Piccolo, *Visiting Assistant Professor*. MID, Pratt Institute, 1966; MFA, Brooklyn College, 1968. (1984)

José Cornelio Da Silva, *Visiting Assistant Professor*. B.Arch., Escola Superior de Belas Artes de Lisboa, 1983.

Thomas Gordon Smith, *Professor*. B.A., Univ. of California, Berkeley, 1970; M.Arch., *ibid.*, 1975. (1989)

John Stamper, *Associate Dean and Associate Professor*. B.S., Univ. of Illinois, 1973; M.A., *ibid.*, 1975; M.A., Williams College, 1977; Ph.D., Northwestern Univ., 1985. (1984)

Lucien Steil, *Visiting Assistant Professor*. Diplome d'Architecture, Ecole des Beaux Arts, Paris, 1980.

Duncan G. Stroik, *Associate Professor*. B.S.Arch., Univ. of Virginia, 1984; M.Arch., Yale Univ., 1987. (1990)

Carroll William Westfall, *the Frank Montana Professor*. B.A., Univ. of California, Berkeley, 1961; M.A., Univ. of Manchester, England, 1963; Ph.D., Columbia Univ., 1967. (1998)

Samir Younés, *Director of the Rome Studies Center and Associate Professor*. B.Arch., Univ. of Texas, 1981; M.Arch., *ibid.*, 1984. (1991)

The Division of Engineering

Five departments in the Division of Engineering offer program opportunities to qualified graduate students for advanced instruction and research leading to the degrees of master of science and doctor of philosophy. The graduate program strikes a balance between basic science and engineering application, theory and experiment, and scholarly achievement and professional development. The division attracts scholars—faculty, postdocs and students—with interests encompassing a wide range of topics in engineering and the geological sciences.

Through its program of sponsored research, the division enhances the opportunities available to its faculty and graduate students to conduct research in their areas of interest. Responding to the requirements of an increasingly complex and interrelated social context, the division has developed a number of interdisciplinary programs of advanced teaching and research. Some of these programs are in collaboration with faculty members of other divisions and institutes within the University, while others involve cooperative efforts with professional colleagues from outside organizations. (<http://www.nd.edu/~engineer/prospects/geninfo.htm>)

Aerospace and Mechanical Engineering

Chair:

Stephen M. Batill

Director of Graduate Studies:

Glen Niebur

Telephone: (574) 631-5430

Fax: (574) 631-8341

Location: 365 Fitzpatrick Hall

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The Program of Studies

The Department of Aerospace and Mechanical Engineering offers graduate programs of study and research leading to the degrees of master of science in aerospace engineering, master of science in mechanical engineering, master of engineering in mechanical engineering, and doctor of philosophy. In addition, a combination master of engineering/juris doctor degree program is available to Notre Dame law students.

For those students seeking a master's degree, the programs aim at proficiency and creative talent in the application of basic and engineering sciences to relevant problems in the two engineering disciplines. The doctoral program strives to prepare students for creative and productive scholarship. It is designed to suit each student's interests and gives students the opportunity to conduct individual research under the supervision of the department faculty.

Students in either the master's degree or the doctoral degree programs must satisfy departmental and University course requirements along with the residence requirement.

Every degree-seeking student is required to participate in the academic programs of the department by performing a teaching-related assignment.

Current research efforts are within the areas of aerospace sciences, biomechanics and biomaterials, mechanical systems and robotics and design, solid mechanics and materials, and thermal and fluid sciences.

Aerospace Sciences

The aerospace sciences area emphasizes both the theoretical and the experimental aspects of aeroacoustics, aero-optics, aerospace systems design, high-lift aerodynamics, gas turbine engines, compressors, turbines, low Reynolds-number aerodynamics, low speed aerodynamics, particle dynamics, flow control, transonic, supersonic and hypersonic flows, wind energy and vortex aerodynamics.

Biomechanics and Biomaterials

The biomechanics and biomaterials area offers opportunities for both basic and applied research using both experimental and computational techniques. Research focuses on the design and manufacture of next-generation orthopaedic devices, biological material characterization, the design, synthesis, and characterization of novel biomaterials, biocompatibility, tribology, surgical simulation, human body kinematics, and computational modeling of biomechanical systems. Collaborative research efforts are maintained with industrial partners and the Departments of Biological Sciences, Chemical and Biomolecular Engineering, and Computer Science and Engineering.

Mechanical Systems and Robotics and Design

Research in this area is in both the theoretical and the experimental aspects of computer-aided design and manufacturing, design for manufacturing, design optimization, model-based design, reliability, dynamic and control systems, vision-based control mechanism and machine theory, robotics, and tribology.

Solid Mechanics and Materials

Research in this area focuses on the theoretical, experimental, and computational aspects of coupled field phenomena in continuum mechanics, cyclic plasticity, damage mechanics, dynamic deformation and fracture, fatigue crack initiation, fracture analysis of aircraft structures, high temperature fatigue of engineering alloys, inelastic buckling, interface fracture mechanics, modeling of composite and fused deposition polymeric materials, and structural stability.

Thermal and Fluid Sciences

Experimental and theoretical research in this area is conducted in boundary layer phenomena, chaos in fluid systems, computational fluid mechanics, detonation theory, droplet sprays, fire research, fluid-structure interaction, flow control, food processing technology, hydronics, hydrodynamic stability, industrial energy conservation, microfluid mechanics, molecular dynamics, multiphase and buoyant flows, reacting flows, turbulent flows, and solidification of liquid metals.

In cooperation with the Department of Civil Engineering and Geological Sciences, the Department of Aerospace and Mechanical Engineering offers an interdisciplinary program of study and research in the areas of solid, continuum, and structural mechanics. Courses in these subject areas listed by each department are cross-listed and are offered jointly. Students pursuing research in the areas of biomaterials and biomechanics may take selected courses offered by the Department of Chemical and Biomolecular Engineering.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

AEROSPACE AND MECHANICAL ENGINEERING

60611. Mathematical Methods I
(3-3-0)

Multidimensional calculus, linear analysis, linear operators, vector algebra, ordinary differential equations.

60612. Mathematical Methods II
(3-3-0)

Continuation of AME 561 (60611). Partial differential equations, characteristics, separation of variables, similarity and transform solutions, complex variable theory, singular integral equations, integral transforms.

60613. Finite Elements in Engineering
(3-3-0)

Fundamental aspects of the finite-element method are developed and applied to the solution of PDEs encountered in science and engineering. Solution strategies for parabolic, elliptic, and hyperbolic equations are explored.

60614. Numerical Methods
(3-3-0)

Interpolation, differentiation, integration, initial value and boundary value problems for ordinary differential equations; solution methods for parabolic, hyperbolic, and elliptic partial differential equations; applications to classical and current research problems in engineering and science.

60621. Intro to Aeroelasticity
(3-3-0)

Aerodynamic loadings, steady state aeroelastic problems, flutter analysis under various flow conditions, analytical methods in aeroelasticity demonstrated by selected problems.

60623. Analytical Dynamics
(3-3-0)

Fundamental principles and analytical methods in dynamics with applications to machine design, robot analysis, and spacecraft control.

60624. Continuum Mechanics
(3-3-0)

Deformation and motion of continua and singular surfaces; general balance equations; stress principle; balance laws for mass, momentum, and energy; thermodynamics of continua; entropy balance; constitutive relationships; material symmetry and invariance theory; linear and nonlinear constitutive models; variational foundations; topics of special interest.

60630. Microparticle Dynamics
(3-3-0)

A first-year graduate level course that introduces the subject of aerosol dynamics with emphasis on the fundamental laws that govern microparticle transport deposition and suspension in gases and vacuum.

60631. Experimental Methods in Fluids
(3-3-0)

A graduate course designed to give students laboratory experience in the use of modern measurements and the design of experiments for specific problems.

60632. Physical Gas Dynamics
(3-3-0)

An introduction to quantum mechanics, internal structure, and quantum energy states of monatomic

and diatomic gases. Application to chemical reactions, dissociating gases, and ionized gases. High temperature properties of air.

60633. Introduction to Acoustics and Noise
(3-3-0)

A course that treats the fundamentals of sound and noise production, transmission, and measurement. Theoretical, experimental, environmental, and legislative topics.

60634. Intermediate Heat Transfer
(3-3-0)

Fundamentals of heat convection and radiation, scaling and heat transfer analysis in external and internal flows, turbulent heat transfer, thermal radiation properties of ideal and real surfaces, radiative transfer in black and gray enclosures, introduction to radiative transfer with participating media.

60635. Intermediate Fluid Mechanics
(3-3-0)

Derivation of governing equations of mass, momentum, and energy for a viscous, compressible fluid; general survey of vortex dynamics, potential flow, viscous flow, and compressible flow.

60636. Fundamentals of Combustion
(3-3-0)

Thermodynamics and chemical kinematics of combustion reactions, modeling of reacting fluid mechanical systems, subsonic and supersonic combustion, detailed and on-step kinetics, ignition theory, asymptotic and numerical techniques for modeling combustion systems.

60638. Turbine Engine Components
(3-3-0)

The course concentrates on describing the hardware used in modern turbofan engines and presents the detailed analysis of these components. In particular, the course covers the analysis of inlets, fans compressors, combustors, turbines, afterburners and nozzles. In addition to the analysis, the course introduces design guidelines used by industry.

60639. Advanced Aerodynamics
(3-3-0)

A graduate level course that addresses various topics related to aerodynamics with application to surface or flight vehicles.

60641. Advanced Mechanics of Solids
(3-3-0)

The course covers fundamental principles and techniques in stress analysis of trusses, beams, rigid frames and thin-walled structures. Emphasis is placed on energy methods associated with calculus of variations.

60642. Manufacturing Systems
(3-3-0)

A graduate course dealing with the application of engineering analysis to manufacturing systems and advanced manufacturing topics such as MEMS manufacture and computer integrated manufacturing.

60643. Mechanics of Sliding Surfaces
(3-3-0)

A first-year graduate course that introduces the subject of the mechanics of surfaces in contact, with emphasis on

the fundamental analysis of surface topography, contact mechanics, friction and frictional heating and wear.

60644. Finite Element Methods in Structural Mechanics
(3-3-0)

Finite element methods for static and dynamic analysis of structural and continuum systems. Displacement approach for two- and three-dimensional solids along with beams, plates and shells. Material and geometric nonlinearities.

60645. Advanced Mechanical Behavior of Materials
(3-3-0)

The materials science and engineering of the mechanics of solids. Description of the relationships between the macroscopic deformation of engineering materials and the meso-, micro- and atomic-level structural mechanisms.

60646. Failure of Materials
(3-3-0)

The materials science and engineering of failure, including fracture and fatigue. Description of the relationships between the failure of engineering materials and the meso-, micro- and atomic-level structural mechanisms.

60651. Advanced Vehicle Dynamics
(3-3-0)

The equations of motion of rigid airplane are developed and analyzed. The relationship between aerodynamics stability derivatives, vehicle motion, and handling qualities is presented. Also classical and modern control theory is applied to the design of automatic flight control systems.

60652. Advanced Controls
(3-3-0)

The application of techniques such as the phase-plane method, Lyapunov method, vector-format method, the z-transform method, and statistical methods to the design of control systems.

60653. Math Theory of Robotic Manipulation ()
(3-3-0)

Homogeneous representation of rigid motion in R3, exponential coordinates for rigid motions, twists and screws, spatial and body velocities and adjoint representation for coordinate transformations. Manipulator kinematics via the product of exponentials formulation, inverse kinematics, Jacobians, singularities and manipulability. Multifingered hand kinematics including contact models, the grasp map, force closure, grasp planning, grasp constraints and rolling contact kinematics.

60654. Advanced Kinematics
(3-3-0)

An in-depth study of the curvature theory of general planar one degree of freedom motion and the special case of first-order translations. Development of Frueudenstein's equation. Applications to synthesis of one degree of freedom mechanisms for path tracking, rigid body guidance and function generation.

60655. Intelligent Systems
(3-3-0)

This course will introduce seniors to a unified view of the aerospace and mechanical engineering applications of intelligent systems theory and practice. This course will introduce seniors to a unified view of the aerospace

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and mechanical engineering applications of intelligent systems theory and practice.

60656. Vision-Based Control of Engineering Systems (3-3-0)

A study of tools of estimation and stochastic modeling and their use in the application of artificial vision to the guidance and control of multi-degree-of-freedom mechanisms. The Kalman filter and extended Kalman filter are developed; state and observation equations, based, respectively, on robot mechanisms and discrete visual issues of image analysis, time delay, and the modeling of random-disturbance covariances as well as kinematic holonomy.

60657. Introduction to Nonlinear Analysis (3-3-0)

An introduction to nonlinear analysis methods for engineering systems, particularly mechanical systems, with an emphasis on geometric interpretation and analysis. Topics include a comparison of linear and nonlinear systems, special results for planar dynamical systems, input/output analysis. Lyapunov stability theory and applications, bifurcation theory and classifications. Also covered are a summary and overview of the basic mathematics of group theory, linear algebra, the theory of ordinary differential equations and differential geometry. Controls applications will be emphasized and utilized to illustrate each topic

60661. Optimum Design of Mechanical Elements (3-3-0)

Introduction to basic optimization techniques for mechanical design problems. Current applications.

60662. Topology Optimization (3-3-0)

This course is designed to teach advance computational methods for design optimization of structures, material microstructures and compliant mechanisms.

60671. Orthopaedic Biomechanics (3-3-0)

An introduction to the biomechanics of the musculoskeletal system. Kinematics and dynamics of the skeleton. Calculation of inter-segmental forces, muscle forces and activation levels. Mechanical behavior of typical orthopaedic tissues using appropriate engineering models. Mechanical adaptability of the skeleton to mechanical loads. Applications to the design of orthopaedic devices.

60672. Cell Mechanics (3-3-0)

The effects of mechanical loading on cells are examined. Mechanical properties and material structure of cell materials are reviewed. Filaments, filament networks and membranes are examined. Mechanics of flow induced effects, adhesion cell-substrate interactions, and signal transduction are examined. Experimental techniques are reviewed.

60673. Kinematics of Human Motion (3-3-0)

To teach students the motion capabilities of the human body and to develop and study kinematic models of the individual joints in the human body. Both simply rotational models and more advanced three dimensional models will be developed for the individual joints.

63999. Graduate Seminar (1-0-0)

Required for all department graduate students. Discussion of current topics in research and engineering by guest lecturers and staff members.

67060. Advance Topics in Optimization (1-1-0)

Nonlinear programming nonconvex optimization, Interior Point methods, Primal-Dual methods, Approximation Concepts, Engineering applications.

67099. Special Studies (v-v-0)

Individual or small group study under the direction of a faculty member in a graduate subject not currently covered by any University course.

67663. Advanced MEME Project (v-v-0)

Advanced project for ME/ME degree.

68691. Thesis Direction (v-v-0)

This course is reserved for the six-credit-hour thesis requirement of the research master's degree.

68697. Nonresident Thesis Research (v-v-0)

For master's degree students.

90921. Spatial Kinematics (3-3-0)

Prerequisite: AME 60654. A study of the finite and instantaneous kinematics of rigid body systems including closed and open loop systems with up to five degrees-of-freedom. Position analysis via coordinate transformations. Development of Screw Theory with applications to dimensional synthesis of mechanisms and path tracking control of manipulators.

90931. Viscous Flow Theory I (3-3-0)

Prerequisite: AME 60635. Properties and solutions of the Navier-Stokes equations, high and low Reynolds number approximations for steady and unsteady flows.

90932. Flow Control (3-3-0)

Prerequisite: AME 60635. Passive, active and reactive flow management strategies to achieve transition delay/advance, separation control, mixing augmentation, drag reduction, lift enhancement, and noise suppression.

90933. Dynamics of Compressible Flow (3-3-0)

Theoretical gas dynamics, including properties of compressible real fluids and fundamental relations for subsonic and supersonic flows.

90934. Unsteady Aerodynamics and Aeroacoustics (3-3-0)

Unsteady flows, unsteady aerodynamics of airfoils, cascades, and finite wings, acoustics in moving media, aerodynamic sound, Lighthill's analogy, far field conditions, Kirchhoff's method, numerical methods in aeroacoustics.

90935. Turbulence (3-3-0)

Experimental facts, measurements, theory, correlations, simple approximations. Homogeneous turbulence, spectra, direct interaction, numerical models, theory of Kraichnan, meteorology, diffusion.

90936. Computational Fluid Mechanics (3-3-0)

Prerequisite: AME 60614, AME 60635. Generalized coordinate transformation, grid generation, and computational methods for inviscid flow, viscous incompressible flow, and viscous compressible flow.

90937. Hydrodynamic Stability (3-3-0)

Introduction of the major fundamental ideas, methods, and results of the theory of hydrodynamic stability. Examples of major applications are presented.

90938. Thermal Radiation (3-3-0)

Basic concepts and laws of thermal radiation. Radiative properties of gases and surfaces. Radiative exchange between surfaces. Gaseous radiation interaction.

90939. Thermal Convection (3-3-0)

Prerequisite: AME 90931. Forced convection in ducts; Graetz solution and extensions; free or forced flow boundary layer heat transfer; turbulent heat transfer; combined forced and free convection; heat transfer including phase change.

90941. Advanced Topics in Solid Mechanics (3-3-0)

Topics in solid mechanics normally not covered in elementary graduate courses. Topics covered may vary.

90942. Stability Theory of Structural Systems (3-3-0)

Prerequisite: AME 60641. The general principle of stability of structural systems. Euler buckling and post-buckling behavior of discrete and continuous systems are presented.

90943. Fluid Film Lubrication (3-3-0)

Covers the regimes of lubrication and application of Reynolds equation to common tribological problems including bearings, gears and cams, as well as nanoscale lubrication problems and biotribology. Elastohydrodynamic and unsteady lubrication are also covered.

90944. Elasticity (3-3-0)

The fundamental theories and techniques in elasticity are covered. Variational methods and complex variable techniques are included, and applications are demonstrated by selected problems.

90946. Plasticity (3-3-0)

The course covers basic concepts and applications of the classical theory of plasticity including continuum mechanics concepts applicable to elastic-plastic deformation, yield functions, yield anisotropy, deformation theory, Drucker's postulates, flow theory and kinematic

AEROSPACE AND MECHANICAL ENGINEERING

hardening, numerical implementation and application to computational solutions of problems.

90951. Geometric Nonlinear Control Theory (3-3-0)

Review of state space linear dynamical control systems, basic Lyapunov theory, and bifurcation theory. Basic concepts and methods from differential geometry including manifolds, tangent spaces, vector fields, distributions, Frobenius' Theorem, and matrix groups and their application to nonlinear control including I/O and full state linearization via state feedback, controllability and observability, trajectory generation for nonlinear systems, and applications to stratified systems such as legged robotic locomotion and robotic manipulation.

90974. Advanced Topics in Biomechanics (3-3-0)

The mechanical behavior of biological materials will be presented and developed using appropriate mathematical theories. Pertinent theoretical and mathematical descriptions of mechanical behavior of solids will be reviewed. Examples will be taken from recent literature.

98991. Research and Dissertation (v-v-0)

Required for candidates for the advanced degree in the research program.

98998. Nonresident Dissertation Research (v-v-0)

This course is reserved to provide the required continuing minimal registration of one credit hour per academic semester for nonresident graduate students who wish to retain their degree status.

In addition to the courses listed above, selected 50000-series courses for advanced undergraduates may be taken for graduate credit, subject to approval of the Department of Aerospace and Mechanical Engineering. For information on these courses, refer to the College of Engineering section of the *Bulletin of Information, Undergraduate Programs*.

Faculty

Hafiz Atassi, *the Viola D. Hank Professor*. Engineer, Ecole Centrale de Paris; Licence, Univ. of Paris, 1963; Ph.D., *ibid.*, 1966. (1969)

Stephen M. Batill, *Chair and Professor*. B.S., Univ. of Notre Dame, 1969; M.S., *ibid.*, 1970; Ph.D., *ibid.*, 1972. (1978)

Alan P. Bowling, *Assistant Professor*. B.S., Univ. of Texas, 1983; Ph.D., Stanford Univ., 1998. (2001)

Raymond M. Brach, *Professor Emeritus*. B.S., Illinois Institute of Technology, 1958; M.S., *ibid.*, 1962; Ph.D., Univ. of Wisconsin, 1965. (1965)

Thomas C. Corke, *Director of Hestert Laboratory for Aerospace Research and the Clark Equipment Professor*. B.S., Illinois Institute of Technology, 1974; M.S., *ibid.*, 1976; Ph.D., *ibid.*, 1981. (1999)

Edmundo Corona, *Associate Professor*. B.S.A.E., Univ. of Texas, Austin, 1983; M.S., *ibid.*, 1986; Ph.D., *ibid.*, 1990. (1991)

Patrick F. Dunn, *Professor*. B.S., Purdue Univ., 1970; M.S., *ibid.*, 1971; Ph.D., *ibid.*, 1974. (1985)

J. William Goodwine, *Associate Professor*. B.S., Univ. of Notre Dame, 1988; J.D., Harvard Law School, 1991; M.S., California Institute of Technology, 1993; Ph.D., *ibid.*, 1998. (1998)

James E. Houghton, *Assistant Professor Emeritus*. B.S.E.E., Univ. of Notre Dame, 1949; M.S., *ibid.*, 1962. (1952)

Robert A. Howland Jr., *Associate Professor*. B.A., Yale Univ., 1965; M.S., *ibid.*, 1966; Ph.D., North Carolina State Univ., 1974. (1981)

Nai-Chien Huang, *Professor Emeritus*. B.S., National Taiwan Univ., 1953; M.S., Brown Univ., 1958; Ph.D., Harvard Univ., 1963. (1969)

Frank Incropera, *the Matthew H. McCloskey Dean of the College of Engineering and the H. Clifford and Evelyn A. Brosey Professor of Mechanical Engineering*. S.B., Massachusetts Institute of Technology, 1961; M.S., Stanford Univ., 1962; Ph.D., *ibid.*, 1966. (1998)

Edward W. Jerger, *Professor Emeritus*. B.S., Marquette Univ., 1946; M.S., Univ. of Wisconsin, 1947; Ph.D., Iowa State Univ., 1951. (1955)

Eric J. Jumper, *Professor*. B.S.M.E., Univ. of New Mexico, 1968; M.S.M.E., Univ. of Wyoming, 1969; Ph.D., Air Force Institute of Technology, 1975. (1989)

Francis M. Kobayashi, *Professor Emeritus and Assistant Vice President Emeritus for Research*. B.S., Univ. of Notre Dame, 1947; M.S., *ibid.*, 1948; Sc.D., *ibid.*, 1953. (1948)

Lawrence H. N. Lee, *Professor Emeritus*. B.S., Utopia Univ., 1945; M.S., Univ. of Minnesota, 1947; Ph.D., *ibid.*, 1950. (1950)

Katherine Wenjun Liu, *Assistant Professor*. B.S., Tsinghua Univ., 1997; M.S., *ibid.*, 2000; Ph.D., Carnegie Mellon Univ., 2005. (2005)

John W. Lucey, *Associate Professor Emeritus*. B.S., Univ. of Notre Dame, 1957; S.M., Massachusetts Institute of Technology, 1963; Ph.D., *ibid.*, 1965. (1965)

Stuart T. McComas, *Professor Emeritus*. B.S.M.E., Marquette Univ., 1956; M.S., Univ. of Minnesota, 1960; Ph.D., *ibid.*, 1964. (1963)

Scott C. Morris, *Assistant Professor*. B.S., Michigan State Univ., 1994; M.S., *ibid.*, 1997; M.S., *ibid.*, 2001; Ph.D., *ibid.*, 2002. (2002)

Thomas J. Mueller, *the Roth-Gibson Professor Emeritus of Aerospace Engineering*. B.S., Illinois Institute of Technology, 1956; M.S., Univ. of Illinois, 1958; Ph.D., *ibid.*, 1961. (1965)

Victor W. Nee, *Professor Emeritus*. B.S., National Taiwan Univ., 1957; Ph.D., Johns Hopkins Univ., 1967. (1965)

Robert C. Nelson, *Professor*. B.S., Univ. of Notre Dame, 1964; M.S., *ibid.*, 1966; Ph.D., Pennsylvania State Univ., 1974. (1975)

Glen Niebur, *Associate Professor and Director of Graduate Studies*. B.S., Univ. of Minnesota, 1986; M.S.M.E., *ibid.*, 1995; Ph.D., Univ. of California at Berkeley, 2000. (2001)

Timothy C. Ovaert, *Professor*. B.S., Univ. of Illinois, 1981; M.S., Northwestern Univ., 1985; Ph.D., *ibid.*, 1989. (2000)

Samuel Paolucci, *Professor*. B.S., Drexel Univ., 1975; Ph.D., Cornell Univ., 1979. (1989)

Joseph M. Powers, *Associate Professor*. B.S., Univ. of Illinois, 1983; M.S., *ibid.*, 1985; Ph.D., *ibid.*, 1988. (1989)

Francis H. Raven, *Professor Emeritus*. B.S., Pennsylvania State Univ., 1950; M.S., *ibid.*, 1951; Ph.D., Cornell Univ., 1958. (1958)

John E. Renaud, *Professor*. B.S., Univ. of Maine, 1982; M.S., Rensselaer Polytechnic Institute, 1989; Ph.D., *ibid.*, 1992. (1992)

Ryan K. Roeder, *Assistant Professor*. B.S., Purdue Univ., 1994; Ph.D., Purdue Univ., 1999. (2001)

Steven R. Schmid, *Associate Professor*. B.S., Illinois Institute of Technology, 1986; M.S., Northwestern Univ., 1989; Ph.D., *ibid.*, 1993. (1993)

Mihir Sen, *Professor*. B.Tech., Indian Institute of Technology, 1968; Sc.D., Massachusetts Institute of Technology, 1975. (1986)

Steven B. Skaar, *Professor*. A.B., Cornell Univ., 1975; M.S., Virginia Polytechnic Institute and State Univ., 1978; Ph.D., *ibid.*, 1982. (1989)

Michael M. Stanicic, *Associate Professor*. B.S., Purdue Univ., 1980; M.S., *ibid.*, 1982; Ph.D., *ibid.*, 1986. (1988)

Albin A. Szewczyk, *Professor Emeritus*. B.S.M.E., Univ. of Notre Dame, 1956; M.S.M.E., *ibid.*, 1958; Ph.D., Univ. of Maryland, 1961. (1962)

Flint O. Thomas, *Professor*. B.S., Indiana State Univ., 1977; M.S.M.E., Purdue Univ., 1980; Ph.D., *ibid.*, 1983. (1988)

Vikas Tomar, *Assistant Professor*. B.T., National Institute of Technology, Kurukshetra, 1998; M.S., I.I.T. Chennai, Univ. of Stuttgart, 2001; Ph.D., Georgia Institute of Technology, 2005. (2006)

Diane R. Wagner, *Assistant Professor*. B.S., Univ. of Michigan, 1989; Ph.D., Univ. of California, Berkeley, 2002. (2005)

Meng Wang, *Associate Professor*. B.S. Zhejiang Univ., 1982; M.S., 1989; Ph.D., Univ. of Colorado, Boulder, 1985; Ph.D., *ibid.*, 1989. (2006)

Kwang-Tzu Yang, *the Viola D. Hank Professor Emeritus of Aerospace and Mechanical Engineering*. B.S., Illinois Institute of Technology, 1951; M.S., *ibid.*, 1952; Ph.D., *ibid.*, 1955. (1955)

CHEMICAL AND BIOMOLECULAR ENGINEERING

Chemical and Biomolecular Engineering

Chair:

Mark J. McCready

Director of Graduate Studies:

Mark A. Stadtherr

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Location: 182 Fitzpatrick Hall

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The Program of Studies

The department offers programs leading to the degrees of master of science and doctor of philosophy. The aim of the graduate program is to prepare qualified candidates for research, development, teaching, and other professional careers in chemical engineering. Thus, the Ph.D. program is emphasized.

The objective of the doctoral program is to superimpose upon a broad education the ability to think independently in new fields, to coordinate technical ideas at an advanced level, and to make a systematic approach to the solution of new problems.

The course work is chosen in consultation with department faculty and the dissertation research adviser according to procedures outlined in *A Guide to Graduate Studies in Chemical and Biomolecular Engineering* (available from the department office).

The master's degree program consists of at least 15 credit hours of course work, plus 15 credit hours of thesis research and graduate seminar. For the Ph.D. degree, a minimum of 30 credit hours of course work is required, in addition to 42 credit hours of dissertation research and graduate seminar. There are required courses in the areas of thermo-dynamics, reaction engineering, transport phenomena, and mathematical methods.

After the second semester of residence, each Ph.D. student presents written and oral reports based on thesis research or project work. These reports, along with performance in courses, in research, and in teaching assistantship duties, constitute the comprehensive evaluation in chemical engineering. This allows the faculty to evaluate the student's grasp of chemical engineering fundamentals and his or her ability to perform original, independent research. Students who pass the comprehensive evaluation may continue to the Ph.D. program.

Ph.D. students generally take the oral candidacy examination before the end of the fifth semester in residence. This examination focuses on the progress achieved in thesis-related work and on the proposed future research.

The departmental faculty believes that all students seeking advanced degrees in chemical engineering should have some experience related to the instruction of others. Therefore, all first- and second-year graduate students are assigned teaching assistant duties. These duties consist of

conducting recitation sections for lecture courses, supervising laboratory courses, or grading homework.

Full-time students normally complete the Ph.D. degree requirements in about four-and-a-half years beyond the bachelor's degree. Requirements for the master's degree can normally be completed in two years of full-time study.

A student pursuing the Ph.D. degree will be eligible to receive an M.S. degree after completing five semesters in the Ph.D. program, passing the Ph.D. candidacy exam, and preparing and submitting for publication a research paper in collaboration with the student's research advisor(s). This paper shall describe work in which the student has a primary (not supporting) role, be submitted to a research journal or to the proceedings of a technical conference, and be subject to peer review.

New graduate students in chemical engineering select their research area and director during their first semester in residence at Notre Dame. Areas of current research include applied mathematics; biological materials; bioseparations; catalysis and surface science; ceramic materials; chemical reaction engineering; combustion synthesis of materials; drug delivery systems; ecological modeling; environmentally conscious design; fuel cells; gas-liquid flows; ionic liquids; materials science; microfluidic devices; microscale sensor arrays; molecular modeling and simulation; molecular theory of transport; nano-structured materials; parallel computing; phase equilibria; pollution prevention; polymer rheology; process dynamics and control; process optimization and design; process simulation; statistical mechanics; superconducting materials; supercritical fluids; suspension rheology; and transport in porous media.

More detailed descriptions of the research interests of individual faculty members may be found at the departmental website.

In addition to graduate assistantships and Peter C. Reilly Fellowships, several industrial fellowships also are available for highly qualified students.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

60510. Advanced Thermodynamics
(3-3-0)

An advanced treatment of physical and chemical thermodynamics for engineers.

60538. Introduction to Statistical Thermodynamics for Engineers
(3-3-0)

Development of the fundamentals of statistical mechanics and thermodynamics. Applications to monatomic gases and solids, diatomic and polyatomic gases, chemical equilibrium, dense gases, solids, and liquids.

60539. Chemical Process Simulation and Optimization
(3-3-0)

This course will provide an overview of the computational methodologies used for chemical process simulation and optimization. Topics will include: (1) how to formulate process models; (2) how to solve process models (linear and nonlinear equation solving, etc.); and (3) how to optimize using process models (linear and nonlinear programming, global optimization, etc.).

60542. Mathematical Methods in Engineering I
(3-3-0)

Rigorous development of tools of mathematical analysis and application of these to solve engineering problems. Topics include matrices, linear and nonlinear ordinary differential equations, special functions, and modeling.

60544. Transport Phenomena I
(3-3-0)

Differential balance equations that govern transport processes are derived and used to solve problems that demonstrate the physical insight necessary to apply these equations to original situations. The emphasis in this course is on fluid mechanics.

60545. Transport Phenomena II
(3-3-0)

The differential equations that govern transport phenomena are applied to the solution of various heat and mass transfer problems.

60546. Advanced Chemical Reaction Engineering
(3-3-0)

Prerequisite: Undergraduate course in chemical reaction engineering. Analyses and mathematical modeling of chemical reactors with emphasis on heterogeneous reaction systems.

60552. Mathematical Methods in Engineering II
(3-3-0)

Partial differential equations, characteristics, separation of variables, similarity and transform solutions, complex variable theory, singular integral equations, integral transforms. (Every spring)

60553. Advanced Chemical Engineering Thermodynamics
(3-3-0)

This course is focused on an advanced treatment of thermodynamic concepts. An introduction to molecular thermodynamics is given, followed by detailed treatments of phase equilibrium, equation-of-state development and activity coefficient models.

60556. Polymer Engineering
(3-3-0)

Prerequisite: Senior or graduate student standing in science or engineering. A course for seniors and graduate students in science and engineering who are interested in applications of engineering to polymer science and technology. Topics include polymerization reactions and the structure, properties, processing, and production of polymers.

60561. Structure of Solids
(3-3-0)

This class seeks to provide students with an understanding of the structure of solids, primarily as found in metals, alloys, and ceramics applied in technological

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applications. The structure of crystalline solids on the atomic level as well as the microstructural level will be discussed. Imperfections in the arrangements of atoms will be described, especially as regards their impact on properties. The study of structure through X-ray diffraction will be a recurring theme. A sequence of powder diffraction laboratory experiments (four to five class periods) also will be included.

60565. Electrochemistry and Corrosion
(3-3-0)

A study of some of the major concepts of electrochemistry and materials science that provides the student with a foundation for understanding, at a conceptual level, some of the important corrosion processes, as well as the methods of their control as practiced today in various industrial environments.

60567. Heterogeneous Catalysis
(3-3-0)

Introduction to solid state and surface chemistry, adsorption, reaction of gases on solid surfaces, experimental techniques in catalysis, catalyst preparation, and industrial catalytic processes.

60572. Topics-Ecology & Environment
(3-3-0)

This course covers various topics pertaining to the Earth's ecological and biogeochemical systems and the effects of disturbances or imbalances, particularly those caused by human/industrial activities. Based on fundamentals incorporated in such subject areas as chemical reaction engineering, process dynamics, and transport phenomena, the principal topics center on population and ecosystem dynamics, and on the Earth's natural and altered environments. Examples and applications are drawn from such subjects as the endangerment or extinction of species, biogeochemical cycles, greenhouse gases and global warming, ozone pollution in the troposphere and depletion in the stratosphere, pollutant dispersion, and acid rain. The course makes extensive use of methods of mathematical modeling, nonlinear dynamics, and computer simulations. In major course assignments, students work in small groups on modeling/simulation projects.

60574. Environmental Design
(3-3-0)

The goals of this course are to explore how to design and operate chemical processes so that we avoid or decrease the amount of pollutants that are released into the environment. Thus, this is essentially a course in pollution prevention. In the course, we identify and apply chemical engineering principles learned in previous classes (thermodynamics, phase equilibria, transport, reaction engineering) to environmental problems. In addition to normal lectures, discussions and homeworks, the course is comprised of a series of case studies that compare the design and operation of chemical processes using conventional technology versus new technology that incorporates various principles of pollution prevention.

60576. Global Climate Change
(3-3-0)

This course integrates the principles of physical sciences and engineering as they pertain to the environment, with additional discussion of social, political, and theological concerns. We analyze the complex couplings and feedback mechanisms that operate between the geosphere,

the biosphere, the atmosphere, and the hydrosphere as related to global climate changes.

60581. Biomedical Engineering Transport Phenomena
(3-3-0)

This course brings together fundamental engineering and life science principles, and provides a focused coverage of key concepts in biomedical engineering transport phenomena. The emphasis is on chemical and physical transport processes with applications toward the development of drug delivery systems, artificial organs, bioartificial organs, and tissue engineering.

60582. Biomaterials Engineering
(3-3-0)

Biomaterials engineering is the application of engineering principles to design, develop, and analyze materials that involve biological molecules. These may be materials of biological origin that are used in medical, biological, or chemical applications, and materials of chemical origin that are used with biological systems or their components. In this course you learn about the basic principles involved in the choice of material properties, the nature of the interaction of biological materials with their surroundings, and modern applications in science, medicine and engineering. Issues relating to marketing, packaging and storage, regulation, and ethics will also be discussed. Students will have an opportunity to apply mathematical-based engineering analysis of complex biomaterials systems.

60584. Bioprocess Engineering
(3-3-0)

Bioprocess engineering is the application of engineering principles to design, develop, and analyze processes that use biocatalysts. These may be in the form of a living cell, its substructures, or their chemical components. In this course you learn concepts of cellular biology, and be introduced to mathematical-based engineering analysis of complex biological systems. By the end of this course you should be able to understand basic structure and function of cells, homogeneous and heterogeneous enzyme kinetics, the regulation of cell growth, the design and operation of bioreactors, recovery and characterization of products, and methods in genetic engineering and molecular cloning.

60631. Molecular Modeling
(3-3-0)

And introduction to the theory, methods and applications of classical molecular modeling as applied to contemporary research in chemical engineering, chemistry, physics and biology. Topics include elementary statistical mechanics and ensemble theory, classical force fields, Monte Carlo, molecular dynamics, free energy calculation, and transport properties. Applications to simple and complex fluid as well as solids.

60634. Nonlinear Dynamics and Pattern Formation
(3-3-0)

This course reviews some classical pattern formation dynamics in extended domains. Specific topics include Rayleigh-Benard convection, Hamiltonian dynamics, wave phenomena, solidification, Turing patterns, etc. Analytical and numerical tools will be introduced to reduce the model dimension and to classify the pattern dynamics.

60902. Gaann: Risk Assessments
(1-1-0)

The GAANN program is a project funded by the Department of Education to provide interdisciplinary training on the topic of Risk Assessments of Novel Chemicals in the Environment. This course will introduce the scholars to ionic liquids, the novel chemicals of primary interest. Then various GAANN faculty will discuss different ways that their research might contribute to this project. The grade for the course will be based on a research proposal that the student will have to prepare, as well as on attendance.

60910. Selected Topic/Materials Processing
(3-3-0)

This course covers a limited number of materials processing techniques used by materials researchers as well as industrial manufacturers. The primary areas to be covered include thin film processing, fine ("nanoscale") particle processing, crystal growth, and a few selected ceramics processing techniques. Within each of these areas various techniques will be discussed, with both the theoretical and practical aspects being described.

60913. Macromolecular Bioengineering
(3-3-0)

Recent advances in molecular biology have made it possible to thoroughly study biological macromolecules. These macromolecules can perform many important functions, such as information transfer, catalysis, energy acquisition, transport regulation, and energy generation. This course focuses on the unique characteristics of macromolecules and how they can contribute in the area of engineering, such as in developing nanoscale devices, innovative materials, information storage devices, energy capture and storage, and many other applications.

60916. Biological Dynamics & Diagnostics
(3-3-0)

This course will examine physiology phenomena such as cardiac rhythms, bacterial detection/diagnostics, neuron signal transmission, blood circulation, pulmonary airflow, and more general biological topics such as ion channels, actin motors, genomic sequences from the viewpoint of mathematical analysis. Explicit and implicit patterns and organized dynamic will be elucidated and used to provide insight into the underlying physiology or biology.

60926. Carbon Science & Technologies
(3-3-0)

Lectures cover both fundamental science of carbon (e.g. structure, properties) as well as engineering application of these materials.

60993. Nonlinear Hydrodynamics
(3-3-0)

Discussion of advanced concepts in hydrodynamic stability.

60995. Transport Phenomena/Microscale
(3-3-0)

An advanced course intended to give students insight into the unique problems that arise for fluid flow and transport phenomena in very small passages such as occur in microfluidic devices.

63001. Graduate Seminar
(1-1-0)

Staff members, guest speakers, and doctoral students discuss current research problems. (Every semester)

66697. Directed Readings
(0-0-0)

Course requires the student to explore various readings as explained by the professor.

67690. Ceramics
(0-0-0)

Intended to facilitate research interactions between Notre Dame and Industry by allowing students to get credit for work experience.

68801. Thesis Direction
(0-0-0)

Research to satisfy the six credit hours required for the master's degree.

68901. Research and Dissertation
(0-0-0)

Research and dissertation for resident doctoral students.

68991. Nonresident Dissertation Research
(1-1-0)

Required of nonresident graduate students who are completing their dissertations in absentia and who wish to retain their degree status.

Faculty

Sudhir Aki, *Assistant Research Professor*. B.S., Andhra Univ., 1991; Ph.D., Univ. of Toledo., 1998. (2001)

Joan F. Brennecke, *the Keating-Crawford Professor of Chemical Engineering*. B.S., Univ. of Texas, 1984; M.S., Univ. of Illinois, 1987; Ph.D., *ibid.*, 1989. (1989)

Hsueh-Chia Chang, *the Bayer Corporation Professor of Chemical Engineering*. B.S., California Institute of Technology, 1976; Ph.D., Princeton Univ., 1980. (1987)

Daniel E. E. Hayes, *Visiting Research Professor*. B.S.M.E., Oklahoma State Univ., 1968; M.S., Air Force Institute of Technology, 1971; M.S., Univ. of Dayton, 1981. (2001)

Davide A. Hill, *Associate Professor*. Dottore in Ingegneria Chimica, Univ. di Napoli, Italy, 1983; Ph.D., Univ. of California, Berkeley, 1989. (1990)

Jeffrey C. Kantor, *Professor of Chemical and Biomolecular Engineering*. B.S., Univ. of Minnesota, 1976; M.A., Princeton Univ., 1977; Ph.D., *ibid.*, 1980. (1981)

David T. Leighton Jr., *Professor*. B.S.E., Princeton Univ., 1980; M.S., Stanford Univ., 1981; Ph.D., *ibid.*, 1985. (1985)

Edward J. Maginn, *Associate Professor*. B.S., Iowa State Univ., 1987; Ph.D., Univ. of California, Berkeley, 1995. (1995)

Mark J. McCready, *Chair and Professor*. B.Ch.E., Univ. of Delaware, 1979; M.S., Univ. of Illinois, 1981; Ph.D., *ibid.*, 1984. (1984)

Paul J. McGinn, *Director of the Center for Molecularly Engineered Materials and Professor*. B.S., Univ. of Notre Dame, 1980; M.S., *ibid.*, 1983; Ph.D., *ibid.*, 1984. (1987)

Albert E. Miller, *Professor*. B.S., Colorado School of Mines, 1960; Ph.D., Iowa State Univ., 1964. (1967)

Alex S. Mukasyan, *Research Professor*. M.S., Moscow Physical Engineering Institute, 1980; Ph.D., Institute of Chemical Physics, USSR Academy of Sciences, 1986; D.Sc., Institute of Structural Macrokineitics, Russian Academy of Sciences, 1994. (1997)

Kenneth R. Olson, *Adjunct Professor of Biological Sciences (South Bend Center for Medical Education) and Concurrent Professor*. B.S., Univ. of Wisconsin-LaCrosse, 1969; M.S., Michigan State Univ., 1970; Ph.D., *ibid.*, 1972. (1975)

Agnes E. Ostafin, *Assistant Professor*. B.S., Wayne State Univ., 1989; Ph.D., Univ. of Minnesota, 1994. (1999)

Andre F. Palmer, *Assistant Professor*. B.S., Harvard Univ., 1995; Ph.D., The Johns Hopkins Univ., 1998. (2001)

Roger A. Schmitz, *Professor Emeritus*. B.S., Univ. of Illinois, 1959; Ph.D., Univ. of Minnesota, 1962. (1979)

William F. Schneider, *Associate Professor*. B.Sc., Univ. of Michigan-Dearborn, 1986; Ph.D., Ohio State, 1991. (2004)

Mark A. Stadtherr, *Director of Graduate Studies and Professor*. B.Ch.E., Univ. of Minnesota, 1972; Ph.D., Univ. of Wisconsin, 1976. (1996)

William C. Strieder, *Professor*. B.S., Pennsylvania State Univ., 1959; Ph.D., Case Institute of Technology, 1963. (1966)

Eduardo E. Wolf, *Professor*. B.S., Univ. of Chile, 1969; M.S., Univ. of California, Davis, 1972; Ph.D., Univ. of California, Berkeley, 1975. (1975)

Y. Elaine Zhu, *Assistant Professor*. B.S., Tsinghua Univ., People's Republic of China, 1997; Ph.D., Univ. of Illinois Urbana-Champaign, 2001. (2005)

Civil Engineering and Geological Sciences

Chair:

Peter C. Burns

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Yahya C. Kurama

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The Program of Studies

The graduate program in civil engineering and geological sciences provides an interdisciplinary atmosphere conducive to preparation of qualified candidates for careers in structural/geotechnical/materials engineering, environmental engineering, and geological sciences.

The programs of study offered by the department lead to the master of science degree and the doctor of philosophy. The department requires a minimum cumulative grade point average of 3.0 for graduation from its degree programs.

Although both research and nonresearch options are available to students seeking the master's degree, the research option is the preferred and normal route. The nonresearch option is allowed only in exceptional circumstances. In the research option, 30 credit hours are required with six to 14 of these credits devoted to thesis research, depending on the program of study developed in conjunction with the department. The research option requires a completed thesis and an oral defense of that thesis. The master's research is commonly completed by the end of the fourth semester of enrollment.

Requirements for the doctor of philosophy include a total of 72 credit hours with at least 18 credit hours of formal graduate course work, successful completion of a written qualifier examination, a research proposal, an oral candidacy examination, and completion and defense of a dissertation.

Programs of study and research are arranged to suit the specific background and interests of the individual student, with guidance and approval of the faculty of the department and in conformity with the general requirements of the Graduate School.

Regardless of funding source, all students participate in the educational mission of the department by serving as teaching assistants for eight hours per week during their first year, four hours per week during their second year, and four hours per week during one additional semester.

Students in all the graduate programs are encouraged to include courses from other departments and colleges within the University to expand their understanding of today's complex technological-social-economic problems. In the past, students have shown particular interest in extradepartmental courses in biological sciences, chemical engineering, chemistry, economics, electrical engineering, mathematics, and mechanical engineering.

CIVIL ENGINEERING AND GEOLOGICAL SCIENCES

Admission to graduate study in civil engineering and geological sciences is not limited to undergraduate majors in civil engineering and/or geology. Those with undergraduate majors in other fields of engineering or the physical sciences are encouraged to apply.

All full-time admitted students, pursuing a research degree option, are provided with full financial support that includes a competitive stipend and full tuition waiver. Additional fellowships are available for students from underrepresented groups.

Course Descriptions

Each course listing includes:

- Course Number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course Description

Civil Engineering

60110. Structural Reliability and Probabilistic Bases of Design
(3-3-0)

Prerequisite: CE 20110 or consent of instructor. Identification and modeling of nondeterministic problems in the context of engineering design and decision making; stochastic concepts and simulation models.

60120. Advanced Geostatistics
(3-3-0)

Prerequisite: CE 20110 or consent of instructor. Introduction to modern geostatistical techniques, including principal component analysis, factor analysis, kriging, and 3-D simulation. The focus is on application to field data and analysis. Substantial computer programming required.

60125. Numerical Methods in Engineering
(3-3-0)

Finite difference and finite element methods for the solution of ordinary and partial differential equations encountered in engineering.

60130. Finite Elements in Engineering
(3-3-0)

Prerequisite: CE 30120 or consent of instructor. Fundamental aspects of the finite-element method are developed and applied to the solution of PDEs encountered in science and engineering. Solution strategies for parabolic, elliptic, and hyperbolic equations are explored.

60151. Durability Issues in Materials
(3-3-0)

Prerequisite: Consent of instructor. An introduction to durability mechanics and nondestructive testing of concrete, steel, and reinforced concrete in civil structures. When time permits, the course also covers rehabilitation and repair techniques.

60170. Advanced Mechanics of Solids
(3-3-0)

Prerequisite: AME 20241. Finite element methods for static and dynamic analysis of structural and

continuum systems. Analysis of two and three dimensional solids as well as plates and shells. Introduction to nonlinear analysis.

60250. Structural Dynamics
(3-3-0)

Prerequisite: Consent of instructor. Vibration of single-degree-of-freedom, multi-degree-of-freedom, and continuous linear viscoelastic systems. Dynamic analysis of structural systems in both frequency and time-domain. Study of nonlinear and nonclassical damped systems with applications to earthquake/wind engineering.

60251. Analytical Dynamics
(3-3-0)

Fundamental principles and analytical methods in dynamics with applications to machine design, robot analysis, and spacecraft control.

60272. Advanced Topics in Reinforced Concrete Design
(3-3-0)

Prerequisite: CE 40270 or consent of instructor. Behavior of reinforced concrete structures under earthquakes. Seismic design and detailing of RC structures. Nonlinear-inelastic modeling and analysis of RC structures. Seismic evaluation and retrofit of existing structures.

60273. Advanced Structural Stability
(3-3-0)

Development of classical elastic stability relationships. Inelastic buckling, torsional buckling, and load-deflection behavior of thin-walled metal members. Frame stability. Development of design equations.

60275. Prestressed Concrete Design
(3-3-0)

Prerequisite: CE 40270 or consent of instructor. Mechanics of prestressed concrete structural members. Design of prestressed concrete structural members and simple systems. Strength and serviceability considerations.

60280. Design of Structures to Resist Natural Hazards
(3-3-0)

Prerequisite: CE 40270 and CE 40280 or consent of instructor. Natural hazards and associated load effects on structures. Structural performance under extreme loads. Analysis of damage caused by wind storms, earthquakes, and ocean waves. Design provisions to resist damage from natural hazards.

60320. Environmental Chemistry
(3-3-0)

Prerequisite: Consent of instructor. Application of acid-base, solubility, complex formation and oxidation reduction equilibria to water supply, wastewater treatment and natural environmental systems.

60330. Environmental Biotechnology
(3-3-0)

Prerequisite: CE 40340 or consent of instructor. Environmental biotechnology is the application of biological processes to the solution of environmental

problems. Applications include municipal and industrial wastewater treatment, drinking water treatment, remediation of soils and groundwaters, remediation of surface waters and sediments, and control of air contaminants.

60347. Physicochemical Treatment of Organics
(3-3-0)

An investigation of the physicochemical treatment processes for treatment of organic contaminants.

60350. Environmental Microbiology
(3-3-0)

Corequisite: CE 40605. Prerequisite: Consent of instructor. Fundamentals of microbiology as needed to understand environmental systems and microbial treatment processes. Emphasis is placed on kinetics and energetics of microorganisms, fate of environmental pollutants, biotechnology applications, and laboratory techniques used to cultivate organisms and analyze biological systems.

60385. Hazardous Waste Management and Design
(4-3-1)

Prerequisite: Consent of instructor. The course addresses traditional and innovative technologies, concepts, and principles applied to the hazardous waste management and design to protect human health and the environment. Topics include the regulatory process, fate and transport of contaminants, toxicology, environmental audits, waste minimization, physicochemical processes, bioremediation, stabilization, incineration, land disposal, risk assessment, remedial investigations, remedial technologies, and alternative analysis. Includes a remediation design project, which may require laboratory analyses.

60450. Advanced Hydraulics
(3-3-0)

Application of the basic principles of fluid mechanics. Study of laminar flow, turbulent flow, and dispersion processes with emphasis on conduit and open channel flow.

60501. Geotechnical Earthquake Engineering
(3-3-0)

The course focuses on describing earthquake hazards and developing methods used for seismic analysis and design. Topics covered include seismicity, site response analysis, liquefaction, and dynamic properties of soils.

60530. Foundation Analysis and Design
(3-3-0)

Prerequisite: CE 30510 or consent of instructor. The course covers topics in foundation engineering, including earth pressure theories, design of retaining structures, bearing capacity, and the analysis and design of shallow and deep foundations.

67600. Special Studies
(0-0-0)

Prerequisite: Consent of instructor. Individual or small-group study under the direction of a faculty member in a graduate subject not concurrently covered by any University course.

CIVIL ENGINEERING AND GEOLOGICAL SCIENCES

68600. Thesis Direction
(0-0-0)

Prerequisite: Consent of instructor. Research to satisfy the six credit hours required for the research master's degree.

68610. Nonresident Thesis Research
(1-0-0)

Prerequisite: Consent of instructor. Required of non-resident graduate students who are completing their theses in absentia and who wish to retain their degree status.

70140. Advanced Finite Element Methods
(3-3-0)

Prerequisite: CE 60250 or consent of instructor. Finite element methods for static and dynamic analysis of structural and continuum systems. Displacement approach for two and three dimensional solids along with beams, plates, and shells. Material and geometric nonlinearities.

70250. Experimental Methods in Structural Dynamics
(3-3-0)

Prerequisite: CE 60250 or consent of instructor. Overview of experimental techniques for analyzing and modeling the behavior of structures under dynamic loads, including stochastic concepts and spectral/time-frequency transform techniques. Course includes vibration measurement through experiments, signal processing and system identification. Experimental modules on acceleration-based system identification, strain/displacement measurement, modal testing and remote data acquisition systems are provided.

70290. Behavior and Design of EQ Resistant Structures
(3-3-0)

Prerequisites: CE 60250 or consent of instructor. Characteristics of earthquakes. Effect of earthquakes on structures. Response of linear-elastic structures under earthquakes. Response of nonlinear-elastic structures under earthquakes. Behavior of structural members under seismic loading. Principles of earthquake resistant design. Code implementation.

77600. Special Studies
(0-0-0)

Prerequisite: Consent of instructor. This number is reserved for specialized and/or experimental graduate courses. Content, credit, and instructor will be announced by the department.

78600. Research and Dissertation
(0-0-0)

Prerequisite: Consent of instructor. Research and dissertation for resident doctoral students.

78610. Nonresident Dissertation Research
(1-0-0)

Prerequisite: Consent of instructor. Required of non-resident graduate students who are completing their dissertations in absentia and who wish to retain their degree status.

Environmental Geosciences

60300. Geochemistry
(3-3-0)

Prerequisite: CHEM 30321 or consent of instructor. An introduction to the use of chemical thermodynamics and chemical kinetics in modeling geochemical processes. Special emphasis is placed on water-rock interactions of environmental interest.

60340. Water-Rock Interactions
(3-3-0)

Prerequisite: ENVG 40380 or consent of instructor. Fundamental properties of mineral surfaces and of the mineral-water interface. Methods of surface and interface analysis. The electric double layer. Interface reactions including adsorption, mineral growth, and dissolution, photoredox phenomena, and controls on bacterial adhesion.

60360. Geomicrobiology
(3-3-0)

Prerequisite: ENVG 40300, 60300, or consent of instructor. This course explores current research involving the interaction between microbes and geological systems, focusing on the ability of microbes to affect mass transport in fluid-rock systems. Readings concentrate on laboratory, field, and modeling studies of environmental and geological interests.

60362. Global Climate Change
(3-3-0)

Prerequisite: Consent of instructor. This course integrates the principles of physical sciences and engineering as they pertain to global change and the environment, with additional discussion of social and political concerns. We analyze the complex couplings and feedback mechanisms that operate between the geosphere, the biosphere, the atmosphere, and the hydrosphere as related to global climate change. Engineering analysis will be used to provide quantitative understanding of the individual components and how the components work to make the climate system.

60370. Environmental and Technical Aspects of Minerals
(3-3-0)

Prerequisite: Consent of instructor. This course explores the chemistry and structures of minerals with emphasis on environmental and technological issues. Topics of environmental significance include the disposal of spent nuclear fuel, contamination of soils with heavy metals, and the remediation of mine tailings. Emphasis will be on the mineralogy of uranium, lead, mercury, iodine, selenium and tellurium. Technological aspects of minerals, such as the use of zeolites and clay minerals as molecular sieves and as waste containment vessels will be addressed.

60380. Environmental Isotope Chemistry
(3-3-0)

Prerequisite: Consent of instructor. The course focuses on radioactive and stable isotopes, both natural and man-made, in the environment. Specific topics include: age dating, identification of geological reservoirs and radioactive waste disposal.

60400. High-Temperature Geochemistry
(3-3-0)

Prerequisite: Chem 30321 and ENVG 40300 or ENVG 60300, or consent of instructor. Study of magma generations and evolution from a geochemical and thermodynamic standpoint. Recognition of igneous processes will result in the formation of petrogenetic models using actual data sets. These models will be tested using thermodynamic approaches.

60410. Geophysics
(3-2-1)

Prerequisite: Consent of instructor. Physics of the solid Earth: seismic wave, gravity, resistivity and electromagnetic methods of probing the structure of the Earth. Applications to environmental concerns as well as to groundwater, mineral and petroleum exploration are discussed.

60500. ICP Analytical Techniques
(3-2-1)

Prerequisite: Consent of instructor. Students are introduced to the analytical techniques of inductively coupled plasma-mass spectroscopy (ICP-MS) and atomic emission spectrometry (ICP-AES). The first half of the course covers the theory of ICP-MS and ICP-AES as well as specialized sample introduction techniques. Three weeks are spent in the lab learning machine tuning/setup techniques, ICP-MS and ICP-AES software, and sample preparation/calibration protocols. The last third of the course is spent conducting independent projects. Graduate students are strongly advised to make this project related to their research and senior undergraduates are encouraged to choose a project which will help in the workplace or in graduate school.

67600. Special Studies
(0-0-0)

Prerequisite: Consent of instructor. Individual or small-group study under the direction of a faculty member in a graduate subject not concurrently covered by any University course.

Faculty

Peter C. Burns, *Chair and the Henry J. Massman Jr. Professor of Civil Engineering and Geological Sciences*. B.Sc., Univ. of New Brunswick, 1988; M.Sc., Univ. of Western Ontario, 1990; Ph.D., Univ. of Manitoba, 1994. (1997)

Jeremy B. Fein, *Director of the Environmental Molecular Science Institute and Professor*. B.A., Univ. of Chicago, 1983; M.Sc., Northwestern Univ., 1986; Ph.D., *ibid.*, 1989. (1996)

Robert L. Irvine, *Professor Emeritus*. B.S., Tufts Univ., 1964; M.S., *ibid.*, 1965; Ph.D., Rice Univ., 1969. (1974)

Ahsan Kareem, *the Robert M. Moran Professor of Civil Engineering and Geological Sciences*. B.S., W. Pakistan Univ. of Engineering and Technology, 1968; M.S., Univ. of Hawaii, 1975; Ph.D., Colorado State Univ., 1978. (1990)

Sydney Kelsey, *Professor Emeritus*. B.Sc., Univ. of Leeds, 1946. (1967)

Lloyd H. Ketchum Jr., *Associate Professor*. B.S.C.E., Michigan State Univ., 1960; M.S.E., Univ. of Michigan, 1964; M.Ph., *ibid.*, 1964; Ph.D., *ibid.*, 1972. (1973)

Tracy Kijewski-Correa, *the Rooney Family Assistant Professor*. B.S., Univ. of Notre Dame, 1997; M.S., *ibid.*, 2000; Ph.D., *ibid.*, 2003. (2003)

David J. Kirkner, *Associate Professor*. B.S., Youngstown State Univ., 1971; Ph.D., Case Western Reserve Univ., 1979. (1979)

Yahya C. Kurama, *Director of Graduate Studies and Associate Professor*. B.S., Bogazici Univ., 1990; M.S., Lehigh Univ., 1993; Ph.D., *ibid.*, 1997. (1998)

Kenneth R. Lauer, *Professor Emeritus*. B.S., Univ. of Alberta, 1947; M.Sc., *ibid.*, 1948; M.C.E., Cornell Univ., 1952; Ph.D., Purdue Univ., 1960. (1956)

Jerry J. Marley, *Associate Professor Emeritus*. B.S., Univ. of Notre Dame, 1957; M.S., Iowa State Univ., 1962; Ph.D., *ibid.*, 1969. (1969)

Patricia A. Maurice, *Director of the Center for Environmental Science and Technology and Professor*. B.A., Johns Hopkins, 1982; M.S., Dartmouth, 1985; Ph.D., Stanford, 1994. (2000)

Clive R. Neal, *Associate Professor*. B.Sc., Univ. of Leicester, 1982; Ph.D., Univ. of Leeds, 1985. (1990)

Robert Nerenberg, *Assistant Professor*. B.S., Univ. of Buenos Aires, 1990; M.S., Wayne State Univ., 1992; Ph.D., Northwestern Univ., 2003. (2003)

J. Keith Rigby Jr., *Associate Professor*. B.S., Brigham Young Univ., 1971; M.Phil., Columbia Univ., 1974; Ph.D., *ibid.*, 1976. (1982)

Rev. James A. Rigert, C.S.C., *Associate Professor Emeritus*. B.S., Univ. of Portland, 1957; M.S., Cornell Univ., 1960; Ph.D., Univ. of Illinois, 1971; Ph.D., Texas A&M Univ., 1980. (1973)

Susan E. H. Sakimoto, *Assistant Professor*. B.A., Whitman College, 1989; M.A., Johns Hopkins Univ., 1991; Ph.D., *ibid.*, 1995. (2004)

Lynn Ann Salvati, *Clare Boothe Luce Assistant Professor*. B.S., Brown Univ., 1995; M.S., Univ. of California, Berkeley, 1996; Ph.D., *ibid.*, 2002. (2002)

Stephen E. Silliman, *Professor and Fellow of the Center for Social Concerns*. B.S.E., Princeton Univ., 1979; M.S., Univ. of Arizona, 1981; Ph.D., *ibid.*, 1986. (1986)

Jeffrey W. Talley, *Assistant Professor*. B.S.F., Louisiana State Univ., 1981; M.A., Assumption College, 1985; M.L.A., Washington Univ. in St. Louis, 1988; M.S.E., Johns Hopkins Univ., 1995; Ph.D., Carnegie Mellon Univ., 2000. (2001)

James I. Taylor, *Professor Emeritus*. B.S.C.E., Case Institute of Technology, 1956; M.S.C.E., *ibid.*, 1962; Ph.D., Ohio State Univ., 1965. (1976)

Wilasa Vichit-Vadakan, *Clare Booth Luce Assistant Professor*. B.S., Cornell Univ., 1995; M.S., Massachusetts Institute of Technology, 1997; M.A., Princeton Univ., 1999; Ph.D., *ibid.*, 2002. (2003)

Joannes J. Westerink, *Associate Professor*. B.S., State Univ. of New York, 1979; M.S., *ibid.*, 1981; Ph.D., Massachusetts Institute of Technology, 1984. (1990)

Jennifer R. Woertz, *Assistant Professor*. B.S., Univ. of Illinois, 1996; M.S., Univ. of Texas, 1998; Ph.D.; *ibid.*, 2003. (2003)

Computer Science and Engineering

Chair:

Kevin W. Bowyer

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The Program of Studies

Current research emphasizes several distinct areas: computing systems in emergent technologies, algorithms and the theory of computing, prototyping computationally demanding applications, systems and networks, e-technology, computer vision/pattern recognition and artificial intelligence.

The department offers programs of study and research leading to the degrees of master of science in computer science and engineering and the doctor of philosophy.

Students who show potential for the doctoral level work may be admitted to the Ph.D. program but are expected to complete the master's degree requirements first. The master's degree requires a minimum of 24 credit hours of course work beyond the bachelor's degree and a master's thesis. A full-time student can complete these requirements in three regular academic semesters plus the summer, although the majority of students take four semesters. The student must, upon the acceptance of the thesis, successfully pass an oral thesis defense examination. Doctoral students are normally required to accumulate a minimum of 12 credit hours of satisfactory course work beyond the master's degree, plus a dissertation.

The doctoral program normally requires four years of full-time work. The requirements include successful completion of the Ph.D. qualifying and candidacy examinations, a dissertation, and the oral dissertation defense examination. Students are encouraged to pursue course work outside the department whenever such studies support their program in the major field.

The Ph.D. qualifying examination is written and is normally taken in the second spring semester after entering the program with a bachelor's degree. Those admitted with a master's degree are required to take the Ph.D. qualifying examination the first spring after entering the program. The Ph.D. candidacy requirement, which consists of a written and an oral part, is administered to determine if the student has identified a viable dissertation topic. The candidacy consists of

a written topic proposal followed by an oral examination. After passing the Ph.D. candidacy, which typically takes place after the completion of the formal course work, the student devotes essentially all efforts to completing his or her dissertation research. At the dissertation defense, the student defends the dissertation before an oral examining board. In recent years, students have completed the Ph.D. degree requirements in about four to five years.

Finally, both M.S. and Ph.D. candidates are required to complete a teaching apprenticeship that involves teaching duties of one semester for M.S. candidates and two semesters for Ph.D. candidates.

Research Facilities

Notre Dame's College of Engineering maintains a cluster of 110 PC workstations running Windows and Linux, as well as a cluster of 20 Sun Microsystems Blade 1000 workstations with 3D graphics display capability. Also in the cluster are six Xerox line printers which are available to faculty, staff, and students. The College also maintains a teaching lab/classroom with Windows desktop workstations.

The University's Office of Information Technology provides an AFS file service with 18 Sun UltraSparc fileservers. These fileservers provide over 5 Terabyte of RAID (0+1) mirrored striped file storage for the campus community. In addition the OIT provides 9 Terabytes of file space as a CIFS filesystem via two Network Appliance File Servers.

The University's High Performance Computer Center provides a wide variety of computer nodes for use by the campus research community. The HPCC also contains several support systems which provide file space, and other services to the HPCC computer cluster systems. The hardware base of the HPCC includes:

Multi-processor Systems:

- Eight Sun Enterprise 420R - 4 x 450 MHz processors, 4 GB RAM, 35 GB /scratch space,
- Six - Sun V880 - 8 x 900 MHz Cu processors, 16 GB RAM

Beowulf Computer Clusters:

- One - Sun Microsystems V60 Beowulf cluster - 128 node Dual 3.0Ghz Xeon CPU, 2Gb RAM.
- One - Sun Microsystems Beowulf cluster with Myrinet - 16 Dual 2.2Ghz Opteron CPU 8GB RAM
- One - IBM 1300 (x330) Linux Cluster, 32 Node 2 x 1.4 GHz Pentium III, and 1GB RAM.

The BoB cluster in Chemistry also reserves cycles for use by campus researchers. BoB is the 445th fastest computer in the world. BoB is built out of 106 commodity dual-processor desktop computers. Each computer has 2x 1.7 GHz Xeon processors, 1 GB RDRAM, 40 GB HD and a Gigabit Ethernet card.

The campus is connected to the VbNS Internet-II backbone via a Gigabit connection that is shared with several local industrial partners. Two hundred

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megabits of this connection is reserved to use for Notre Dame commodity and research traffic. The residence hall network (RESNET) has a separate 45 megabit OC-3 connection via a local service provider. All desktop network ports in the College of Engineering are provided by 100 megabit Ethernet switches, and the College is connected to the campus backbone network via dual Gigabit Ethernet connections.

The Department of Computer Science and Engineering maintains over 100 Dual-CPU Beowulf computer nodes housed in five clusters. In addition, the department provides 85 UltraSparc workstations, 25 Windows workstations, 25 Linux systems and 12 Apple Macintosh G4/G5 systems. The department also contains a research Myrinet gigabit network, a scanner, color printer, 20 laser printers, and a large-bed plotter.

The System and Network Administration lab contains multiple HP Linux file servers which provide a total of 2TB of RAID disk storage, a Sun Microsystems Inc., Blade 1000 file server, and 24 seats of Solaris, Linux, and Windows systems, which includes various RAID disk systems. The lab also contains a Cisco 4500 router, an HP5308 switch/router, two Cisco 2924 Ethernet switches, several HP Procurve Gigabit Ethernet switches, a HP Internet Advisor network analysis system, and various other pieces of network equipment. Software in the lab includes HP Network Node Manager, SNMP, Cisco IOS, Linux, Solaris, Windows (Xp, 2000, Server 2003). The servers in the lab provide access to Oracle, dB2, mysql, and Microsoft SQL databases, and associated web servers (Apache and IIS) to access the databases. This lab is used by several undergraduate courses and research projects within the department.

The Artificial Intelligence and Robotics laboratory currently hosts five robots, one ActivMedia Pioneer Peoplebot, three ActivMedia Pioneer P2Dxe robots, and one Arrick Robotics Trilobot. All ActivMedia robots have an onboard Linux PC, Sony pan-tilt-zoom cameras and are equipped with wireless Ethernet links. They are operated using AGES, a distributed agent development environment under development in the lab. Additional computing equipment comprises four Dell Linux PC desktops, one Dell laptop, and one SUN UltraSPARC workstation.

Additional equipment is available by individual research group to support specific research projects. Specialized laboratories that include this equipment are the Distributed Computer Lab, the Laboratory of Computational Life Sciences, the Lab for VLSI, and the Computer Vision Research Lab.

A specialized College of Engineering research library holds more than 50,000 volumes. The Engineering Library augments the University's Theodore M. Hesburgh Library, which contains more than three million volumes and receives 625 journals related to engineering. The Hesburgh Library also provides database searches and bibliographic instruction.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

60092. Computer System Modeling (3-3-0)

Computer techniques for simulating the behavior of physical, biological, engineering and social systems, including both natural and artificial systems. Applications include scientific enquiry, engineering design, manufacturing planning, training, entertainment, and games. Topics include animation, visualization, and graphical analysis of results.

60111. Complexity and Algorithms (3-3-0)

A study of theoretical foundations of computer science and a selection of important algorithm techniques. Topics include the classes of P and NP, the theory of NP-completeness, linear programming, advanced graph algorithms, parallel algorithms, approximation algorithms, and randomized algorithms.

60113. Numerical Methods and Computation (3-3-0)

Introduction to analysis and implementation of numerical methods for scientific computation. Topics include computer arithmetic, solution of linear and nonlinear equations, approximation, numerical integration and differentiation, numerical solution of ordinary and partial differential equations, and applications of all of these.

60131. Programming Languages (3-3-0)

Prerequisite: Familiarity with a standard programming language. An introduction to modern computing concepts and computational models as embodied in a number of different classes of languages. These include (1) functional-based languages such as Lisp, Scheme, SASL, ML; (2) logic-based languages such as Prolog, Parlog, Strand, OPS; and (3) object-oriented languages such as Smalltalk, C++, Java.

60166. Computer Graphics (3-3-0)

Prerequisites: Linear algebra, high-level language. Graphics Display devices. Two- and three-dimensional geometry: transformations and projections. Raster graphics algorithms; primitive rendering; 3-D modeling; scene description. Graphics software standards. Software projects.

60171. Artificial Intelligence (3-3-0)

Prerequisite: Advanced standing in engineering or science. Evaluation of the areas that make up artificial intelligence today. Development of various representations commonly used. Differences between knowledge bases and databases are explored. A study of several applications including expert systems.

60232. Software Engineering (3-3-0)

Prerequisites: CSE 30331, CSE 30341. Software Engineering is an engineering discipline that is concerned with all aspects of producing high-quality, cost-effective and maintainable software systems. This course provides an introduction to the most important tasks of a software engineer: requirements engineering, software design, implementation and testing, documentation and project management. A medium-scale design project combined with individual assignments complement the lectures.

60239. Computer Simulation (3-3-0)

Prerequisites: MATH 30530. Computer techniques for simulating the behavior of physical, biological, engineering and social systems, including both natural and artificial systems. Applications include scientific enquiry, engineering design, manufacturing planning, training, entertainment, and games. Topics include animation, visualization, and graphical analysis of results.

60321. Computer Architecture (3-3-0)

Classic high-performance computer architectures are considered along with standard parameters for their evaluation. Characteristics that improve performance are introduced. Various forms of parallel processing with specific implementation examples are given. More recent architectural advances are discussed, such as power-away, fault tolerance, and others.

60535. Computer Vision (3-3-0)

An introduction to the major biometric techniques (fingerprint, face, iris, voice, hand shape), the underlying pattern recognition basis for these biometrics, and current concerns regarding privacy and social / ethical issues.

60539. Simulation of Complexity (3-3-0)

Computer simulation of biosystems.

60567. 3D Photography (3-3-0)

Course provides a comprehensive treatment of three-dimensional photography including digitization techniques, 3D data processing, surface and volume extraction, 3D object recognition, and applications in areas such as character design, historic preservation, biometric authentication and archaeology.

60613. Introduction to E-Technology (3-3-0)

Introduction to concepts, theories and techniques of Internet and WWW programming. The goal of this course is to prepare the student to design and develop Web-based applications, e-Commerce applications, e-Science applications and Internet-based services. Students will be expected to design a large system (course project) requiring integration with other student projects.

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60641. Operating System Design
(3-3-0)

This course introduces students to advanced topics in operating systems. The course will follow the course text book as well as important research publications. Topics include: advanced process management mechanisms, virtual machines, monolithic vs micro kernels, storage management, protection and security, OS reliability and robustness, energy aware computing and other current research topics.

60656. Advanced Databases
(3-3-0)

Pre-requisite: CSE 30246. Advanced topics in databases. DBA techniques.

60721. Advanced Architecture
(3-3-0)

Prerequisites: CSE 60321. Advanced topics in computer architecture.

60726. CAD of Digital Systems
(3-3-0)

This is a senior/entry graduate level course intended to expose students to the fundamentals of CAD tools for the design and analysis of digital systems. The course aims at introducing to students the theory and implementation behind commercial CAD tools so that the students will be able to contribute to the development of such tools as well as be productive users of such tools. The main topics include basic algorithms for CAD, digital system modeling, timing and power analysis, logic/architectural synthesis, physical level design, and system-level design.

60743. Behavior-Based Robotics
(3-3-0)

This course is designed to provide a forum for applying and testing artificial intelligence methods and models, especially behavior-based techniques, on a robot. While models will be evaluated with respect to their theoretical tenability, most emphasis will be given to issues of practicality. These practical considerations will be extensively studied in simulations as well as real-world implementations on a variety of robots. Implementations might also comprise new ideas, hopefully giving rise to original research results.

60753. Digital Systems Testing
(3-3-0)

A comprehensive and detailed treatment of digital systems testing and testable design. Fundamental concepts as well as the latest advances and challenges in the field of ULSI/VLSI testing are examined. Topics covered include fault modeling and simulation, combinational and sequential circuit test generation, memory and delay test, and design-for-testability methods such as scan and built-in self-test. Testing of embedded cores in systems-on-chip environments is also considered. A major outcome of this course is the analysis, design, and implementation of CAD tools that give solutions to test-related problems.

60764. Computer Networks
(3-3-0)

This course introduces students to topics on the principles, design, implementation, and performance of computer networks. Topics include: Internet protocols and routing, congestion control, switching and routing, mobile IP and ad-hoc networks, network security, the end-to-end arguments, peer-to-peer systems and other current research topics.

60771. Distributed Systems
(3-3-0)

A distributed system is a collection of independent machines that work together on a common problem. Distributed systems have been both interesting and difficult to build because their components may be autonomous and highly failure prone. The primary material for this course will be a series of papers describing both working distributed systems and theoretical results. Topics may include distributed file and storage systems, batch computing, peer-to-peer computing, grid computing, process migration, fault tolerance, security, time and ordering, and distributed agreement. Students will undertake a course project that involves building and evaluating a distributed system. Grading will be based on discussion, exams, and the course project.

63801. Research Seminar I
(1-1-0)

Weekly seminars for graduate students.

63802. Research Seminar II
(1-1-0)

Weekly seminars for graduate students.

66191. Directed Readings - Biometrics
(3-3-0)

Directed readings in the field of biometrics.

67101. Directed Readings
(3-3-0)

Topics will vary from semester to semester and will be announced in advance. Possible topics might include: computer-aided design, numerical analysis and computation, distributed computing, computational geometry, special VLSI architectures, and others of interest to students and faculty.

67900. Special Studies
(0 -0- 0)

This number is reserved for specialized and/or experimental graduate courses. Content, credit, and instructor will be announced by department.

68900. Thesis Direction
(0 -0- 0)

Research to satisfy the six credit hours required for the master's degree.

68901. Thesis Direction
(0 -0- 0)

Research to satisfy the six credit hours required for the master's degree.

68905. Nonresident Thesis Research
(1-1-0)

Required of nonresident master's degree students who are completing their theses in absentia and who wish to retain their degree status.

76100. Directed Readings
(0 -0- 0)

Topics will vary from semester to semester and will be announced in advance. Possible topics might include: computer-aided design, numerical analysis and computation, distributed computing, computational geometry, special VLSI architectures, and others of interest to students and faculty.

70188. Advanced Communications & I/O Architecture
(3-3-0)

Advanced communications & I/O architecture

70421. Advanced Embedded Systems Design
(3-3-0)

This is an advanced graduate level course intended to expose students to the state-of-the-art design and analysis techniques for embedded systems. The main topics include system modeling, performance and power/energy analysis and estimation, system-level partitioning, synthesis and interfacing, co-simulation and emulation, and re-configurable computing platforms.

75701. Industrial Research Experience
(0-0-0)

In most engineering disciplines, the experience gained through on-the-job training is invaluable to graduate students. This course aims at providing advanced graduate students with real-world working experience. It requires students to work in an industrial environment participating in projects related to their research areas. Students are to submit a final report at the completion of the course.

77900. Special Studies
(0-0-0)

This number is reserved for specialized and/or experimental graduate courses. Content, credit, and instructor will be announced by department.

98900. Research and Dissertation
(0-0-0)

Research and dissertation for resident doctoral students.

98901. Research and Dissertation
(0-0-0)

Research and dissertation for resident doctoral students.

98995. Nonresident Dissertation Research
(1-1-0)

Required of nonresident doctoral students who are completing their dissertations in absentia and who wish to retain their degree status.

Upper-level Undergraduate Courses

Graduate students may also consult the director of graduate studies for permission to take one upper-level undergraduate course as credit toward their degree. Full descriptions of these courses are available in the *Bulletin of Information, Undergraduate Programs*.

Faculty

Panos J. Antsaklis, *Director of the Center for Applied Mathematics, the H. C. and E. A. Brosey Professor of Electrical Engineering, and Concurrent Professor of Computer Science and Engineering*. Dipl., National Technical Univ. of Athens, 1972; M.S., Brown Univ., 1974; Ph.D., *ibid.*, 1977. (1980)

Kevin W. Bowyer, *Chair, the Schubmehl-Prein Professor, and Concurrent Professor of Electrical Engineering*. B.S., George Mason Univ., 1976; Ph.D., Duke Univ., 1980. (2001)

Jay B. Brockman, *Associate Professor and Concurrent Associate Professor of Electrical Engineering*. Sc.B., Brown Univ., 1982; M.S.E.E., Carnegie Mellon Univ., 1988; Ph.D., *ibid.*, 1992. (1992)

Ramzi K. Bualuan, *Associate Professional Specialist*. B.S.E.E., American Univ. Beirut, 1983; M.S., Univ. of Notre Dame, 1985. (1993)

Surendar Chandra, *Assistant Professor*. B.E., Anna Univ., Madras, 1988; M.S., Worcester Polytechnic Institute, 1993; Ph.D., Duke Univ., 2000. (2002)

Amitabh Chaudhary, *Assistant Professor*. Ph.D., Johns Hopkins Univ., 2002. (2002)

Nitesh V. Chawla, *Research Assistant Professor*. M.S., Univ. of South Florida, 2000; Ph.D., *ibid.*, 2002. (2002)

Danny Z. Chen, *Professor*. B.S., Univ. San Francisco, 1985; M.S., Purdue Univ., 1988; Ph.D., *ibid.*, 1992. (1992)

Patrick J. Flynn, *Professor*. B.S.E.C.E., Michigan State Univ., 1985; M.S.C.S., *ibid.*, 1986; Ph.D., *ibid.*, 1990. (2001)

Joseph C. Freeland, *Associate Professional Specialist*. B.S.E., Purdue Univ., 1985. (1995)

Ashish Gehani, *Research Assistant Professor*. B.S., Univ. of Chicago; M.S.C.S., Duke Univ.; Ph.D., *ibid.*, 2003. (2003)

Eugene W. Henry, *Professor Emeritus*. B.S.E.E., Univ. Notre Dame, 1954; M.S.E.E., *ibid.*, 1955; Ph.D., Stanford Univ., 1960. (1960)

Xiaobo (Sharon) Hu, *Director of Graduate Studies and Associate Professor*. B.S., Tianjin Univ., 1982; M.S., Polytechnic Institute New York, 1984; Ph.D., Purdue Univ., 1989. (1996)

Yih-Fang Huang, *Chair and Professor of Electrical Engineering and Concurrent Professor of Computer Science and Engineering*. B.S.E.E., National Taiwan Univ., 1976; M.S.E.E., Univ. of Notre Dame, 1980; M.A., Princeton Univ., 1981; Ph.D., *ibid.*, 1982. (2003)

Jesús A. Izaguirre, *Assistant Professor*. B.A., ITESM-Mexico, 1991; M.S., Univ. of Illinois Urbana-Champaign, 1996; Ph.D., *ibid.*, 1999. (1999)

Peter M. Kogge, *the Ted H. McCourtney Professor of Computer Science and Engineering and Concurrent Professor of Electrical Engineering*. B.S., Univ. of Notre Dame, 1968; M.S., Syracuse Univ., 1970; Ph.D., Stanford Univ., 1973. (1994)

Gregory R. Madey, *Professional Specialist, and Concurrent Associate Professor*. B.S., Cleveland State Univ., 1974; M.S., *ibid.*, 1975; M.S., Case Western Reserve Univ., 1979; Ph.D., *ibid.*, 1984. (2000)

Maria K. Michael, *Visiting Assistant Professor*. B.S., Southern Illinois Univ., 1996; M.S., *ibid.*, 1998; Ph.D., *ibid.*, 2002. (2002)

Matthias Scheutz, *Assistant Professor*. M.A., Univ. of Vienna, 1989; M.S., *ibid.*, 1993; M.S.E.E., Vienna Univ. of Technology, 1993; Ph.D., Univ. Vienna, 1995; M.S., Indiana Univ., 1996; Ph.D., *ibid.*, 1999. (1999)

Robert L. Stevenson, *Professor of Electrical Engineering and Concurrent Professor of Computer Science and Engineering*. B.E.E.E., Univ. Delaware, 1986; Ph.D., Purdue Univ., 1990. (2003)

Aaron Striegel, *Assistant Professor*. B.S., Iowa State Univ., 1998; Ph.D., *ibid.*, 2002. (2003)

Douglas Thain, *Assistant Professor*. M.S., Univ. of Wisconsin, 1999; Ph.D., *ibid.*, 2004.

John J. Uhran Jr., *Senior Associate Dean for Academic Affairs in the College of Engineering, Professor of Computer Science and Engineering, and Professor of Electrical Engineering*. B.S., Manhattan College, 1957; M.S., Purdue Univ., 1963; Ph.D., *ibid.*, 1966. (1966)

Electrical Engineering

Chair:

Thomas E. Fuja

Director of Graduate Studies:

Gregory L. Snider

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Location: 275 Fitzpatrick Hall

E-mail: eegrad@nd.edu

Web: <http://www.ee.nd.edu>

The Program of Studies

The department offers programs leading to the M.S. and Ph.D. degrees in electrical engineering. Research areas include communications systems, control systems, signal and image processing, solid-state nanoelectronics, microwave electronics, optoelectronic materials and devices, and ultrahigh-speed and microwave-integrated circuits.

A research M.S. degree requires 30 credit hours beyond the B.S., with at least six credit hours coming from thesis research. A research M.S. also requires the completion and defense of an M.S. thesis. A nonresearch M.S. degree requires 30 credit hours of course work. All students must take a written qualifying examination at the end of their second semester of graduate study; successful completion of the exam is required to receive an M.S. degree and to continue to the Ph.D. program. Doctoral students must accumulate a minimum of 36 course credits beyond the B.S. degree, pass the qualifying and candidacy examinations, spend at least two years in resident study, and write and defend a Ph.D. dissertation.

Electronic Circuits and Systems. Approximately half of the faculty members have research interests in this area, which includes systems and control, signal and image processing, and communications. Projects are conducted in the following areas: turbo coding and iterative decoding; bandwidth efficient coding and modulation; radio architecture and codes for deep space and satellite communications; multimedia communication, including combined source and channel coding and restoration techniques for robust transmission of video/audio; statistical signal processing, including array signal processing (radar, sonar) and adaptive interference mitigation in wireless communications; identification and estimation, including blind identification, set membership estimation, adaptive equalization, and spectral analysis; digital filtering, including analysis and design of multidimensional filters, floating point realizations, robust stability of discrete-time systems, and nonlinear discrete-time systems; digital image processing, including data compression for image sequences, video data processing, tomographic image reconstruction, and image restoration/enhancement; control systems — e.g., investigations of stability, robust control, restructurable control, zero dynamics, modeling, and nonlinear servomechanism design; control of communication networks; hybrid and discrete event systems; and large-scale dynamic systems, including qualitative properties of large-scale dynamical systems addressing Lyapunov stability, input-output properties, and decomposition problems.

Electronic Materials and Devices. The other half of the faculty members have research interests in this area, which includes solid-state, nanoelectronics, and optoelectronic materials and devices. Current research projects include quantum device phenomena — e.g., optical properties, localization, universal conductance fluctuations, transport, interference, and resonant tunneling; nanoelectronic systems, including novel circuits-and-systems architectures for the nanoelectronic regime; experimental nanoelectronics, including nanofabrication of quantum dots, cryogenic characterization of single-electron effects, and ultra-small resonant tunneling diodes for ultrahigh-speed digital ICs; nanospectroscopy — high-spatial, spectral, and temporal resolution investigations of quantum dots via atomic force microscopy and near-field scanning optical microscopy; device degradation-studies of the electromigration behavior of ultrasmall metal interconnects and hot carrier effects in MOS oxide breakdown phenomena; optoelectronic materials-studies of the optical and material properties of compound semiconductor native oxides; optoelectronic devices-fabrication and characterization of waveguides and optical components for integrated photonic ICs, semiconductor lasers, and optical amplifiers; micromachining-fabrication of microelectromechanical devices utilizing Si processing, particularly reactive ion etching; and ultrahigh-speed circuits and devices for digital and microwave circuit applications.

Research Facilities

Several major research laboratories in the department support the study of electronic and photonic materials and devices and the analysis and design of communication systems, control systems, and signal and image processing algorithms.

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The Nanofabrication Facility allows fabrication of ICs and devices with geometries as small as 0.02 microns. The 3600-square-foot cleanroom contains a photomask generator, four contact mask aligners, a wafer stepper, nine furnace tubes, a plasma etcher, PECVD, APCVD, LPCVD, RIE, ICP Deep RIE, five evaporators, and a sputtering system. Inspection systems include an ISI SEM, Hitachi FESEM, a prism coupler, an interferometer, an ellipsometer, a variable-angle spectroscopic ellipsometer, two surface profilers, a four-point probe, and two Zeiss optical microscopes. A 50-kV SEM/EML system is available for nanolithography.

Advanced measurement facilities include low-temperature equipment such as a 3He cryostat capable of 300 mK and magnetic fields of 11T and a dilution refrigerator capable of 10mK, with fields up to 11T. A UHV-STM with atomic resolution is available for sample characterizations, along with two AFMs.

The High-Speed Circuits and Devices Laboratory houses a state-of-the-art microwave and high-speed digital device and circuits characterization facility. Full on-wafer testing capability, including analog characterization to 50 GHz and digital testing to 12.5 Gb/s, allows for comprehensive characterization of both analog and digital high-speed microelectronic circuits. In addition, facilities for high-speed optoelectronic characterization of detectors and photoreceiver subsystems for fiber-optic telecommunications are available. State-of-the-art microwave CAD, data collection, and data analysis facilities are also in place for rapid circuit design and characterization. The Semiconductor Optics Lab includes a 15-watt Argon-ion laser, a tunable mode-locked Ti:sapphire laser delivering femtosecond pulses, an He-Cd laser, and He cryostats with high spatial resolution and magnetic fields up to 12 Tesla.

The Laboratory for Image and Signal Analysis (LISA) features state-of-the-art workstations for development and analysis of digital signal, image, and video processing algorithms, as well as equipment for the acquisition, processing, and real-time display of HDTV sequences, cameras, frame grabbers, a flat-bed scanner, several high-definition, 24-bit color monitors, and specialized printers.

The Network Communications and Information Processing (NCIP) Lab focuses on research in multiuser and MIMO communications, software radio, distributed signal processing, sensor networks, and network protocol analysis, design, and implementation. Equipment includes a sensor networking testbed with 40 "Berkeley motes" of various generations, four Intel Stargate devices, sensor and programming boards, a software radio testbed with 6 USRP boards with basic transmit and receive daughterboards, RF test and measurement equipment (spectrum analyzer, arbitrary waveform generator, oscilloscope), a file server and several PCs and Macs.

The Embedded Sensor-Actuator Network (ESAN) Laboratory supports research into the use of embedded sensor-actuator networks in the monitoring and control of distributed physical processes. The lab has several Windows XP and Linux platforms for

cross-platform development of embedded systems ranging from 586 and ARM single board computers to 8-bit micro-controller platforms such as Crossbow's MICA2 embedded sensor node. The lab has a system of ceiling-mounted cameras and several autonomous robotic systems (K-team Koala and ActivMedia Pioneer 3 robots) supporting research work into multi-agent coordination over ad hoc wireless networks. The lab also has an embedded wireless sensor network used to support research into sensor network middleware for environmental monitoring.

The Communication Systems Research Laboratory and the Wireless at Notre Dame (WAND) Laboratory support a research program in physical-layer communication signal processing, coding, and modulation, as well as novel transceiver architectures. It has a full complement of RF measurement equipment, wide-band digitizers, and connections to roof antennas as well as a full complement of supporting workstations.

The department has its own electronics shop run by a full-time technician, and the solid-state laboratories are overseen by a full-time professional specialist and a full-time technician. Another full-time professional specialist manages the department's undergraduate laboratories.

Application

GRE General Test scores, TOEFL scores for international students, two transcripts showing academic credits and degrees, letters of recommendation from 3 or 4 college faculty members and a statement of intent should be sent to the Graduate Admissions Office, University of Notre Dame, 502 Main Building, Notre Dame, Indiana 46556.

The GRE should be taken no later than January preceding the academic year of enrollment, particularly if financial aid is desired.

The application deadlines are November 1 for the spring semester and February 1 for fall admission.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

60532. Advanced Instrumentation and Measurement (3-3-0)

Prerequisite: EE 30342. This course covers the general information on instrumentation and measurements. It aims to give the broad introduction to electronic instrumentation as well as provide in depth coverage of modern instrumentation systems used in cutting-edge research and applications in microelectronics. Significant

attention is paid to cover noise and interference reduction and signal conditioning. Various examples of practical applications are explained in detail.

60542. Analog Integrated Circuit Design (3-3-0)

Prerequisite: EE 30342. This course covers bipolar and complementary metal oxide semiconductor (CMOS) amplifier design, including frequency response, noise, feedback, stability, and compensation. Operational amplifiers, bandgap reference circuits, oscillators, and phase lock loops are analyzed. Both analytic and SPICE circuit design methods are developed.

60546. IC Fabrication
61546. IC Fabrication Laboratory (3-3-0)

Corequisite: EE 61546. This course introduces the students to the principles of integrated circuit fabrication. Photolithography, impurity deposition and redistribution, metal deposition and definition, and other topics. Students will fabricate a 5000 transistor CMOS LSI circuit.

60548. Electromagnetic Theory (3-3-0)

Prerequisite: EE 30358. The fundamental laws of Ampere, Gauss and Faraday leading to Maxwell's equations. Solutions of boundary value problems in various coordinates.

60550. Linear Systems (3-3-0)

Prerequisite: EE 30354 or equivalent. State variable descriptions of linear dynamical systems. Solution of state equations for continuous-time and discrete-time systems. Input-output descriptions: impulse response and transfer function. Controllability, observability, canonical forms, stability. Realizations of input-output descriptions. State feedback and state observers. Polynomial matrix and matrix fraction descriptions of linear, time-invariant systems.

60551. Mathematical Programming (3-3-0)

Theory of constrained optimization complemented by comprehensive computing exercises. Linear programming and convexity. Simplex algorithm. Optimality conditions for nonlinear optimization. Convergence of algorithms. Interior point methods in linear programming.

60553. Advanced Digital Communications (3-3-0)

Prerequisite: EE 40453 and EE 60563 or equivalent. Review of the signal space approach to communication theory and the derivation of optimum receiver principles. Intersymbol interference and equalization. Modulation and coding for fading and wireless channels. Introduction to spread spectrum communication and digital cellular systems.

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60554. Computer Communication Networks
(3-3-0)

Prerequisite: EE 60563 or equivalent. Introduction to queuing systems. Network design for centralized and distributed networks. Routing and flow control algorithms. Polling and random access protocols, packet radio, satellite networks, and local area networks.

60555. Multivariable Control
(3-3-0)

Prerequisite: EE 60550 or equivalent. This course studies the design of robust optimal controllers for linear continuous-time systems. Topics include: normal linear signal/system spaces, matrix fraction descriptions, internal stability, uncertain systems, robust stability, robust performance, SISO/MIMO loopshaping, linear fractional transformations and the generalized regulator problem, H₂/H-∞ optimal control, algebraic Riccati equation, and balanced model reductions.

60556. Fundamentals of Semiconductor Physics
(3-3-0)

Prerequisite: EE 30357, EE 40476 or equivalent. Treatment of the basic principles of solids. Topics include periodic structures, lattice waves, electron states, static and dynamic properties of solids, electron-electron interaction transport, and optical properties.

60558. Microwave Circuit Design and Measurement
61558. Microwave Circuit Design & Measurements
Lab
(3-3-0)

This course is an introduction to microwave circuit design and analysis techniques, with particular emphasis on applications for modern microwave communication and sensing systems. An integrated laboratory experience provides exposure to fundamental measurement techniques for device and circuit characterization at microwave frequencies. Students will develop an enhanced understanding of circuit design and analysis principles as applied to modern microwave circuits, as well as become familiar with design techniques for both hand analysis and computer-aided design. An appreciation for basic measurement techniques for characterization of microwave devices, circuits and systems through laboratory experiments will also be developed. Fall.

60563. Random Vectors, Detection & Estimation
(3-3-0)

Fundamentals of probability, random variables, and detection and estimation theory for signal processing, communications, and control. Vector spaces of random variables. Bayesian and Neyman-Pearson hypothesis testing. Bayesian and maximum likelihood estimation. Minimum-variance unbiased estimators and the Cramer-Rao bounds.

60565. Optimal Control
(3-3-0)

Prerequisite EE 40455, EE 60550 or equivalent. Optimal control is concerned with the synthesis of feedback control laws that minimize some specified measure of control system performance. This course is a rigorous introduction to the classical theory of optimal control. The topics covered by this course

include: 1) the calculus of variations, 2) Pontryagin's principle, 3) dynamic programming, and 4) stochastic dynamic programming.

60566. Solid-State Devices
(3-3-0)

Prerequisite: EE 60556 or equivalent. In-depth analysis of electronic devices with an emphasis on both homojunction and heterojunction devices. Operation of p-n junctions is analyzed, along with BJTs, MOSFETs, and heterojunction devices such as HBTs and MODFETs.

60568. Modern Photonics
(3-3-0)

Prerequisite: EE 30347 or EE 60556. A hands-on overview of the important role of photons alongside electrons in modern electrical engineering. Photonics technologies studied include lasers, optical fibers, integrated optics, optical signal processing, holography, optoelectronic devices and optical modulators. A survey of the properties of light, its interactions with matter, and techniques for generating, guiding, modulating and detecting coherent laser light.

60571. Statistical Signal Processing
(3-3-0)

Prerequisite: EE 60563 or equivalent. This course covers essential statistical concepts for communications and signal and image processing. The topics include Bayesian estimation methods such as MMSE and MAP as well as MLE; optimality theory of estimation that includes concepts of sufficiency, consistency, and efficiency; Fisher's information; confidence intervals and basic hypothesis testing; classical Fourier-analysis based spectral analysis methods and modern eigen-decomposition based methods such as MUSIC and ESPRIT; interference suppression for various communication systems including wireless multiuser communications.

60573. Random Processes, Detection, & Estimation
(3-3-0)

Prerequisites: EE 60563 or equivalent. Fundamentals of random processes, including characterization, convergence issues, covariance and power spectral density. Spectral representations of stochastic processes using Karhunen-Loeve, Fourier, and sampling expansions. Detection and estimation from continuous waveform observations. Other topics: linear prediction and filtering adaptive; Wiener and Kalman filters.

60576. Microelectronic Materials
(3-3-0)

Principles of materials science applied to materials issues in fabrication, operation, and reliability of microelectronic devices.

60580. Nonlinear Control Systems
(3-3-0)

Prerequisite: EE 40455 or equivalent. This course studies the analysis and design of nonlinear feedback control systems. Topics include: Lyapunov stability, Input-Output Stability of Perturbed Systems, Model-reference adaptive control, sliding mode control, Lyapunov redesign methods, back stepping, and feedback linearization.

60581. Digital Image Processing
(3-3-0)

Prerequisite: EE 60563. An introduction to the manipulation and analysis of digital images, intended as a foundation for research in such fields as visual communications, medical imaging, and image analysis. Specific topics include human visual effects, filtering, compression, restoration, and reconstruction.

60587. Quantum Mechanics for Electrical Engineers
(3-3-0)

The course focuses on those aspects of quantum theory that are of particular relevance to electrical engineering. It is intended to give seniors and first-year graduate students a working knowledge of quantum mechanics at a level sufficient to illuminate the operation of standard and advanced quantum devices. Topics include classical mechanics versus quantum mechanics, early quantum theory, Schrödinger formulation, time-dependent and time-independent Schrödinger equation, Dirac formulation, Bloch theorem, magnetic effects, open quantum systems, and density matrices.

60660. Optical Characterization of Nanostructures
(3-3-0)

Prerequisites: Undergraduate quantum mechanics, electricity and magnetism, and solid state physics. Graduate students of chemistry, engineering, materials science, and physics are welcome with approval of the instructor. This course treats the optical characterization techniques that are employed to investigate the physical properties of modern semiconducting materials. A brief overview will first be given of the basic science and growth of these materials, and the theory for their optical characterization. A detailed description will then be provided of measurement techniques, illustrated by examples of the application of these techniques to current semiconductor research and technology. Emphasis will be given to the use of these techniques to investigate low dimensional nanostructures such as quantum wells, wires, and dots.

60664. Wireless Communications
(3-3-0)

Prerequisites: EE 60553 or EE 60563. This course will address the physical layer of wireless communication channels. Topics will include: modeling of the wireless channel (e.g. propagation loss, fading), interference models and cell planning, multiple access, modulation and equalization techniques, well-suited to wireless communications. Standards for cellular systems and wireless LANs will be used to motivate and illustrate.

63502. Solid State Seminar
(1-1-0)

This course consists of lectures by faculty, senior graduate students, and visiting lecturers covering a broad range of topics in electronic materials, devices and circuits. Students read papers in preparation for the weekly talks and are given a comprehensive examination.

ELECTRICAL ENGINEERING

66597. Directed Readings
(0-0-0)

Individualized instruction in the areas of faculty and student interest. Course content and credit will be determined by faculty members offering the course.

67001. Special Studies
(0-0-0)

Individual or small-group study under the direction of a faculty member in a graduate subject not currently covered by any University course. Individual or small-group study under the direction of a faculty member in a graduate subject not currently covered by any University course.

67003. Advanced Digital Signaling Process
(3-3-0)

Prerequisite: EE 40471 or equivalent. This course covers advanced topics of digital filter design, finite wordlength effects, multirate digital signal processing, and select topics of adaptive digital filters and spectrum analysis.

67010. Instrumentation for Nanoelectronics
(3-3-0)

Prerequisite: EE 30342. This lab course is intended to give students hands-on practice on measurements and applications of nanoelectronics devices combined with development and implementation of interfacing instrumentation. Single-electron and nanomagnetic devices are the primary subjects of the course.

67011. Topics in Wireless Networking
(3-3-0)

After reviewing the characteristics of the wireless channel, we discuss current cellular and local area wireless networks (GSM, IS-95, UMTS, 802.11, 802.15, HiperLAN, HomeRF, Bluetooth) to gain insight into their architectures and protocols. The second part of the course covers wireless ad hoc and sensor networks, addressing the challenges and proposed solutions, with an emphasis on modeling and cross-layer protocol design aspects. In the third part, we will discuss emerging wireless technologies such as ultra-wideband, software-defined radio, virtual antenna arrays, and cognitive radio techniques and their use in future wireless networks.

67014. Epitaxial Nanostructures
(3-3-0)

The class will cover advanced topics on epitaxial growth of semiconductor nanostructures, transport, device physics and technology. The class will comprise of finding, reading, and analysis of research papers, writing reports, discussions, and oral presentations. Students will be required to think independently, come up with new ideas, and work under the instructor's guidance with the intention of publishing their work.

67015. Robust Stability & Modern Applications
(3-3-0)

Coverage of results in the area of robust stability of dynamical systems. The emphasis is placed on the case of structured uncertainties, i.e. uncertainties that are described in the coefficient space. The course is self contained and requires no prior graduate level knowledge in the area of stability, systems,

or control. All major theorems will be shown from first principles. The material covered stretches from elementary concepts such as the principle of argument, Hurwitz and Schur stability and the Hermite-Biehler Theorem to the use of piece-wise linear Lyapunov functions and semi-groups for the analysis of time-varying/nonlinear systems stability. The developed concepts are illustrated using examples from the areas of networking, in particular congestion control, and sensor-actuator networks and systems.

67016. Principles of Vacuum Systems for Microelectronics
(1-1-0)

Prerequisite: EE 40446, EE 60546 or consent of instructor. Fundamentals of vacuum environments and systems for microelectronics applications. A survey of vacuum pumps, gauges, and practices will be presented.

67017. SEM and Nanofabrication
(1-1-0)

Prerequisite: EE 40446, EE 60546 or consent of instructor. A short introduction to fundamentals of scanning electron microscopy and electron beam lithography. SEM fundamentals will be used to illustrate issues in nanofabrication by EBL.

67018. Advanced Nanolithography
(1-1-0)

Prerequisite: EE 40446, EE 60546 and EE 67016 or consent of instructor. A short introduction to the wide array of technologies used for performing lithography below 0.1 micron.

67020. Wide Bandgap Semiconductors
(3-3-0)

This course will discuss the development of wide bandgap semiconductors, including III-V Nitrides, II-VI semiconductors, SiC and diamond. Growth, material properties, device physics and technology will be addressed. The class will consist of reading and analysis of research papers, writing reports, discussions, and oral presentations. Students will be required to think independently, come up with new ideas, and work under the instructor's guidance with the intention of publishing their work.

67598. Special Studies
(0-0-0)

Individual or small-group study under the direction of a faculty member in a graduate subject not currently covered by any University course.

68599. Thesis Direction
(0-0-0)

Research to satisfy the six credit hours required for the master's degree.

80603. Robust Stability of Linear Systems
81603. Transmitting Electron Microscope Lab
(4-3-1)

Corequisite: EE 81603. Introduction to Transmission Electron Microscopy (TEM) applied to metals, ceramics and semiconductors. TEM optics, electron diffraction, image formation modes and mechanisms, specimen preparation and practical TEM operation, and analytical techniques for chemical analysis.

80650. Advanced Linear Systems Design
(3-3-0)

Prerequisite: EE 60550 or consent of instructor. Applications of modern algebra to problems of complicated linear system design. Quotients and state variable design; freedom and system-matrix design; tensors and multilinear design.

80653. Information Theory
(3-3-0)

Corequisite: EE 60563. A study of Shannon's measure of information to include: mutual information, entropy, and channel capacity; the noiseless source coding theorem; the noisy channel coding theorem; rate distortion theory and data compression; channel coding and random coding bounds.

80654. Coding Theory
(3-3-0)

Corequisite: EE 60563. Error control coding techniques for digital transmission and storage systems. Linear block codes, cyclic codes, BCH codes, and Reed-Solomon codes. Syndrome decoding. Convolutional codes, maximum likelihood decoding, maximum a posteriori probability decoding, and sequential decoding. Block and trellis coded modulation. Low density parity check codes and turbo codes. Applications to computer memories, data networks, space and satellite transmission, data modems.

80655. Digital Control Systems
(3-3-0)

Prerequisite: EE 40455 and EE 60550 or equivalent. Analysis and design of discrete-time and sampled-data control systems. State space descriptions and transfer function descriptions using the z-transform. Control design using classical (root-locus, Bode, Nyquist), state space, and polynomial techniques.

80656. Advanced. Semiconductor Physics
(3-3-0)

Prerequisites: EE 60587. The class will provide graduate students with a solid understanding of the basic underlying physics of semiconductors that lead to practical applications. Starting from electronic bandstructure, the course will cover topics such as electron-phonon interactions, charge scattering and transport, and optical properties of semiconductors. The effects of quantum confinement in modern nanoscale electronic and optical devices will be covered in detail. The course is geared to be a bridge between physics and engineering; much of the physical concepts covered will be shown to be the basis of practical semiconductor devices currently in commercial production. The students will be required to choose a topic of research early in the class and make presentations and write term papers. The students will be evaluated through their assignment solutions, reports, and presentations.

80663. Information and Complexity
(3-3-0)

This course provides and introduction to the basic measures used to characterize information and complexity. Topics include: NP completeness, Kolmogorov Complexity, and entropy. All of these concepts are then used to study cryptographic systems.

ELECTRICAL ENGINEERING

80665. Noncooperative Optimal Control: Dynamic Games (3-3-0)

Prerequisites: EE 60555 or consent of instructor. History of the Optimal Control Problem. Ideas of Jacobi, of Lagrange, of Hamilton, and of Pontryagin. Necessary conditions for solutions; sufficient conditions for solutions. Solution settings in terms of partial differential equations and in terms of two-point boundary value problems. Extensions to the case of competing control players. Introduction to the theory of dynamic games. Two-player, zero-sum games. Stochastic games. Game value as a random variable. Cumulants as a random variable description. Cumulant games.

80666. Advanced Solid State Devices (3-3-0)

Prerequisites: EE 60566. This course provides in-depth coverage of electronic devices, ranging from conventional to innovative devices. Topics include MOSFETs, resonant tunnel diodes, single-electron devices, power devices, and heterojunction devices. Particular attention is paid to recent development in device research.

80673. Advanced Stochastic Processes (3-3-0)

Prerequisites: EE 60563, EE 60573. Stochastic processes are found in probabilistic systems that evolve with time. This course introduces the fundamentals of stochastic processes and the application of stochastic theory to problems in engineering and science. Bernoulli processes, renewal theory, and Markov chains will be covered.

80675. Stochastic Control Theory (3-3-0)

Prerequisite: EE 60555 or consent of instructor. Optimal control in the presence of process noise. Cost as a random variable. Minimizing average cost over many realizations of a process. Optimal control when the system will operate only a small number of times. Distribution of the cost. Description of stochastic cost by moments or by cumulants. Optimal stochastic control of cost cumulants. Application to the protection of buildings from earthquakes.

87005. Advanced Topics in Multiuser Communications (3-3-0)

Senior graduate course exploring advanced topics in multiuser communications, signal processing, and information theory. Example topic areas include: multiple-access channels; multi-user detection; broadcast channels; communication with side information and watermarking; multihop and relay networks; multi-antenna and multi-carrier systems. Objectives for the course are to develop understanding of the basic models, fundamental performance limits and tradeoffs, and practical approaches for communication in these environments. Interaction and cross-fertilization of ideas from different research areas will also be emphasized.

87006. High Speed Devices (3-3-0)

This course consists of a series of lectures where the fundamental properties of high-speed devices are presented and discussed. In addition, each student has to present a student paper related to one selected device. The paper should present the device, design, the principle of operation, typical figures of merit and possible advantages and drawbacks.

87008. Advanced Topics: Iterative Decoding (3-3-0)

This course will address recent innovations pertaining to the iterative decoding of graph-based error control codes. Particular emphasis will be placed on the belief propagation algorithm as applied to low-density parity check (LDPC) codes and to the maximum a posteriori (MAP) algorithm as applied to turbo codes. Application of these techniques to bandwidth-efficient modulation will also be considered.

87012. Advanced Electron Devices (3-3-0)

In-depth coverage of electronic devices, ranging from conventional devices to innovative devices. Topics include MOSFET's resonant tunnel diodes, single electron devices, power devices, and heterojunction devices. Particular attention is paid to recent developments in device research.

88600. Nonresident Thesis Research (1-1-0)

Required of nonresident master's students who are completing their theses in absentia and who wish to retain their degree status.

87698. Special Studies (0-0-0)

This number is reserved for specialized and/or experimental graduate courses. Content, credit, and instructor will be announced by department.

88699. Research and Dissertation (0-0-0)

Research and dissertation for resident doctoral students.

88700. Nonresident Dissertation Research (1-0-0)

Required of nonresident doctoral students who are completing their dissertations in absentia and who wish to retain their degree status.

83701. Graduate Seminar (0-0-0)

Lectures by speakers from inside and outside the Notre Dame community on subjects of current research interest.

Faculty

Panos J. Antsaklis, *Director of the Center for Applied Mathematics, the H. C. and E. A. Brosey Professor of Electrical Engineering, and Concurrent Professor of Computer Science and Engineering*. Dipl., National Technical Univ. of Athens, 1972; Sc.M., Brown Univ., 1974; Ph.D., *ibid.*, 1977. (1980)

Peter H. Bauer, *Professor*. Diplom. Engineer in Electrical Engineering, Technische Universitaet Muenchen, 1984; Ph.D., Univ. of Miami, 1987. (1988)

Gary H. Bernstein, *Associate Chair and Professor*. B.S.E.E., Univ. of Connecticut, 1979; M.S.E.E., Purdue Univ., 1981; Ph.D., Arizona State Univ., 1987. (1988)

William B. Berry, *Professor Emeritus*. B.S.E.E., Univ. of Notre Dame, 1953; M.S.E.E., *ibid.*, 1957; Ph.D., Purdue Univ., 1963. (1964)

Kevin Bowyer, *Chair and the Schubmehl-Prein Professor of Computer Science and Engineering and Concurrent Professor of Electrical Engineering*. B.S., George Mason Univ., 1976; Ph.D., Duke Univ., 1980. (2001)

Jay B. Brockman, *Associate Professor of Computer Science and Engineering and Concurrent Associate Professor of Electrical Engineering*. Sc.B., Brown Univ., 1982; M.S.E.E., Carnegie Mellon Univ., 1988; Ph.D., *ibid.*, 1992. (2002)

Oliver M. Collins, *Professor*. B.S., California Institute of Technology, 1986; M.S.E.E., *ibid.*, 1987; Ph.D., *ibid.*, 1989. (1995)

Daniel J. Costello, *the Leonard Bettex Professor of Electrical Engineering*. B.S.E.E., Seattle Univ., 1964; M.S.E.E., Univ. of Notre Dame, 1966; Ph.D., *ibid.*, 1969. (1985)

Patrick J. Fay, *Associate Professor*. B.S.E.E., Univ. of Notre Dame, 1991; M.Eng., Univ. of Illinois at Urbana-Champaign, 1993; Ph.D., *ibid.*, 1996. (1997)

Thomas E. Fuja, *Chair and Professor*. B.S.E.E., Univ. of Michigan, 1981; B.S.Comp.E., *ibid.*, 1981; M.S.E.E., Cornell Univ., 1983; Ph.D., *ibid.*, 1987. (1998)

Martin Haenggi, *Assistant Professor*. Dipl. El.-Ing. ETH, ETH Zurich, 1995; Dipl. NDS ETH, *ibid.*, 1998; Ph.D., *ibid.*, 1999 (2000)

Douglas C. Hall, *Associate Professor*. B.S., Miami Univ., 1985; M.S., Univ. of Illinois at Urbana-Champaign, 1988; Ph.D., *ibid.*, 1991. (1994)

Yih-Fang Huang, *Professor of Electrical Engineering and Concurrent Professor of Computer Science and Engineering*. B.S.E.E., National Taiwan Univ., 1976; M.S.E.E., Univ. of Notre Dame, 1979; Ph.D., Princeton Univ., 1982. (1982)

Debdeep Jena, *Assistant Professor*. B.Tech, Indian Institute of Technology, Kanpur, 1998; Ph.D., Univ. of California, Santa Barbara, 2003. (2003)

Thomas H. Kosel, *Associate Professor*. B.S., Univ. of California, 1967; M.S., *ibid.*, 1970; Ph.D., *ibid.*, 1975. (1978)

J. Nicholas Laneman, *Assistant Professor*. B.S.E.E., Washington Univ., St. Louis, 1995; B.S.C.S., *ibid.*, 1995; S.M.E.E., Massachusetts Institute of Technology, 1997; Ph.D., *ibid.*, 2002. (2002)

Michael D. Lemmon, *Professor*. B.S.E.E., Stanford Univ., 1979; M.S.E.E., Carnegie Mellon Univ., 1987; Ph.D., *ibid.*, 1990. (1990)

Craig S. Lent, *the Frank M. Freimann Professor of Electrical Engineering*. A.B., Univ. of California, Berkeley, 1978; Ph.D., Univ. of Minnesota, 1984. (1986)

Christine M. Maziar, *Vice President and Associate Provost of the University and Professor of Electrical Engineering*. B.S.E.E., Purdue Univ., 1981; M.S.E.E., *ibid.*, 1984; Ph.D., *ibid.*, 1986. (2004)

James L. Merz, *the Frank M. Freimann Professor of Electrical Engineering*. B.S., Univ. of Notre Dame, 1959; M.A., Harvard Univ., 1961; Ph.D., *ibid.*, 1967. (1994)

Anthony N. Michel, *the Frank M. Freimann Professor Emeritus of Engineering*. B.S.E.E., Marquette Univ., 1958; M.S., *ibid.*, 1964; Ph.D., *ibid.*, 1968; D.Sc., Tech. Univ., Graz, 1973. (1984)

Alexander Mintairov, *Research Associate Professor*. Ph.D., Ioffe Physical Technical Institute, Russia, 1987. (2003)

Alexei Orlov, *Research Associate Professor*. Ph.D., Russian Academy of Science, 1990.

John Ott, *Assistant Professional Specialist*. M.S.E.E., Univ. of Notre Dame, 1998.

Wolfgang Porod, *Director of the Center for Nano Science and Technology and the Frank M. Freimann Professor of Electrical Engineering*. M.S., Univ. of Graz, 1979; Ph.D., *ibid.*, 1981. (1986)

Joachim J. Rosenthal, *Professor of Mathematics and Concurrent Professor of Electrical Engineering*. Vordiplom, Univ. Basel, 1983; Diplom, *ibid.*, 1986; Ph.D., Arizona State Univ., 1990. (1990)

Michael K. Sain, *the Frank M. Freimann Professor of Electrical Engineering*. B.S., St. Louis Univ., 1959; M.S., *ibid.*, 1962; Ph.D., Univ. Illinois, 1965. (1965)

Ken D. Sauer, *Associate Professor*. B.S.E.E., Purdue Univ., 1984; M.S.E.E., *ibid.*, 1985; M.A., Princeton Univ., 1987; Ph.D., *ibid.*, 1989. (1989)

R. Michael Schafer, *Professional Specialist*. B.S.E.E., Univ. of Notre Dame, 1975; M.S.E.E., *ibid.*, 1977; Ph.D., *ibid.*, 1980. (1996)

Alan C. Seabaugh, *Professor*. B.S.E.E., Univ. of Virginia, 1977; M.S.E.E., *ibid.*, 1979; Ph.D., *ibid.*, 1985. (1999)

Gregory Snider, *Director of Graduate Studies and Associate Professor*. B.S.E.E., California State Polytechnic Univ., 1983; M.S.E.E., Univ. of California, Santa Barbara, 1987; Ph.D., *ibid.*, 1991. (1994)

Robert L. Stevenson, *Professor of Electrical Engineering and Concurrent Professor of Computer Science and Engineering*. B.E.E., Univ. of Delaware, 1986; Ph.D., Purdue Univ., 1990. (1990)

Paulo Tabuada, *Assistant Professor*. B.S., Univ. Tecnica de Lisboa, Lisbon, Portugal, 1998; Ph.D., *ibid.*, 2002. (2003)

John J. Uhran Jr., *Senior Associate Dean for Academic Affairs in the College of Engineering, Professor of Computer Science and Engineering, and Professor of Electrical Engineering*. B.S., Manhattan College, 1957; M.S., Purdue Univ., 1963; Ph.D., *ibid.*, 1966. (1966)

Grace Xing, *Assistant Professor*. B.S., Peking Univ., 1996; M.S.E.E., Lehigh Univ., 1998; Ph.D., Univ. of California, Santa Barbara, 2003. (2004)

Engineering and Law Dual Degree Program

The dual degree program in engineering and law is designed for law students who are interested in pursuing careers in areas such as patent, environmental, telecommunications, or similar law specialties. To be eligible for the master of engineering degree, the candidate must have a B.S. in an A.B.E.T. accredited engineering or computer science program and must also be a candidate for the juris doctor degree in the Notre Dame Law School. The master's of engineering program is not available as an individual degree program.

To be awarded both degrees, the candidate must complete a minimum of 99 credit hours, 75 in law and 24 in the engineering program. The engineering degree awarded will be the master of engineering with a concentration in one of the engineering disciplines offered in Notre Dame's division of engineering. The course work-only master's program requires the completion of 24 credit hours of engineering, mathematics, or science courses acceptable to the appropriate engineering department; six credit hours of appropriate law courses; and a master's examination. Courses for the M.Eng. will be chosen in consultation with an adviser in the student's engineering department. The recommended distribution of engineering courses in the Law School curriculum is one each semester during the first and third years of study and two each semester during the second year. (<http://www.nd.edu/engineer/prospects/images/lawdual.pdf>)

Admission

Admission to the program requires a separate application to each school. Admissions decisions will be made independently by the Law School and by the Graduate School.

Law School applications may be obtained from the Director of Admissions, P.O. Box 959, University of Notre Dame, Notre Dame, IN 46556-0959, telephone (574) 631-6626.

For further information about the engineering program, contact the Office of Graduate Admissions by telephone at (574) 631-7706 or by email at gradad.1@nd.edu.

The Division of Humanities

The Division of Humanities offers graduate programs from the master's in English, history, history and philosophy of science, literature, medieval studies, philosophy, and theology. Master's degree programs are also available in art, creative writing, early Christian studies, and Romance languages and literatures. Because of the increasingly interdisciplinary nature of research in many fields, joint Ph.D. programs (e.g. in mathematics and philosophy, or history and philosophy of science and physics) are available as well.

Several centers and institutes provide a framework for multidisciplinary research in the humanities. The Medieval Institute, for instance, coordinates the teaching and research of the largest contingent of medievalists of any North American university. The Keough-Naughton Institute for Irish Studies is an interdisciplinary project devoted to teaching and research in Irish culture in all its internal and external relations. The Nanovic Institute provides a forum for the discussion of key issues in Europe across all fields. The Erasmus Institute brings resources from two millennia of Catholic thought to bear on problems in the humanities, social sciences, and arts. The Notre Dame Center for Ethics and Culture supports scholarly research in ethics and its dissemination in the classroom and the broader culture. The Center for Philosophy of Religion promotes, supports, and disseminates scholarly work in the philosophy of religion and Christian philosophy. Descriptions of these and other University research institutes and centers may be found elsewhere in this *Bulletin*.

The division attempts to prepare graduate students to be expert researchers in a specific area, excellent pedagogues, and broad intellectuals. The programs provide training in research through seminars, opportunities to work with faculty in their research, support to become engaged in professional societies, and rigorous standards for dissertations. Many of the departments have formal pedagogical training programs and make use of the Kaneb Center. The John A. Kaneb Center for Teaching and Learning sponsors a program of workshops, presentations, and consultations that highlight the best teaching practices and learning environments and encourage and assist the efforts of Notre Dame's faculty and teaching assistants to nurture and sustain these. The residential nature of the programs create a rich intellectual environment in which faculty and graduate students interact with one another and among themselves on a regular basis.

Art, Art History, and Design

Chair:

Dennis Doordan

Director of Graduate Studies:

Martina Lopez

Telephone: (574) 631-7602

Fax: (574) 631-6312

Location: 306 Riley Hall

E-mail: art@nd.edu

Web site: <http://www.nd.edu/~art>

The Program of Studies

The Department of Art, Art History, and Design offers the master of fine arts (M.F.A.) degree in studio art and design and the master of arts (M.A.) degree in art history. In studio art and design, the department also awards the M.A. degree, but only to students who are not accepted to degree candidacy in the M.F.A. program.

The aim of the graduate program is to educate qualified, promising students in various aspects of creative activity and art history. Studio and design students may concentrate in ceramics, design, painting, photography, printmaking, and sculpture, or in a combination of these disciplines. Art history students select from a range of course offerings to fulfill their professional interests. In addition to specific courses, graduate students may pursue an area of interest through a system of independent study with a faculty

adviser and a graduate committee selected by the student. Students are expected to develop a personal direction that culminates in a professional exhibition of visual work or a research project in art history.

The Master of Fine Arts Degree

The master of fine arts degree (M.F.A.) at Notre Dame is for artists and designers with exceptional talent and strong academic skills. The program combines studio work with academic studies in art history and criticism. The College Art Association and most other professional institutions of higher education recognize the M.F.A. as the terminal degree for artists and designers. This degree has become the standard prerequisite for those who intend to teach at the college level. It is also appropriate for individuals seeking to further develop their professional careers as artists and designers.

The M.F.A. degree is a studio and research degree that requires three years or six semesters of study and 60 graduate credit hours with a B (3.0) or better average, including nine credit hours of art history, three credit hours in ARHI 63570 (Graduate Seminar) and 10 credit hours of ARST 78708 (Thesis Direction). Additional requirements include:

- Successful completion of ARST 62704 (Teaching Methods) each year.
- Successful completion of the seminar offered in the student's area of study each semester.
- Admission to the third year of the M.F.A. program (M.F.A. candidacy).

- The successful completion of a written thesis approved by the student's thesis committee.
- The completion of a thesis project, an exhibition of creative work that is approved by the entire art and design faculty.

Students who are not in residence but still in the process of finishing an M.F.A. degree must be enrolled for a minimum of one credit hour of ARST 78706 (Nonresident Thesis Research) each semester.

Admission

Prerequisites for admission ordinarily include the B.F.A. degree in studio art or design, including courses in art and art history. However, students of exceptional merit who have earned the B.A. or B.S. degree in studio art or design or the equivalent will be considered. All applicants must have a B (3.0) or better average in undergraduate major courses.

Art and design majors are evaluated primarily on the basis of a portfolio of 20 slides of recent work and three letters of recommendation. All applicants must write a statement of intent indicating their goals for the M.F.A. degree and their expectations for graduate studies.

CD Portfolio Submissions: A CD-ROM is an optional method for submitting a portfolio. Submissions however must follow these guidelines to be considered.

- The digital portfolio should be developed cross-platform or there should be both Apple

ART, ART HISTORY, AND DESIGN

Macintosh and PC computer versions of the portfolio submitted. Suggested development applications include Apple QuickTime, Microsoft PowerPoint, Macromind Director, Macromind Flash, or it can be a Web site on a CD-ROM.

- Still images should be organized in a straightforward slide show arrangement.
- The file size of the images should not exceed 700 pixels in height or 1000 pixels in width at a resolution of 72 dpi.
- The CD and its case or envelope must be labeled with the applicant's name, contact information, software needed for launching the files, and viewing directions.

To be considered for tuition and stipend scholarships, applications should be received by February 1.

The Master of Arts Degree: Art History

The M.A. prepares the student for more advanced graduate work by providing him or her with the opportunity to solidify general and specialized art historical knowledge and to hone research skills. The degree may also serve as a foundation for employment or further study in fields such as museology, visual image management, and art dealing and investment. The M.A. in art history is not a terminal degree. A doctorate is normally required to teach at the collegiate level.

The M.A. in art history requires the completion of 36 credit hours of graduate study, including six credit hours of thesis research, with a B (3.0) or better average. A normal course load is from nine to 12 credit hours per semester. The successful completion of ARHI 63576 (Art History Methods) is required. Students must also successfully complete four seminars in addition to ARHI 63576, and take at least one course or seminar from each of the core art history faculty. Students who are not in residence but still in the process of finishing an M.A. degree must be enrolled for a minimum of one credit hour of ARHI 68574 (Nonresident Thesis Research) each semester.

Additional requirements include:

- The successful completion of a comprehensive examination. This examination is taken at the beginning of the fall semester of the second year of study.
- The successful completion of a written thesis. The student will be expected to select a thesis topic and adviser by the end of the first year of study. The finished thesis must be read and approved by the adviser and two other readers.
- Evidence of reading ability in one foreign language, either German, French, or another language approved by the graduate adviser. Reading ability is normally demonstrated by obtaining a passing grade on the appropriate Graduate Reading Examination administered by the University. This requirement must be fulfilled during the first year of graduate study.

Admission

Admission to the art history program is based on Graduate Record Examination scores, evaluation of undergraduate transcripts, a writing sample, and letters of recommendation. Successful applicants are normally expected to hold a B.A. in art history or its equivalent (20 to 30 credit hours in art history). Students with insufficient undergraduate art history credits may be provisionally admitted to the program with the stipulation that they make up any deficiencies before being admitted to regular candidacy. Undergraduate courses taken to rectify deficiencies will not count toward the 36-credit-hour degree requirement.

To be considered for tuition and stipend scholarships, applications should be received by February 1.

The Master of Arts Degree: Studio Art and Design

The non-research master of arts degree (M.A.) program in studio art and design is granted to M.F.A. students who either are not admitted to M.F.A. candidacy or choose to leave the M.F.A. program with an M.A. degree. The department does not regularly admit students to this program. The non-research M.A. degree requires 40 graduate credits, including six credit hours in art history and three credit hours in ARHI 63570 (Graduate Seminar). Students who are not in residence but still in the process of finishing an M.A. degree must be enrolled for a minimum of one credit hour of ARST 78706 (Nonresident Thesis Research) each semester.

Studio Art and Design Course Descriptions

Graduate instruction in studio and design is done primarily on an independent study basis. Students take credit hours each semester with faculty in their chosen media area. The program fosters an interdisciplinary environment that allows students to also study with faculty from other areas of the department to meet their creative objectives. Students meet regularly with faculty and graduate students for critiques and seminars. Course listings below reflect the various media areas in which a student can take credits.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

Art History Program Courses (ARHI)

63105. Topics in Greek and/or Roman Art (3-3-0)

Topics course on special areas of Greek and/or Roman art.

60120. Classical Greek Art (3-3-0)

This course analyzes and traces the development of Greek architecture, painting, and sculpture in the historical period, from the eighth through the second centuries BC, with some consideration of prehistoric Greek forebears of the Mycenaean Age. Particular emphasis is placed upon monumental art, its historical and cultural contexts, and how it reflects changing attitudes towards the gods, human achievement, and the relationship between the divine and the human.

60121. Greek Architecture (3-3-0)

In this course, the development of Greek monumental architecture and the major problems that define it will be traced from the eighth through the second centuries B.C., from the late Geometric through the Archaic, Classical, and Hellenistic periods. Among themes to be treated are the relationship between landscape and religious architecture, the humanization of temple divinities, the architectural expression of religious tradition and even specific history, architectural procession and hieratic direction, emblem and narration in architectural sculpture, symbolism and allusion through architectural order, religious revival and archaism, and the breaking of the architectural and religious canon.

63122. Seminar in Greek and/or Roman Art (3-3-0)

Permission required. Seminar on specific subjects in Greek and/or Roman art.

63123. Athenian Acropolis in Context (3-3-0)

Permission required. The monumental elaboration of the Athenian Acropolis did not begin with Pericles and Pheidias in the mid-fifth century B.C. Greek monumental art and architecture were spawned in the context of religion, and by the early Archaic period, the Acropolis was the center of Athenian religion; almost immediately, religious awe and piety were expressed in the form of impressive freestanding sculptural dedications and in large and meticulously wrought stone buildings, elaborately decorated with carved and painted designs and, most impressively, with figural relief sculpture. The monuments of the Athenian Acropolis must be understood first in this context --- as the embodiment of religious concepts --- and then in the context of Greek art and culture as a whole. An ultimate goal of the seminar will be to arrive at an understanding of the evolving meaning of the Greek Temple and monumental form, and how they find unique expression in the fifth century Acropolis building program of Pericles. Among the themes that will be treated to one degree or another are the relationship between landscape and religious architecture, the humanization of temple divinities, the monumental expression of religious tradition and even specific history, architectural procession and hieratic direction, emblem and narration in architectural sculpture, symbolism and allusion through architectural order, religious revival and archaism, the breaking of architectural and religious canon. Taken together, they constitute the specific architectural narrative of the Periclean Acropolis.

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60130. Etruscan and Roman Art and Architecture (3-3-0)

Roman Art of the Republic and Empire is one focus of this course, but other early cultures of the Italian peninsula and their rich artistic production are also considered. In particular, the arts of the Villanovans and the Etruscans are examined and evaluated as both unique expressions of discrete cultures and as ancestors of and influence on Rome. The origins and development of monumental architecture, painting, portraiture and historical relief sculpture are isolated and traced from the early first millennium B.C. through the early fourth century of the modern era.

6171. Special Studies - Ancient (0-0-0)

Independent study in ancient art history under the direction of an individual faculty member.

66172. Directed Readings - Ancient (0-0-0)

Specialized reading related to the study of ancient art history under the direction of an individual faculty member.

60202. The Contest of Word and Image in Early Medieval Art (3-3-0)

This course will investigate the art produced in Western Europe between the seventh and eleventh centuries. Often characterized as a Dark Age, this period in fact demonstrates a fertile, fluid and inventive response to the legacy of Late Antique Christianity. The course will focus on the production and reception of illuminated manuscripts, perhaps the site where the most original encounters with and re-shaping of this legacy occur. This course should interest those who wish to think through the relationship of words and images on the page and in life.

63205. Topics in Medieval Art (3-3-0)

The topic and format of this course will vary from year to year.

60210. The Formation of Christian Art (3-3-0)

Art in late antiquity has traditionally been characterized as an art in decline, but this judgment is relative, relying on standards formulated for art of other periods. Challenging this assumption, we will examine the distinct and powerful transformations within the visual culture of the period between the third and the eighth centuries AD. This period witnesses the mutation of the institutions of the Roman Empire into those of the Christian Byzantine Empire. The fundamental change in religious identity that was the basis for this development had a direct impact upon the visual material that survives from this period, such that the eighth century witnesses extensive and elaborate debates about the status and value of religious art in Jewish, Moslem, Byzantine, and Carolingian society. This course will examine the underlying conditions that made images so central to cultural identity at this period.

60212. Byzantine Art (3-3-0)

Byzantine art has often been opposed to the traditions of western naturalism, and as such has been an undervalued or little known adjunct to the story of Medieval art. In order to develop a more sophisticated understanding of this material we will examine the art produced in Byzantium in the period from the ninth to the twelfth century, a period which marks the high point of Byzantine artistic production and influence. Stress will be placed upon the function of this art within the broader setting of this society. Art theory, the notions of empire and holiness, the burdens of the past and the realities of contemporary praxis will be brought to bear upon our various analyses of material from all media. How we, as art historians, can write the history of this rich culture will be a central issue of this course.

60220. Early Medieval Art (3-3-0)

This course will investigate the art produced in Western Europe between the seventh and eleventh centuries. Often characterized as a Dark Age, this period in fact demonstrates a fertile, fluid and inventive response to the legacy of Late Antique Christianity. The course will focus on the production and reception of illuminated manuscripts, using facsimiles of these works as a basis for teaching. Students will become familiar with art-historical methods for the examination of such works, and will be invited to contemplate the interplay of word and image that these books propose. Categories of material discussed include: Insular art, the Carolingian scriptoria, Ottonian imperial image making, Anglo Saxon art, Spanish Apocalypses and Italian Exultets.

60240. Romanesque Art (3-3-0)

This course examines sculpture, architecture, manuscript illumination, and mural painting along with the arts produced for church and court treasuries in Western Europe during the 11th and 12th centuries. Pilgrimage to the holy shrines, the veneration of saints, and crusades to Jerusalem are among the issues discussed in relation to the arts. Monastic and ecclesiastical reform, heresy, and renewed interest in antiquity are also considered.

60250. Gothic Art (3-3-0)

This course studies Gothic monuments -- who commissioned and made them and how they functioned for different audiences. Among others we consider the following questions: what motives fueled large architectural enterprises? What was their cultural, political, and social significance to women and men, to the laity and clergy, and to viewers from different social classes? How did imagery convey complex theological messages to this varied audience? How did architectural or public images differ from the portable private works of art which became increasingly popular in the late Gothic period?

67271. Special Studies - Medieval (0-0-0)

Independent study in Medieval art history under the direction of an individual faculty member.

66272. Directed Readings - Medieval (0-0-0)

Specialized reading related to the study of Medieval art history under the direction of an individual faculty member.

63305. Topics in Renaissance Art (3-3-0)

Topics course on special areas of Renaissance art.

60311. 15th-Century Italian Renaissance Art (3-3-0)

This course investigates the century most fully identified with the Early Renaissance in Italy. Individual works by artists such as Brunelleschi, Donatello, Ghiberti, Botticelli, and Alberti are set into their social, political, and religious context. Special attention is paid to topics such as the origins of art theory, art and audience, Medician patronage, and art for the Renaissance courts of northern Italy and Naples.

63312. Venetian and Northern Italian Renaissance Art (3-3-0)

This course focuses on significant artistic developments of the sixteenth century in Venice with brief excursions to Lombardy and Piedmont. Giorgione, Titian, and Palladio, the formulators of the High Renaissance style in Venice, and subsequent artists such as Tintoretto and Veronese are examined. An investigation of the art produced in important provincial and urban centers such as Brescia, Cremona, Milan, Parma, Varallo, and Vercelli also provide insight into the traditions of the local schools and their patronage.

60313. The High Renaissance in Rome and Florence (3-3-0)

Leonardo, Michelangelo, Bramante, and Raphael provide the basis of study of one of the most impressive periods of artistic activity in Italy - the High Renaissance in Rome and Florence. The course also investigates the origins of Mannerism in the excessive achievements of Jacopo Pontormo, Rosso Fiorentino, and the succeeding generation of late-Renaissance maniera artists who helped to formulate a new courtly style.

60314. Seminar in Mannerism: Painting and Sculpture (3-3-0)

This course will explore the artistic trends in Italy after the High Renaissance (c. 1520) and before the Baroque (c. 1580), and will begin with definitions of terminology and a brief historiographic survey. Our attention will then turn to the Roman art of Raphael's heirs, Giulio Romano, Perino del Vaga, and Polidoro da Caravaggio, and the emerging Tuscan painters Pontormo, Rosso Fiorentino, and Domenico Beccafumi. We will also investigate the dispersal of the Roman school: Giulio Romano to the Gonzaga course in Mantua, in 1524, and following the Sack of Rome by imperial troops in 1527,

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other maniera artists to Genoa, Bologna, Parma, and as far as the French royal chateau at Fontainebleau. Rome consequently experienced a revival at the end of the reign of Clement VII, and under the pontificate of Paul III, notably, the arts, politics, and theology flourished. This period may be marked by such diverse works and Michelangelo's monumental Last Judgment (1536-41) and his frescoes (1542-45) in the Pauline Chapel, Vatican Palace, the decorations (1536-51) by various mannerist artists in San Giovanni Decollato, Perino's elegant frescoes in the Sala Paolina (1545-47), Castel Sant' Angelo, Giorgio Vasari's fantastic murals in the Palazzo Cancelleria (1546), and Francesco Salviati beautiful, secular frescoes in the Palazzo Ricci-Sacchetti (c. 1553-54). Attention will also be given to the art of the Counter-Reformation in Rome, and to painting and sculpture by Bronzino, Salviati, Cellini, Bandinelli, Vasari, Giambologna, and others at the Florentine courts of Dukes Cosimo I and Francesco I.

63315. Seminar in Renaissance Art
(3-3-0)

Permission required. Seminar on specific subjects in Renaissance art.

60320. Northern Renaissance Art
(3-3-0)

This course traces the development of painting in Northern Europe (France, Germany, and Flanders) from approximately 1300 to 1500. Special attention is given to the art of Jan Van Eyck, Rogier van der Weyden, Heironymous Bosch, and Albrecht Dürer. Through the consideration of the history of manuscript and oil painting and the graphic media, students will be introduced to the special wedding of nature, art, and spirituality that defines the achievement of the Northern Renaissance.

60350. Survey of Italian Baroque Art: From Caravaggio to Tiepolo
(3-3-0)

This course surveys Italian painting, sculpture, and architecture of the seventeenth and eighteenth centuries, a period which also witnesses the foundation and suppression of the Jesuit Order, the Counter-Reformation, absolute monarchy, and democratic nations. Thus, the course begins with the "new Rome" of Pope Sixtus V, which attracted pilgrims and artists from all over Europe, and ends with the Carracci, artists who were responsible for creating a new style based upon High Renaissance principles and a new kind of naturalism derived from the study of life. There Bernini, whose architectural and sculptural monuments almost single-handedly gave Rome its Baroque character. Other artists and architects of this era under discussion include such diverse personalities as Borromini, Guarini, Algardi, Artemisia Gentileschi, and the great ceiling painters Pietro da Cortona, Baciccio, Pozzo, and Tiepolo.

63351. Seminar in Baroque Art
(3-3-0)

Permission required. Seminar on specific subjects in Baroque art.

60360. The Age of Rembrandt: Northern Baroque Painting
(3-3-0)

Open to all students. Epitomized by the self-conscious art of Rembrandt, Northern Baroque painting and printmaking not only became a domestic commodity sold in a more modern-looking marketplace, it also continued to serve its traditional political, moral and spiritual functions. This course will concentrate on paintings and prints produced in Flanders, Spain, and the Dutch Republics during the 17th century, an era of extraordinary invention. The work of artists such as Rubens, van Dyck, Velázquez, Zurbarán, Leyster, Hals, and Rembrandt will be considered in the context of a number of interrelated themes, including the business of art, the status of the artist, art in service of the state, the rise of genre, gender stereotypes, allegory, and art, religion, and spirituality.

60361. Eighteenth-Century European Art
(3-3-0)

Profound and universal inquiry into all aspects of knowledge marked the history of the century of the Enlightenment and the Grand Tour. The rise of the collective idea of nature, the study and instrumentality of the antique, the foundations of religion, the state, morality and reason, the relationship of the arts to the state, the philosophy of aesthetic were all critically analyzed and questioned. This course investigates various stylistic trends in 18th-century art in Italy, France and England with a focus on the institutionalization of art through the academies. Discussion also centers on classical art theory and its relationship to the academies in light of the social, political and religious climate of the period. We will also consider the aesthetic, art historical and social consequences of the writings of Kant, Burke and Winckelmann. The course begins with the late baroque paintings of Carlo Maratti and his followers and then moves to subsequent stylistic trends as neoclassicism, Egyptian revival, and the rococo. Attention is also given to the vedute painters and to such diverse personalities as Piranesi, Mengs, Kauffmann, Tiepolo, Watteau and Chardin.

67371. Special Studies in Renaissance and Baroque Art History
(0-0-0)

Independent study in Renaissance/Baroque art history under the direction of an individual faculty member.

66372. Directed Readings in Renaissance and Baroque Art History
(0-0-0)

Specialized reading related to the study of Renaissance/Baroque art history under the direction of an individual faculty member.

63404. Seminar in Modern European Art
(3-3-0)

Permission required. Seminar on specific subjects in 19th-century and 20th-century art.

63405. Topics in Modern Art
(3-3-0)

Topics course on special areas of modern art.

60417. British Art
(3-3-0)

This course focuses on the dynamic between art and society in the period in which the Industrial Revolution shaped the face of modern Britain. We will examine paintings and architectural monuments that register the devastating human consequences of modernization during this one hundred-year period. As we survey the response of British society to the forces of industrialization, our themes will be the worship of science and progress; the Romantic discovery of nature, the imagination, and the exotic; images of the rural and urban poor; the new constructions of masculinity and femininity; the return to the Middle Ages for sources of national identity and social reform. The principal artists discussed will be Joseph Wright of Derby, William Blake, John Constable, Joseph Mallord William Turner, Edwin Landseer, the Pre-Raphaelites, and William Morris.

60442. 20th-Century Art II
(3-3-0)

This introductory course is subtitled "Techno-Capitalism and the Art of Accommodation." The post-World War II era, particularly in the United States, is marked by the greatest expansion of corporate and consumer capitalism in history. Massive wars are fought to defend capitalist ideology. (A case in point is the tragic Vietnam War.) How has art figured into these social transformations? Has art protested these conditions or easily accommodated itself to over-powering economic, political, and legalistic technocapitalist regimes? These questions arise throughout this course, which concentrates on selective artistic events in the United States and Europe during the second half of the 20th century. Movements considered include pop art, minimalism, op art, arte povera, postminimalism, earth art, conceptual art, photo-realism, video and performance art, and other recent picture/theory approaches to art making. This course focuses on recent developments in painting and sculpture. It also examines associated theories of art criticism.

60470. Architecture of the 20th Century
(3-3-0)

This course is a survey of the significant themes, movements, buildings and architects in Twentieth Century architecture. Rather than validate a single design ideology such as Modernism, Postmodernism or Classicism, this account portrays the history of architecture as the manifestation -- in design terms -- of a continuing debate concerning what constitutes an appropriate architecture for this century. Topics include developments in building technologies, attempts to integrate political and architectural ideologies, the evolution of design theories, modern urbanism and important building types in modern architecture such as factories, skyscrapers and housing. Class format consists of lecture and discussion with assigned readings, one midterm exam, a final exam and one written assignment.

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67471. Special Studies in Modern Art History
(0-0-0)

Independent study in modern art history under the direction of an individual faculty member.

66472. Directed Readings in Modern Art History
(0-0-0)

Specialized reading related to the study of modern art history under the direction of an individual faculty member.

63478. Frank Lloyd Wright Seminar
(3-3-0)

This seminar is a survey of the historiography of art history with special attention paid to the various types of methodology which have been applied to the analysis of art. Special attention is given to the nineteenth-century and twentieth-century art historical methods, including connoisseurship, biography, iconology, psychoanalysis, semiotic, and feminist approaches.

60490. Architecture Now: Trends in Contemporary Architecture
(3-3-0)

This is a survey of contemporary trends in global architecture with a focus on recent developments in design theory and building technologies. The course will examine a broad spectrum of architecture produced in the past decade.

60520. Anthropology of Art
(3-3-0)

This course will examine art as a functional part of culture from an anthropological point of view. Attention is given to evolution of art as part of human culture and to evolution of the study of art by anthropologists.

60521. The Art of Mythology
(3-3-0)

This cross-disciplinary class is an exploration of the representation of classical myth in Western art and literature, ranging from the seventh century B.C.E. to the 18th century C.E. Beginning with mythological subjects in the political and religious sculpture, temple architecture and vase decoration of Ancient Greece, we will move on to study Roman painting and sculpture, medieval Ovidian allegory, the Renaissance reinvention of classical types and 18th-century neo-classicism. We will compare literary and visual narratives, evaluating the discursive modes of each, and analyzing how and why poets, philosophers, artists, sculptors, and architects selected and adapted the episodes that they did. Primary readings will include selections from Greek and Roman epic, lyric and dramatic poetry, Greek and Roman philosophical mythology, and early analyses of the relationship between art and myth such as Philostratus' *Eikones*. Among the artistic works that we will examine will be Raphael's Roman cycles, Bellini and Titian's poesie, and Bernini's sculpted dramas. We will consider the erudite contexts for such works, including gardens, drawing rooms, princely residences, and civic institutions. We will discuss the connection between political power and myth, and concepts

such as heroism, metamorphosis, and earthly and divine love. One aim of this class will be to identify the explanatory character of myth, and of story-telling within culture, as means of historical self-understanding, self-revelation, and catharsis.

60522. Fashioning Identities in Colonial America
(3-3-0)

This course will focus on dress and material/visual culture in Colonial North America. It will provide an introduction to methodology, and offer an overview of key themes in the history of dress and consumerism within the framework of gender studies. In our focus on the Colonial period (especially in the 18th Century), we will analyze the economics of dress (the production, marketing and acquisition of cloth and clothing) and will assess the importance of fashion and commerce and politics. We will evaluate the role of dress in the construction of colonial identities, and we will examine the ways that dress operated as a visual locus for racial, class and ethnic encounters.

63535. Seminar: Feminist Issues in Modern Art
(3-3-0)

In this course we will survey many of the major figures -- both men and women artists -- of 19th and 20th-century European and American art, in order to examine current debates about the role of the feminine in modern art. The selected readings will explore a broad range of significant, recent discussions of this field, as well as the theoretical sources of these studies. The most important of these issues will include theories of sexuality; the role of gender in the formation of the avant-garde; the problem of a feminine subjectivity --- its possibility or impossibility; the woman-child as the type of woman artist; the importance of the maternal body for men and women artists; the experience of mothering in developing artistic subjectivity; the feminine as performance and masquerade; and the collapse of the feminine into the primitive.

60550. History of Photography
(3-3-0)

This course deals with the development and use of photography as an artistic medium from time of its invention in the mid-nineteenth century up to the present moment. Besides viewing slides, the student will be able to view a large number of original photographs from the Snite Museum of Art.

63570. Graduate Seminar
(3-3-0)

This graduate seminar will probe intersections among contemporary art, advanced art criticism, continental philosophy and theory. Extensive theoretical readings, research and analytical papers, and class presentations required.

67571. Special Studies
(0-0-0)

Permission Required. Independent study in art history under the direction of an individual faculty member.

66572. Directed Readings
(0-0-0)

Permission required. Specialized reading related to the student's area of study.

68573. Thesis Direction
(0-0-0)

Independent research and writing on an approved subject under the direction of a faculty member. Required of candidates for the research M.A. in art history and for the M.F.A.

68574. Nonresident Thesis Research
(1-1-0)

Required of all nonresident graduate students who are completing their theses in absentia and who wish to retain their degree status.

63576. Art History Methods
(3-3-0)

Required of all art history graduate majors. This seminar is a survey of the historiography of art history with special attention paid to the various types of methodology which have been applied to the analysis of art. Special attention is given to nineteenth-century and twentieth-century art historical methods, including connoisseurship, biography, iconology, psychoanalysis, semiotic, and feminist approaches.

60580. History of Design: Form, Values, and Technology
(3-3-0)

This course will provide a historical perspective on the development of industrial, product and graphic design in the 19th and 20th centuries. More than the aesthetic styling of products, design mediates the intersection of technology and cultural values in the modern era. The role of the modern designer as both a facilitator and a critic of industrial technology will be examined.

67585. Topics in Design Studies
(3-3-0)

Topics course on special areas of design studies.

63805. Seminar in Contemporary Art
(3-3-0)

Seminar on specific subjects in contemporary art.

Design Program Courses (DESN)61104. Graphic Design Research
(0-0-0)

Special projects in visual communications for students of graphic design.

61108. Graduate Web Studio
(3-0-6)

This course will cover the design and technical considerations in presenting creative work on the web. Topics will include basic web page design, digitizing 2D and 3D work, digital video, and having an on-line resume.

67171. Special Studies - Graphic Design
(0-0-0)

Independent study in graphic design: research or creative projects. Open to graduate students with permission of the instructor.

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61204. Product Design and Research
(0-0-0)
Special projects in product and systems design.

67271. Special Studies-Product Design
(0-0-0)
Independent study in product design: research or creative projects. Open to graduate students with permission of the instructor.

63350. Design Seminar
(1-2.5-0)
Required of all MFA candidates each semester. This team-taught seminar/critique meets each week to critique ongoing graduate student work and to discuss issues related to contemporary art practice.

67371. Special Studies
(0-0-0)
Independent study in design: research or creative projects.

78308. Thesis Direction
(0-0-0)
Research and writing on an approved subject under the direction of a faculty member.

Studio Art Program Courses (ARST)

61104. Ceramics Studio
(0-0-0)
Studio projects and research in ceramics.

61105. Ceramic Sculpture
(0-0-0)
Clay is the primary medium for this advanced course in sculpture.

63150. Sculpture/Ceramics Seminar
(1-1-0)
A team-taught seminar/critique that brings together all the ceramics and sculpture faculty and graduate students in a weekly dialogue focusing on issues in contemporary art as they relate to student research. This course is required of all ceramic and sculpture candidates each semester leading to and including the M.F.A. thesis year.

67171. Special Studies - Ceramics
(0-0-0)
Independent study in ceramics: research or creative projects. Open to graduate students with permission of the instructor.

67271. Special Studies – Painting and Drawing
(0-0-0)
Independent study in painting/drawing: research or creative projects. Open to graduate students with permission of the instructor.

61306. Painting Studio
(0-0-0)
Studio projects and research in painting.

63350. Sculpture/Ceramics Seminar
(1 -0- 0)
Required of all MFA candidates each semester. This team-taught seminar/critique meets each week to critique ongoing graduate student work and to discuss issues related to contemporary art practice.

61407. Photography Studio
(0-0-0)
Studio projects and research in photography and photo- related media.

63450. Painting/Printmaking Seminar
(1-1-0)
A team-taught seminar/critique that brings together all the printmaking and painting faculty and graduate students in a weekly dialogue focusing on issues in contemporary art as they relate to student research. This course is required of all photography candidates each semester leading to and including the M.F.A. thesis year.

67471. Special Studies - Photography
(0-0-0)
Independent study in photography: research or creative projects. Open to graduate students with permission of the instructor.

67571. Special Studies - Printmaking
(0-0-0)
Independent study in printmaking: research or creative projects. Open to graduate students with permission of the instructor.

61608. Sculpture Studio
(0-0-0)
Studio projects and research in three-dimensional media.

67671. Special Studies - Sculpture
(0-0-0)
Independent study in sculpture: research or creative projects. Open to graduate students with permission of the instructor.

62704. Teaching Methods
(1-1-0)
This seminar prepares graduate student instructors for teaching undergraduate courses in the department. Course development, assignment preparation, time management skills, student evaluations, grading, and student/instructor dynamics are covered. Required for M.F.A. students in studio and design.

63750. Graduate Seminar
(2-3-0)
The class will consist of trips to local, Chicago, and other area venues to view art performances, lectures and exhibitions where students can experience diverse works of art first-hand. An integral part of the course will be readings about the artists and the works seen as well as discussions centered on the concepts, methods, forms, etc. of the works viewed.

67771. Special Studies
(0-0-0)
Independent study in art studio: research or creative projects.

78706. Nonresident Thesis Research
(1-0-0)
Required of all nonresident graduate students who are completing their theses in absentia and who wish to retain their degree status.

78707. Research and Dissertation
(0-0-0)
Individual conferences and consultation between the graduate student and the dissertation director. Required of students pursuing dissertation research in residence.

78708. Thesis Direction
(0-0-0)
Independent research and writing on an approved subject under the direction of a faculty member. Required of candidates for the M.F.A. in art studio.

Faculty

Charles E. Barber, *the Michael P. Grace Professor of Arts and Letters and Associate Professor*. B.A., Courtauld Inst. of Art, London, 1986; Ph.D., *ibid.*, 1989. (1996)

Frederick S. Beckman, *Professor Emeritus*. B.F.A., Univ. of Notre Dame, 1942; M.A., Columbia Univ., 1949. (1946)

Nyame Brown, *Assistant Professor*. B.F.A. School of the Art Inst. of Chicago, 1992; M.F.A. Yale Univ., 1997. (2002)

John Caruso, *Assistant Professor*. B.F.A., Center for Creative Studies, 1987; M.F.A., Univ. of Illinois-Chicago, 1996. (1999)

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Rev. Austin I. Collins, C.S.C., *Associate Professor*. B.A., Univ. of Notre Dame, 1977; M.Div., Graduate Theological Union, 1981; M.F.A., Claremont Graduate School, 1985. (1985)

Jean A. Dibble, *Associate Professor*. B.S., Univ. of Wisconsin, 1979; M.A., Univ. of New Mexico, 1981; M.F.A., Univ. of Wisconsin, 1988. (1989)

Dennis P. Doordan, *Chair and Concurrent Professor of Art, Art History, and Design and Professor of Architecture*. B.A., Stanford Univ., 1973; M.A., Columbia Univ., 1976; M.Phil., *ibid.*, 1978; Ph.D., *ibid.*, 1983. (1990)

Paul A. Down, *Associate Professor*. B.S., Andrews Univ., 1969; M.F.A., Univ. of Notre Dame, 1982. (1983)

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Meredith Gill, *Assistant Professor*. B.A., Univ. of Melbourne, 1981; M.A., Princeton Univ., 1986; Ph.D., *ibid.*, 1992. (1998)

Richard Gray, *Director, Center for Creative Computing and Associate Professor*. B.S., Illinois State Univ., 1976; M.F.A., Rochester Inst. of Technology, 1982. (1982)

Douglas Kinsey, *Professor Emeritus*. B.A., Oberlin College, 1957; M.F.A., Univ. of Minnesota, 1960. (1968)

Martina Lopez, *Director of Graduate Studies and Associate Professor*. B.F.A., Univ. of Washington, 1985; M.F.A., The School of the Art Inst. of Chicago, 1990. (1993)

Martin L. Nguyen, C.S.C., *Associate Professor*. B.A., Univ. of Portland, 1982; M.Div., Univ. of Notre Dame, 1988; M.A., Univ. of California, Berkeley, 1993; M.F.A., *ibid.*, 1995. (1995)

Dean A. Porter, *Director Emeritus of the Snite Museum of Art and Professor*. B.A., Harpur College, 1961; M.A., State Univ. of New York at Binghamton, 1966; Ph.D., *ibid.*, 1974. (1966)

Kathleen A. Pyne, *Director, Program in Gender Studies and Professor*. B.A., Univ. of Michigan, 1971; M.A., *ibid.*, 1975; Ph.D., *ibid.*, 1988. (1988)

Robin F. Rhodes, *Associate Professor and Concurrent Associate Professor of Classics*. B.A., Univ. of North Carolina, 1974; Ph.D., *ibid.*, 1984. (1996)

Charles M. Rosenberg, *Professor*. B.A., Swarthmore College, 1967; M.A., Univ. of Michigan, 1969; Ph.D., *ibid.*, 1974. (1980)

Robert Sedlack, *Assistant Professor*. B.F.A., Univ. of Notre Dame, 1989; M.F.A., Indiana Univ. Bloomington, 1993. (1998)

John F. Sherman, *Associate Professional Specialist*. B.S., Ball State Univ., 1979; M.F.A., Indiana Univ., 1981. (1986)

Maria Tomasula, *Associate Professor*. B.F.A., Univ. of Illinois at Chicago, 1987; M.F.A., Northwestern Univ., 1989. (1994)

Classics

Chair:

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The Department of Classics offers instruction in classical studies and is the administrative home to the program in Arabic studies. The department sponsors a master's degree program in early Christian studies with the Department of Theology. The following courses are available to graduate students. Graduate students who intend to begin or renew their study of Greek, Latin, Arabic, or Syriac are invited to contact the department for advice.

Course Descriptions

Each course listing includes:

- Course Number
- Title

- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course Description

Classical Literature and Civilization

60125. Classical Greek Tragedy
(3-3-0)

This advanced course in literature provides detailed study of the theory and practice of classical Greek tragedy. The structures and sensibilities that inform tragedy are assessed, with special attention to plays written by the three great tragedians, Aeschylus, Sophocles, and Euripides. The Greeks' own responses to tragedy, as represented by Aristophanes, Plato, and Aristotle, are also discussed. The form and function of Greek tragic plays, their place in classical culture, and their distinctive approach to issues of human life are key topics of the course.

60220. The Romans and Their Gods
(3-3-0)

An introduction to the way in which the Romans conceived of, worshipped, and communicated with the myriad gods of their pantheon. The course focuses first on conventional religious rituals and their cultural meaning, and secondly on the success of Roman polytheism in adapting to changing historical and social conditions. Particular attention is paid to the so-called "Mystery Religions," including Christianity, and their relationship to conventional forms of Roman religious behavior.

60225. Romans and Christians
(3-3-0)

The early development of the Christian religion in its historical Roman context. The course surveys the political, social, and administrative structures of the Roman Empire, examines the complexity of Rome's religious life, and analyzes the rise of the Jesus movement and Rome's reaction to it. Particular topics studied include pagan and Christian magic and miracle-working, the sectarian and subversive character of early Christianity, martyrdom and persecution, and Constantine's emergence as Rome's first Christian emperor.

60320. Family and Household in Greco-Roman Antiquity
(3-3-0)

This course takes as its main theme the life-cycle of the ancient Greeks and Romans, and examines its component parts. Among the topics studied are Greco-Roman views and practices concerning marriage, divorce, child-rearing, and old age. The ways in which family and household were conceptualized in the ancient world, and the demographic patterns that controlled the life-cycle are given special consideration.

60365. Art and Literature of Metamorphoses
(3-3-0)

This course begins with a critical study of Ovid's great poem, the *Metamorphoses*. The poem itself became a subject of metamorphosis in poetry and art in the hands of such figures as Statius, Dante, Botticelli, Bernini, Rembrandt, Hughes and Heaney. The course addresses the modeling of transformation within the literary text by examining first Ovid and

his sources, and second, adaptations of his poem by writers such as Shakespeare and Kafka. Connections with folklore, magic, and religion are explored. The graphic arts receive equal consideration as the course explores how Ovid's ideas of the transformation of the body, the capacity of the human body for allegory, and the fragility of identity have influenced later artists and authors.

60420. Late Antique/Early Christian Art
(3-3-0)

Art in Late Antiquity has traditionally been characterized as an art in decline, but this judgment is relative, relying on standards formulated for art of other periods. Challenging this assumption, we will examine the distinct and powerful transformations within the visual culture of the period between the third and sixth centuries AD. This period witnesses the mutation of the institutions of the Roman Empire into those of the Christian Byzantine Empire. Parallel to these social changes we can identify the emergence of a Christian art that defines our basic assumptions about the role of art in a Christian society. The fundamental change in religious identity that was the basis for this development had a direct impact upon the visual material that survives from this period. This course examines the underlying conditions that made images so central to cultural identity at this period.

60431. The Art of Mythology
(3-3-0)

This cross-disciplinary course explores representations of classical myth in Western literature and art from the seventh century BC to the eighteenth century of the modern era. Literary and visual narratives are compared and contrasted, and the procedures of poets, philosophers, artists, sculptors and architects in selecting and adapting mythological subjects are analyzed. The course raises questions about the connections between myth and political power, and about such major concepts as heroism, metamorphosis, and earthly and divine love. Readings from classical sources on Greek myths, and special attention to such works of art as Raphael's Roman cycles and Bernini's sculpted dramas.

Greek Language and Literature (CLGR)

60001. Beginning Greek I
(3-3-0)

This two-semester sequence of courses introduces students to the language of the ancient Greeks for the first time. It emphasizes the fundamentals of ancient Greek grammar and vocabulary, and prepares students to read original Greek texts. An appreciation for ancient Greek culture is also fostered through secondary readings and class discussion. CLGR 60001 is offered each fall semester and CLGR 60002 is offered each spring semester.

66001. Directed Readings
(0-0-0)

Permission of Department required.

67001. Special Studies
(0-0-0)

Permission of the Department required.

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60002. Beginning Greek II
(3-3-0)

This two-semester sequence of courses introduces students to the language of the ancient Greeks for the first time. It emphasizes the fundamentals of ancient Greek grammar and vocabulary, and prepares students to read original Greek texts. An appreciation for ancient Greek culture is also fostered through secondary readings and class discussion. CLGR 60001 is offered each fall semester and CLGR 60002 is offered each spring semester.

60003. Intermediate Greek
(3-3-0)

This second-year language course builds on the work of Beginning Greek I and II. It combines a review of grammar with careful reading of classical Greek authors such as Homer and Plato. The course improves students' translating skills, introduces methods for studying Greek literature in its historical and cultural contexts, and prepares students for more advanced work in the rich literature of the ancient Greeks. Offered each fall semester.

60004. Reading and Writing Greek Prose
(3-3-0)

This second-year language course continues the review of grammar begun in CLGR 60003 and introduces students to stylistic analysis through close readings of classical Greek prose authors such as Herodotus and Xenophon. A special feature of the course is that students learn how to write classical Greek for themselves. Offered each spring semester.

60011. Homer
(3-3-0)

This third-year course builds on CLGR 60003 and CLGR 60004, and offers close reading of passages from the *Iliad* and *Odyssey*. Homer's epic poems stand at the head of the tradition of European literature; their themes and poetic style have substantially influenced the works of Dante, Milton and many other European writers. The poems are discussed in their cultural context, and features of poetic oral composition are examined. The course prepares students for advanced offerings in Greek literature, especially CLGR 60021 and CLGR 60031. Offered in fall semester, alternate years.

60012. Age of Herodotus
(3-3-0)

This third-year course builds on the work of CLGR 60003 and CLGR 60004, and offers close reading of passages from the *Histories* of Herodotus. The *Histories* tells of the momentous wars between the Greeks and the Persians in the early classical era, and is the earliest surviving narrative of the western historical tradition. The political, social, and cultural conditions of fifth-century Greece that inspired Herodotus are discussed, and the development of Greek history-writing is examined. The course prepares students for advanced offerings in Greek literature, especially CLGR 60022, CLGR 60032, and CLGR 60042. Offered in spring semester, alternate years.

60013. Greek Tragedy
(3-3-0)

This third-year course builds on the work of CLGR 60003 and CLGR 60004 and offers close reading of passages from the tragedies of Sophocles and Euripides. These plays illustrate the Athenian invention and development of tragedy that took place when Athens dominated Greece politically between the Persian Wars and the Peloponnesian War, the great fifth-century war against Sparta. The ways in which the plays reveal and address the city's ideological, political, and sexual tensions are key themes for discussion in the course, and matters of style are appropriately examined. The course prepares students for advanced offerings in Greek literature, especially CLGR 60023. Offered in fall semester, alternate years.

60021. Hesiod
(3-3-0)

This advanced course introduces students to the poetry of Hesiod through close reading and detailed study of the *Theogony* and the *Works and Days*. Both works represent an early poetic tradition in Greek literature parallel to but separate from that of Homer which focuses on the human condition in a cosmos controlled by all-powerful and vengeful gods. The relationship of these central works of archaic Greek literature to other archaic texts is a key theme for discussion in the course.

60022. Thucydides
(3-3-0)

This advanced course introduces students to the historical writing of Thucydides through close reading and detailed study of the *History* of the Peloponnesian War. Often considered the most accurate and methodical of the ancient historians, Thucydides brought to Greek history-writing a high level of precision in both language and analysis. His uniquely candid accounts of the history, politics, and social effects of the great war between Athens and Sparta, and the connection between content and literary style are key themes for discussion in the course.

60026. The Age of Alexander
(3-3-0)

Alexander the Great (356-323 BC) had a stunning impact on the ancient Mediterranean world. Leading a panhellenic crusade against the Persians, he created an empire of enormous proportions that included his native Macedonia, Greece, Egypt, and much of the ancient Near East. In so doing he laid the foundations for the dispersal of Greek ideas and practices over a huge area. This course examines Alexander's meteoric and ruthless career through careful study of two Greek authors who wrote extensively about him, Arrian and Plutarch.

60031. Greek Lyric Poetry
(3-3-0)

This advanced course includes readings from Archilochus' iambic and elegiac poems, Sappho's monodies, and Pindar's choral works. It introduces students to archaic and classical Greek lyric poetry, which represents a literary tradition that drew inspiration from religious ritual, contemporary politics, and private experience. Its authors experimented with diction, style, and meter in ways distinct from

those of the epic poets. The manner in which they wrote and the ways in which they responded to the epic tradition are key themes for discussion in the course.

60034. Plato
(3-3-0)

This advanced course offers accelerated reading and detailed study of the philosophical dialogues of Plato, whose writings, often radical and challenging, represent a cornerstone in the Western intellectual tradition. The development of Plato's philosophical ideas in their historical context is a key theme for discussion in the course, and attention is paid to the main features of his prose style in selections of his works.

60063. Euripides
(3-3-0)

This advanced course offers accelerated reading and detailed study of the tragic plays of Euripides, the last of the great tragedians of classical Athens and the object of ridicule from the comic writer Aristophanes. Euripides' plays depart from those of his predecessors first because of their escapist and romantic plots and secondly because of their fierce engagement with contemporary Athenian politics and society. The course dwells on this development, and also considers why Euripides is sometimes considered the most radical of the Athenian tragedians.

60095. Socratic Literature
(3-3-0)

This course will study the character and philosophical significance of Socrates within the context of the intellectual ferment of late fifth-century Athens. The Greek primary texts that constitute the heart of the course are Plato's *Laches* and *Lysis* and sections of Xenophon's *Memorabilia*. Issues that arise from those texts, like the ideal of rational character and Socrates' great interest in *Eros*, will provide opportunities for student research and classroom discussions.

Latin Language and Literature (CLLA)60001. Beginning Latin I
(3-4-0)

This two-semester sequence of courses introduces students to the language of the ancient Romans for the first time. It emphasizes the fundamentals of Latin grammar and vocabulary, and prepares students to read original Latin texts. An appreciation for ancient Roman culture is also fostered through secondary readings and class discussion. CLLA 60001 is offered each fall semester and CLLA 60002 is offered each spring semester.

60002. Beginning Latin II
(3-4-0)

This two-semester sequence of courses introduces students to the language of the ancient Romans for the first time. It emphasizes the fundamentals of Latin grammar and vocabulary, and prepares students to read original Latin texts. An appreciation for ancient Roman culture is also fostered through secondary readings and class discussion. CLLA 60001 is offered each fall semester and CLLA 60002 is offered each spring semester.

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60003. Intermediate Latin
(3-3-0)

Prerequisite: CLLA 60002 or equivalent.

This second-year language course builds on the work of Beginning Latin I and II. It combines a review of grammar with careful reading of classical Latin authors such as Cornelius Nepos and Ovid. The course improves students' translating skills, introduces methods for studying Latin literature in its historical and cultural contexts, and prepares students for more advanced work in the sophisticated literature of the ancient Romans. Offered each fall semester.

60004. Reading and Writing Latin Prose
(3-3-0)

This second-year language course continues the review of grammar begun in CLLA 60003 and introduces students to stylistic analysis through close readings of Latin prose authors such as Cicero and the Younger Pliny. A special feature of the course is that students learn to write classical Latin for themselves. Offered each spring semester.

60010. Intensive Latin
(5-5-0)

This accelerated course provides an introduction to the Latin language for beginners and covers in one semester the contents of CLLA 60001 and CLLA 60002. Students who complete the course are eligible to proceed to the intermediate level of study. The course meets five days a week and requires considerable work outside the classroom.

60011. Virgil
(3-3-0)

This third-year course builds on CLLA 60003 and CLLA 60004, and offers close reading of passages from the Aeneid. Virgil's inspired adaptation of Homer's epic poems traces the story of the flight of Aeneas from Troy to Italy, where Rome, a new Troy, will be founded. The place of Virgil's epic in the emperor Augustus' cultural program, various critical approaches to the poem, and its compositional techniques provide subjects for discussion. The course prepares students for advanced study in Latin literature, especially CLLA 60021, CLLA 60031, CLLA 60041, and CLLA 60051. Offered in fall semester, alternate years.

60012. Latin History-Writing
(3-3-0)

This third-year course builds on CLLA 60003 and CLLA 60004, and offers close reading of passages from the works of the historical writers Caesar and Sallust. Latin historiography is a sophisticated instrument for narrating past events, for showing how notions of cause and effect and change over time develop in historical thinking, and for indicating the relevance of the past to the present. The political and social conditions of Rome that informed the writings of Caesar and Sallust are discussed, and the compositional techniques of their works are examined. The course prepares students for advanced offerings in Latin literature, especially CLLA 60022, CLLA 60032, and CLLA 60052. Offered in spring semester, alternate years.

60013. Roman Lyric Poetry
(3-3-0)

This third-year course offers close reading of passages from the lyric poetry of such authors as Catullus and Horace. The lyric form gives precise and economical expression to a wide range of human thoughts and emotions, from the highly personal to the grandly patriotic. The range of Roman lyric, the technique of its practitioners, and the place of lyric poetry in Roman life are themes that receive special attention. This course prepares students for advanced offerings in Latin literature, especially CLLA 60023, CLLA 60033, CLLA 60043, and CLLA 60053. Offered in fall semester, alternate years.

60014. Cicero's Speeches
(3-3-0)

This third-year course builds on the work of CLLA 60003 and CLLA 60004, and offers close reading of select speeches of Rome's greatest orator, Cicero. The art of persuasion was an essential requirement for success in Roman public life, and no one was more persuasive than Cicero. The flexibility and complexity of Cicero's grammatical expression, the range of his styles, and the political contexts in which his speeches were delivered are all given careful treatment. The course prepares students for advanced offerings in Latin prose, especially Latin CLLA 60024, CLLA 60034, and CLLA 60054. Offered fall semester, alternate years.

60016. Introduction to Christian Latin Texts
(4-4-0)

This course has two goals: to improve the student's all-around facility in dealing with Latin texts and to introduce the student to the varieties of Christian Latin texts and basic resources that aid in their study. Exposure to texts will be provided through common readings which will advance in the course of the semester from the less to the more demanding and will include Latin versions of Scripture, exegesis, homiletic, texts dealing with religious life, formal theological texts, and Christian Latin poetry. Philological study of these texts will be supplemented by regular exercises in Latin composition. Medieval Latin Survey will follow this course in the spring term.

60017. Medieval Latin Survey
(3-3-0)

The aim of this course is to experience a broad spectrum of Medieval Latin texts. Readings representative of a variety of genres (literary and subliterate), eras, and regions will be selected. Students planning to enroll in this course should be completing Introduction to Christian Latin Texts or they must secure the permission of the instructor. Those with interests in particular text types should inform the instructor well in advance so that he can try to accommodate their interests.

60023. Roman Elegiac Poetry
(3-3-0)

This advanced course introduces students to Latin elegy, a form of verse that served Roman poets as a vehicle for expressing and exploring personal feelings, especially those associated with love. Readings from Catullus, Propertius, Tibullus, and Ovid expose how Roman poets adapted and experimented with

the elegiac form to express highly charged personal emotions often at odds with conventional Roman values.

60024. Roman Rhetoric
(3-3-0)

This advanced course introduces students to Roman writings on rhetoric, a vital art in Roman public and cultural life. Readings from the Rhetorica ad Herennium, Cicero, the elder Seneca, Quintilian, and Tacitus allow differing concepts of rhetoric to be seen, the relationship between rhetorical theory and practice to be understood, and the lasting value of Roman efforts to theorize the power of speech to be appreciated.

60027. Medieval Latin Texts
(3-3-0)

A survey of Medieval Latin Texts, designed to introduce intermediate students to medieval Latin literature and to help them progress in translation skills.

60031. Roman Epic: Vergil
(3-3-0)

This advanced course deals with the full corpus of Virgil's poetry, and explores the creative history of Rome's greatest poet through close readings of passages from his pastoral poetry, the Georgics and Eclogues, and his masterpiece the Aeneid. Special attention is given to the settings in which Virgil composed his works, and current and traditional critical interpretations of his poetry are considered.

60032. Livy
(3-3-0)

This advanced course introduces students to the historian Livy through close reading and detailed study of passages from his grand narrative of Rome's history from the founding of the city to the age of Augustus. Aeneas' flight from Troy, Rome's conquest of Italy, and Hannibal's dramatic invasion of Italy across the Alps are some of the stirring topics to which attention is given. Livy's artistic and historical methods, and his position in the emperor Augustus' cultural program, are key themes for discussion in the course.

60044. The Roman Novel
(3-3-0)

This advanced course offers close reading and detailed study of excerpts from Petronius' Satyricon and Apuleius' The Golden Ass. Ribald and full of comic adventures, these works have much in common with modern picaresque novels. Petronius' Trimalchio, an ex-slave buffoon, and Apuleius' Lucius, a young aristocrat magically transformed into an ass, are two of Latin literature's most memorable creations. Narrative technique, critical interpretation, and the special perspective on Roman life the works present, are major subjects for discussion in the course.

60054. St. Augustine's Confessions
(3-3-0)

This advanced course introduces students to the thought and manner of writing of Augustine through close reading and detailed study of excerpts from his highly self-reflective autobiography, the Confessions. Augustine's extended analysis of his

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spiritual development combines in a masterful way the language and habits of thought of the Christian tradition with those of classical philosophy and literature. The style of the Confessions, the significance of the work, and its relation to Augustinian thought at large are major topics for discussion in the course.

Middle Eastern Languages**Arabic (MEAR)**

60001. First Year Arabic I
(3-3-0)

This two-semester sequence of courses is a basic introduction to all aspects of the Arabic language through a comprehensive and integrated method. The focus is on language proficiency in all areas of the language, including speaking, reading, and writing. The course also introduces students to aspects of Arabic culture and everyday life in the Middle East. MEAR 60001 is offered each spring semester and MEAR 60002 is offered each fall semester.

60002. First Year Arabic II
(3-3-0)

This two-semester sequence of courses is a basic introduction to all aspects of the Arabic language through a comprehensive and integrated method. The focus is on language proficiency in all areas of the language, including speaking, reading, and writing. The course also introduces students to aspects of Arabic culture and everyday life in the Middle East. MEAR 60001 is offered each spring semester and MEAR 60002 is offered each fall semester.

60003. Second Year Arabic I
(3-3-0)

This second-year Arabic course builds on the previous two semesters. The emphasis is on speaking and writing for self-expression with continued study of the basic grammatical structures. Proficiency remains the focus through readings and conversations in the language. Students develop skill in the use of the Arabic dictionary.

60004. Second Year Arabic II
(3-3-0)

This course is geared to consolidating skills gained in the previous three semesters while enhancing the ability to converse and conduct oneself in Arabic. Reading skills are enhanced by exposure to more sophisticated examples of literature. Original written expression is encouraged through the composition of short essays.

60005. Third Year Arabic I
(3-3-0)

This third-year Arabic course emphasis is on developing listening, speaking, reading, and writing skills in interactive settings. Vocabulary building will be the focus of drills; we will cover basic vocabulary in various authentic uses of the language. Special attention will also be given to media Arabic. Basic Arabic grammar should be completed by the end of the year. We will continue with part two of the Kitaab sequence. Supplementary materials, mainly from Arabic media (BBC Arabic News, newspapers, magazines), will be provided. Tests, both oral and written, will cover the textbook materials, in addition to the basic grammar and the cumulative vocabulary.

60006. Third Year Arabic II
(3-3-0)

This third-year Arabic course emphasis is on developing listening, speaking, reading, and writing skills in interactive settings. Vocabulary building will be the focus of drills; we will cover basic vocabulary in various authentic uses of the language. Special attention will also be given to media Arabic. Basic Arabic grammar should be completed by the end of the year. We will continue with part two of the Kitaab sequence. Supplementary materials, mainly from Arabic media (BBC Arabic News, newspapers, magazines), will be provided. Tests, both oral and written, will cover the textbook material, in addition to the basic grammar and the cumulative vocabulary.

Middle Eastern Literature/Culture (MELC)

60030. Love, Death, and Exile in Arabic Literature and Cinema
(3-3-0)

This course explores literary and artistic presentation of the themes of "love, death, and exile" in Arabic literature and popular culture from the pre-Islamic era to the present day. Through close readings of Arabic poetry, essays, short stories, and novels (in English translation), and analyzing a number of Arabic movies (with English subtitles), we discuss the following issues: themes and genres of classical Arabic love poetry; gender, eroticism, and sexuality in Arabic literary discourse; alienation, fatalism, and the motif of 'al-hanin ila al-watan' (nostalgia for one's homeland) in modern Arabic poetry and fiction.

60050. Canon and Literature of Islam
(3-3-0)

This course is an introduction to the fundamental religious texts and literature of Islam. The list includes the Qur'an (the central, sacred scripture of Islam), the hadith (record of the speech and actions of the Prophet Muhammad), biography of the Prophet, exegetical literature, historical texts, mystical and devotional literature. Students will read primary texts in English translation with a focused discussion and analysis of form, content, historical background, religious significance, and literary allusions of the various texts. Themes such as "the unity and majesty of God;" "prophecy and revelation;" "good and evil;" "this world and the hereafter" will be dealt with in the lectures and conversation in class. The course lays heavy emphasis on class discussion and student preparedness.

60060. Islam: Religion and Culture
(3-3-0)

This introductory course will discuss the rise of Islam in the Arabian peninsula in the seventh century of the Common Era and its subsequent establishment as a major world religion and civilization. Lectures and readings will deal with the life of the Prophet Muhammad, the Qur'an and its role in worship and society, early Islamic history, community formation, law and religious practices, theology, mysticism, and literature. Emphasis will be on the core beliefs and institutions of Islam and on its religious and political thought from the Middle Ages until our own time. The latter part of the course will deal with the spread of Islam to the West, resurgent trends within Islam,

both in their reformist and extremist forms, and contemporary Muslim engagements with modernity.

Faculty

Asma Afsaruddin, *Associate Professor and Fellow in the Joan B. Kroc Institute for International Peace Studies*. A.B., Oberlin College, 1982; M.A., The Johns Hopkins Univ., 1985; Ph.D., *ibid.*, 1993. (1996)

Joseph P. Amar, *Associate Professor and Concurrent Associate Professor of Theology*. B.A., Catholic Univ. of America, 1970; S.T.B., *ibid.*, 1973; S.T.L., *ibid.*, 1974; M.A., *ibid.*, 1983; Ph.D., *ibid.*, 1988. (1988)

W. Martin Bloomer, *Associate Professor*. B.A., Yale Univ., 1982; M.A., *ibid.*, 1983; M.Phil., *ibid.*, 1984; Ph.D., *ibid.*, 1987. (1998)

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Li Guo, *Assistant Professor*. B.A., Shanghai International Studies Univ., China, 1979; M.A., Alexandria Univ., Egypt, 1984; Ph.D., Yale Univ., 1994. (1999)

Brian A. Krostenko, *Associate Professor*. A.B., Princeton Univ., 1986; M.A. Harvard Univ., 1989; Ph.D. *ibid.*, 1993 (2001)

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Tadeusz Mazurek, *Assistant Professional Specialist*. B.A., Yale Univ., 1985; Ph.D., Univ. of North Carolina-Chapel Hill, 1997.

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Abdul Massih Saadi, *Assistant Professional Specialist*. Ph.D., Lutheran School of Theology at Chicago, 1999.

Catherine M. Schlegel, *Associate Professor*. B.A., Univ. of Chicago, 1978; M.A., *ibid.*, 1983; Univ. of California at Los Angeles, Ph.D., 1994 (1996)

Daniel J. Sheerin, *Professor and Concurrent Professor of Theology*. B.A., St. Louis Univ., 1965; Ph.D., Univ. of North Carolina, 1969. (1985)

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Location: 304 O'Shaughnessy

Web: <http://www.nd.edu/~ecs>

The two-year interdisciplinary M.A. program in early Christian studies is sponsored jointly by the Departments of Classics and Theology, with the participation of faculty in several other departments (see listing below). It offers beginning graduate students basic training in philology, theology, history, liturgy, art history, and philosophy. Each student develops a curriculum to meet individual needs in consultation with a committee of faculty advisers. But all curricula are designed to ensure that students are equipped with the necessary language skills (at least two ancient Christian languages and literatures [Latin and/or Greek and/or Syriac] and one or more contemporary research languages) and with a sturdy grasp of the intellectual, historical, and social contexts of the early church and the methods and resources for studying them.

New disciplinary and critical approaches to late antiquity, as well as a growing awareness of the importance of Christian origins for the present life of the churches, have made early Christian studies a vibrant and rapidly expanding field. Traditional expertise in philology, history, and theology remains fundamental, but these skills must now be supplemented by a broad range of interdisciplinary approaches. An unusually strong faculty presence makes Notre Dame the ideal place for pursuing this area. Students who come with a keen interest in the field, but limited formal training in it, may acquire the basic skills and knowledge necessary for advanced study. Those already adequately prepared in the basics can broaden their competency by studying the language and culture of Middle Eastern, Egyptian, and Byzantine Christianity, and of Rabbinic Judaism and early Islam.

This is a demanding, extended (two academic years plus summer) M.A. program that prepares students to enter the best doctoral programs in theology, religious studies, history, art history, and literary studies, already proficient in language study and basic training in the multiple fields of early Christian studies.

A limited number of tuition scholarships and stipends are available.

Contributing Faculty

Joseph P. Amar, *Associate Professor of Classics and Concurrent Associate Professor of Theology*. Syriac and Christian Arabic literature.

Charles E. Barber, *the Michael P. Grace Professor of Arts and Letters and Associate Professor of Art, Art History, and Design*. Early Christian and Byzantine art.

Keith R. Bradley, *Chair and the Shabbeen Professor of Classics, and Concurrent Professor of History*. Roman social and cultural history.

John C. Cavadini, *Chair and Associate Professor of Theology, and Executive Director of the Institute for Church Life*. Patristic theology.

Brian E. Daley, S.J., *the Catherine F. Huisling Professor of Theology*. Patristic theology.

Blake Leyerle, *Associate Professor of Theology and Concurrent Associate Professor of Classics*. Social history of early Christianity.

Daniel J. Sheerin, *Professor of Classics and Concurrent Professor of Theology*. Christian Latin literature.

Robin Darling Young, *Associate Professor of Theology*. Early Eastern Christianity.

Associated Faculty

Asma Afsaruddin, *Assistant Professor of Classics and Fellow in the Joan B. Kroc Institute for International Peace Studies*. Islam.

David E. Aune, *Professor of Theology*. *New Testament*.

W. Martin Bloomer, *Associate Professor of Classics*. Classics, Ancient education.

Paul M. Cobb, *Assistant Professor of History*. Islamic history.

Mary Rose D'Angelo, *Associate Professor of Theology*. Gender in early Christianity.

Stephen E. Gersh, *Professor of Medieval Studies*. Late antique philosophy.

David T. Jenkins, *Assistant Librarian*. Byzantine librarian.

Maxwell E. Johnson, *Professor of Theology*. Early Christian liturgy.

Mary M. Keys, *Assistant Professor of Political Science*. Early Christian political thought.

Brian Krostenko, *Associate Professor of Classics*. Latin literature and sociolinguistics.

David Ladouceur, *Associate Professor of Classics*. Latin language.

John P. Meier, *the William K. Warren Professor of Catholic Theology*. *New Testament*.

Jerome H. Neyrey, S.J., *Professor of Theology*. Biblical/literary studies.

David K. O'Connor, *Associate Professor of Philosophy and Concurrent Associate Professor of Classics*.

Gretchen J. Reydams-Schils, *Associate Professor in the Program of Liberal Studies and Fellow in the Nanovic Institute for European Studies*. Late antique philosophy.

Michael A. Signer, *the Abrams Professor of Jewish Thought and Culture (Theology) and Fellow in the Nanovic Institute for European Studies*. Rabbinic Judaism.

Gregory E. Sterling, *Associate Dean of Arts and Letters and Professor of Theology*. Biblical and post-biblical Greek, Coptic.

East Asian Languages and Literatures

Chair:

Lionel M. Jensen

Telephone: (574) 631-8874

Fax: (574) 631-4268

Location: 205 O'Shaughnessy

E-mail: jensen.21@nd.edu

Web: <http://www.nd.edu/~e-call>

The University of Notre Dame does not offer a graduate degree in Chinese or Japanese. Graduate students who wish to audit a Chinese or Japanese language class must receive permission from the instructor.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

Chinese Language Courses

10101, 10102, 10103. Beginning Chinese I, II, and III

(3-3-0) (3-3-0) (3-3-0)

For students with no background in Chinese. A three-semester sequence of three-credit courses covering the same material as 10111-10112 and designed to prepare students to enter 10211. 10101 and 10103 are offered only in the spring semester, 10102 only in the fall. Equal emphasis on the basic skills of listening, speaking, reading, and writing. Students may expect to master a spoken vocabulary of about 1,000 words and a written vocabulary of 500 characters.

10111, 10112. First-Year Chinese I and II
(5-5-0) (5-5-0)

Continuation of First Year Chinese I. Equal emphasis is placed on the basic language skills in speaking, listening, reading, and writing. Students will learn both the Chinese Romanization system of the pinyin and written characters, and to perform conversational skills in daily life situations. By the end of the course they are expected to have mastered a spoken vocabulary of about 1,000 words and 500 written characters.

20211, 20212. Second-Year Chinese I and II (5-5-0) (5-5-0)

Grammar review and training in the four basic skills to higher levels of sophistication: oral-aural skills for fluency in communication, reading for critical understanding, and the ability to write simple compositions.

30311, 30312. Third Year Chinese I and II (3-3-0) (3-3-0)

The course focuses on the development of advanced conversational, reading, and writing skills, using a wide range of authentic materials, including material from news media.

40411, 40412. Fourth-Year Chinese I and II (3-3-0) (3-3-0)

The course focuses on the practice in advanced conversational, reading, and writing skills, using newspapers, short fiction, videotapes, and other types of authentic materials.

Japanese Language Courses

10101, 10102, 10103. Beginning Japanese I, II, and III (3-3-0) (3-3-0) (3-3-0)

A three-semester sequence of three-credit courses covering the same material as 10211-10112 and designed to prepare students to enter 20211. Courses 10101 and 10103 are offered only in the spring semester, 10102 only in the fall. Introduction to the fundamentals of modern Japanese. Equal emphasis on speaking, listening, reading, and writing. Introduction of the hiragana and katakana syllabaries, and 200 kanji.

10111, 10112. First-Year Japanese I and II (5-5-0) (5-5-0)

Introduction to the fundamentals of Japanese. Equal emphasis on the four skills: speaking, listening, reading, and writing. Introduction of the hiragana and katakana syllabaries, and 200 kanji.

20211, 20212. Second-Year Japanese I and II (5-5-0) (5-5-0)

This course has continued training in the fundamentals of the modern language. Equal emphasis on the four skills: speaking, listening, reading, and writing. Introduction to approximately 200 kanji.

30311, 33012. Third-Year Japanese I and II (3-3-0) (3-3-0)

The first in a sequence of intermediate courses offered for those students who did not participate in the Year-in-Japan Program. Development of oral-aural skills with an emphasis on typical conversational situations. Improvement of reading and writing skills.

40411, 40412. Fourth-Year Japanese I and II (3-3-0) (3-3-0) Shiga

The second in a sequence of intermediate courses for those students who did not participate in the Year-in-Japan Program. Aimed at achieving a high proficiency in the four skills: speaking, listening, reading, and writing.

40421, 40422. Advanced Japanese I and II (3-3-0) (3-3-0)

Advanced Japanese is a three-credit course for students who have completed EALJ 40412, IJ 500 (Intensive Japanese 500) in the year-in-Japan program at Nanzan, or an equivalent course at Sophia, Kanazawa, Hakodate, or Middlebury. This course takes students beyond the grammar-centered approach of textbooks to the study and discussion of original materials produced in Japanese for everyday Japanese consumption. Course materials include excerpts from short stories, poetry, letters, social criticism, academic writing, newspaper articles, and video clips. Students may repeat the course more than once, as the content of the course changes according to the needs and interests of the students enrolled.

40498. Special Studies (V-V-V) Staff

This course takes students beyond textbook Japanese by introducing original materials created for Japanese audiences (literature, current events, and video materials, etc.). Emphasis is on grammar and syntax, vocabulary building, speaking, reading, and writing.

Faculty

Heather Bowen-Struyk, *Visiting Assistant Professor of Japanese*. B.A., Univ. of Michigan, 1993; M.A., *ibid*, 1995; Ph.D., *ibid.*, 2001.

Michael C. Brownstein, *Associate Professor*. B.A., California State Univ., Northridge, 1972; B.A., Monterey Inst. of International Studies, 1973; M.A., Columbia Univ., 1978; Ph.D., *ibid.*, 1981. (1982)

Liangyan Ge, *Associate Professor*. B.A., Hefei Polytechnic, China, 1982; M.A., Nanjing Univ., China, 1984; Ph.D., Indiana Univ., 1995. (1995)

Howard Goldblatt, *Research Professor*. B.A., Long Beach State College, 1961; M.A., San Francisco State Univ., 1970; Ph.D., Indiana Univ., 1974.

Noriko Hanabusa, *Associate Professional Specialist*. B.A., Keio Univ., Japan, 1988; M.A., Univ. of Wisconsin, Madison, 1994. (1994)

Lionel M. Jensen, *Chair and Associate Professor, Concurrent Associate Professor of History, and Fellow in the Helen Kellogg Institute for International Studies*. B.A., Williams College, 1976; M.A., Washington Univ., 1980; Ph.D., Univ. of California, Berkeley, 1992. (2000)

Sylvia Li-Chun Lin, *Assistant Professor*. B.A., Tamkang Univ., 1984; M.A., *ibid.*, 1987, St. John's Univ., 1988., Univ. of Oregon, 1991; Ph.D., Univ. of California, Berkeley, 1998. (2002)

Jonathan S. Noble, *Visiting Assistant Professor*. B.A., College of William and Mary, 1994; M.A., Ohio State Univ., 1996; Ph.D., Ohio State Univ., 2003.

Setsuko Shiga, *Associate Professional Specialist*. B.A., Nanzan Univ., Japan, 1987; M.A., Univ. of Iowa, 1992. (1997)

Xiaoshan Yang, *Assistant Professor*. B.A., Anhui Univ., China, 1982; M.A., Peking Univ., China, 1985; Ph.D. Harvard Univ., 1994. (1997)

Chengxu Yin, *Assistant Professional Specialist*. B.A., Peking Univ., 1984; M.A., Univ. of Massachusetts, 1990; Ph.D., Brandeis Univ., 1994. (2000)

English

Chair:

Katherine O'Brien O'Keeffe

Director of Graduate Studies:

Graham Hammill

Director of Creative Writing:

William O'Rourke

Telephone: (574) 631-6618

Fax: (574) 631-4795

Location: 356 O'Shaughnessy Hall

E-mail: english@nd.edu

Web: <http://www.nd.edu/~english>

The Program of Studies

The Department of English at the University of Notre Dame is distinguished by its extraordinary diversity. In addition to study in the traditional fields of Old English, Middle English, Renaissance, Restoration and 18th-century, Romantic, Victorian, early American, modern British, and modern American literature, it offers opportunities to work in interdisciplinary fields and programs such as Irish studies, literature and philosophy, religion and literature, the history of science, gender studies, and the Medieval Institute. The intellectual life of the department is further enlivened by sponsorship of conferences, colloquia, and lectures, most notably the annual Ward Phillips and Duffy lectures which have brought a series of distinguished literary critics to our campus. The graduate programs in English seek to combine a formal course of study with encouragement to develop intellectual independence. Students in the Ph.D. program, for example, begin with intensive course work and move toward independent and specialized study. We also seek to train students not only in the history of literature but also in the traditions of critical inquiry, and we have made the study of literary theory as well as literary history an integral part of the program.

Admission

Applicants to both the M.A. and the Ph.D. programs are expected to have completed eight or more upper-division English courses. They must also take the Graduate Record Examination general and subject tests. In addition to other materials required by the Graduate School, the applicant should submit a writing sample, preferably a critical literary essay of 10-15 pages. Special conditions apply for applicants to the creative writing M.F.A. program. Creative writing applicants need not take the GRE subject test and they need not have taken eight English courses. As a writing sample, they should provide 25-30 pages of fiction or nonfiction, or 20 pages of poetry.

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Master's Program**English and American Literature**

The Master's Program is specifically designed for Notre Dame or St. Mary's undergraduate English majors seeking advanced training before applying to a Ph.D. program at another institution. This is a 30-credit-hour program, requiring either 30 credit hours of course work or 24 credit hours of course work and six credit hours of thesis research. Students must take one course in literary criticism or theory. Those seeking the research degree must also demonstrate proficiency in a language appropriate to their area of research. Near the conclusion of the program, the student takes a written examination covering three major literary texts and selected criticism; this examination is designed to test the student's capacity for critical study.

Master's Program in English and Law

This is a program open only to students already admitted to the Notre Dame Law School who also wish to obtain an M.A. in English. A student typically takes 21 hours of English courses and 9 hours of law courses. The course on "Law and Literature," offered in the Law School, can be counted towards the 21 hours of English. Students would normally pursue the nonresearch degree; those wishing to complete the research degree need to complete an additional six hours of thesis research. Admission is through the normal procedures of the Graduate School and the Department of English.

M.F.A. in Creative Writing

The graduate creative writing program includes workshops with nationally acclaimed writers and literature classes with a distinguished English Department faculty. Students participate fully in the intellectual life of the department, which includes regular visits from prominent writers. Students may also choose to work as editorial assistants on our national literary magazine, *The Notre Dame Review*. Throughout the four semesters, all students work closely with an adviser on the thesis, which will ultimately be a publishable novel, collection of stories, volume of poetry, or work of literary nonfiction. Course work includes 36 credit hours of writing workshops, thesis preparation tutorials, and literature classes.

Ph.D. Program**Course Requirements**

The Ph.D. program requires 48 credit hours of course work. Students must take the Introduction to Graduate Study, a historical distribution of courses, and at least one course in literary theory. In keeping with its policy of encouraging interdisciplinary study, the program permits the student to take up to 12 credit hours of course work in a field other than English.

Foreign Language Requirement

The student must demonstrate proficiency in one language verifiably appropriate to the student's area of research by the end of the second year of full-time residency.

Candidacy (Comprehensive Three-Field) Examination

The student takes examinations in one historical period selected from among Old English, Middle English, Renaissance, Restoration and 18th-century, 19th-century British, 20th-century British, early American literature (to 1865), middle American literature from the Civil War to 1930, and post-1930 American literature; either a second historical period or a special topic; and one examination in literary theory/methodology. One of these three fields, ordinarily the field in which the student intends to write his or her dissertation, is designated the major field. These examinations are intended to determine whether the student possesses the theoretical skills and specialized knowledge necessary for writing a dissertation and for teaching in his or her field. Special reading courses enable students to dedicate the majority of their last two semesters of course work to preparation for these examinations. The written part of the examination is followed by an oral component.

Dissertation Proposal

During the fourth year, students produce a dissertation prospectus and preliminary draft of one part of the dissertation (a chapter or substantial part of a chapter). Students then meet with the dissertation committee for advice on continuing and completing the project.

Dissertation

Upon receiving approval of the proposal, the student proceeds with the dissertation under continuing supervision of the dissertation director. The dissertation is intended to demonstrate the student's readiness to participate fully in the profession as a scholar and literary critic.

Further information about financial aid opportunities, the department's many programs and activities, and the faculty is contained in a brochure, obtainable by writing to the Graduate School.

Programs and Institutes

The Department of English offers a variety of subject concentrations in both modern and historical language and literature studies. For more information and up-to-date program descriptions, please visit the appropriate website:

- Keough Institute for Irish Studies
<http://www.nd.edu/~irishstu>
- Modern Poetry and Poetics
<http://www.nd.edu/~poetics>
- Old and Middle English
<http://medieval-englit.nd.edu>
- Ph.D. in Literature
<http://www.nd.edu/~litprog>
- Philosophy and Literature
<http://www.nd.edu/~philnlit>

Publications

The Department of English publishes several scholarly journals, *Religion and Literature*, *The Shakespeare Survey*, *Nineteenth-Century Contexts*, and a literary

quarterly, *The Notre Dame Review*. All of these publications provide graduate students with the opportunity to learn about the process of editing and production.

Financial Assistance and Funding for Professional Activity

The full range of financial assistance, including fellowships (University Lilly Fellowships, first-year fellowships, ethnic minority fellowships, and others), teaching assistantships, and tuition scholarships, is available to students in the English programs. Students admitted into the Ph.D. program ordinarily receive full funding, which continues to be provided throughout course work and within the standard time frame for completing the dissertation (currently six years). The English Department is also committed to supporting students' involvement in professional activities. Funding is provided for research travel and participation in academic conferences. All students admitted into the M.F.A. program are awarded full tuition scholarships and are also considered for teaching and editorial assistantships. All current M.F.A. students are eligible to apply for the Nicholas Sparks Summer Fellows Program, which offers internships in publishing and author representation, and all second-year M.F.A. students are eligible to apply for the Sparks Prize, a \$20,000 annual award to one graduating writer each year. Please note that the request to be considered for financial support is made on the application for admission. No separate application is needed.

Preparation for the Profession: Teaching and Scholarship

The English Department offers all graduate students a variety of teaching opportunities and professional preparation activities, all designed to provide students with important professional experience and to place them in a highly competitive position for entering the job market. All beginning students enroll in a semester workshop on "Teaching Writing," followed by two intensive orientation meetings on teaching First-Year Composition. Students then typically teach two semesters of "First-Year Composition," never more than one class a semester and with class enrollments kept to about 17. Third- and fourth-year students have opportunities to teach literature courses. Postdoctoral teaching fellowships are also available. Students enroll later in a "Preparing for the Profession" seminar, which concentrates on preparing papers for academic conferences, submitting essays for publication to academic journals, and developing strategies for entering the job market. Our job placement workshop consists of practice job interviews and facilitates students generally in their searches for academic employment.

Course Descriptions

Some courses are offered every year or semester, such as "Graduate Writing Workshops" and "Introduction to Graduate Studies," and courses in the traditional historical areas are offered every semester in the standard lecture format. Specific topics will vary each semester.

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Each course listing includes:

- Course number (where possible)
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

Courses within the following topics vary from year to year, but there will always be at least one course taught from each topic per semester. Recent course offerings have included:

Old and Middle English Literature

- 90201. Beowulf
- 90202. Chaucer's Early Poetry
- 90203. First Aid in Middle English
- 90211. Canterbury Tales
- 90212. The Poetry of Chaucer
- 90214. Latin Literature of Anglo-Saxon England
- 90225. Old English Biblical Verse
- 90226. Language, Symbolism, and Vision
- 90227. Chaucer and Medieval Narrative
- 90229. Writing and Politics in Middle English

Renaissance Literature

- 90117. Print, Manuscript, and Performance in the Atlantic World, 1550–1800
- 90209. Books, Authors, and Readers in Early Modern England
- 90217. Republican Aesthetics
- 90221. Hamlet and Lear in Performance
- 90223. Spenser, Milton, Marvell
- 90230. Shakespeare and Film
- 90233. History Plays and Historiography

Restoration and 18th Century Literature

- 90231. Age of Johnson
- 90302. Aesthetic Theory and the Enlightenment
- 90303. Reading the French Revolution
- 90311. Monsters of Benevolence: Irish Ascendancy Writers and Early Modernity, 1720–1800

Romantic and Victorian Literature

- 90301. Victorian Science and Literature
- 90304. Nineteenth-Century British Novel
- 90306. Romantic Era Drama and the Public Theatre
- 90307. Victorian Literature
- 90308. Romanticism and Culture Wars: Lakers, Scots, and Cockneys
- 90309. Romanticism, Gender, Colonialism
- 90310. The 19th Century Local

Modern British Literature

- 90401. Modern British Poetry
- 90406. Postmodernism and British Poetry
- 90407. Woolf and Bloomsbury
- 90409. Modernism and Modernity

American Literature before 1900

- 90601. Early American Literature
- 90604. American Realism
- 90605. American Literature at War in Mexico

American Literature after 1900

- 90702. Cold War Fictions
- 90705. Objectivism in 20th Century American Poetry
- 90801. African-American Women Writers
- 90802. Black Feminist Criticism
- 90803. Latino Poetry
- 90804. Fictions of Citizenship
- 90805. Latino/a Literature
- 90820. Writing Harlem: Race, Renaissance, the Modern

Irish Studies

- 90502. Representing Ireland
- 90504. Anglo-Irish Identities
- 90505. Modernity, Gothic, and Irish Culture
- 90506. Modern Irish Drama and Revolutionary Politics
- 90508. Gaelic Gothic
- 90509. Joyce, Modernity, Post Colonial Ireland
- 90510. Irish Modernism
- 94513. Ireland: Genealogies/Culture

Literary Theory

- 90403. From Brecht to Performance Art: Drama and Dramatic Theory, 1930–2000
- 90405. Weimar Republic
- 90708. Poetic Language, Theory, Performance
- 90903. History of Modern Aesthetics
- 90904. Philology and World Literature
- 90905. Modern and Contemporary Poetics

92001. Practicum: Teaching Writing (1-1-0)

The purpose of this practicum is to provide graduate students with integrated training in the teaching of literature and writing on the undergraduate level. This practicum is required for all first-year Ph.D. students in the English Department. Any other graduate student interested in this course should contact the instructors for more information.

92002. Practicum: Writing for the Profession (1.5-1.5-0)

This is a workshop open to any student whose dissertation prospectus has been approved. Topics covered will be: Abstract and Conference Papers, Articles, Book Proposals, Dissertations, Dissertation to Book, Grant Applications, Job materials (letters, abstracts, teaching philosophy, writing sample). In consultation with the directors of their dissertations, participants must set and meet writing goals for the semester—usually but not exclusively the preparation of an article for publication.

90011. – 90015. Graduate Fiction Writing Workshop (3-3-0)

A fiction workshop for students in the MFA Program.

90031. – 90034. Graduate Poetry Writing Workshop (3-3-0)

A poetry workshop for students in the MFA Program.

90091. The Writing Profession (1.5-1.5-0)

For students in the M.F.A. program: a series of workshops on submitting manuscripts for publication, finding an agent, and applying for jobs in the academy and in publishing. Informational sessions will be followed by workshops in which students will have their submission letters, vitas, and job application letters reviewed. The sessions will be arranged at a time convenient to all the participants.

90092. Small Press Literature and Publishing (0-0-0)

The literature, philosophy, and practice of literary magazines.

90101. Introduction to Graduate Study (3-3-0)

Introduces students to research techniques, literary theory, and the scholarly profession of literature. Frequent guest lectures by the English faculty will enable students to become acquainted with research activities taking place in the department.

90110. English for Non-native Speakers (3-3-0)

A course designed to improve spoken English of non-native speakers, at the intermediate level, with a specific goal of increasing communication skills for teaching, research, and discussion purposes.

90111. Advanced English for Non-Native Speakers (3-3-0)

This course is primarily designed to improve spoken English of non-native speakers, at the intermediate level, with a specific goal of increasing communication skills for teaching, research, and discussion purposes. Mastery of English pronunciation, vocabulary, idiomatic expression, and sentence structure will be the focus. Emphasis will be placed on learning to command clear and accurate spoken English for the purpose of classroom instruction and participation. To this end, emphasis will be placed on phonology, stress placement, intonation, juncture, accent, tempo, general pronunciation, linguistic posture and poise (kinesics), conversational diction, presentation of material, handling questions, and other matters of instruction related to Language Arts.

96001. Directed Readings (0-0-0)

Directed readings for examinations in the doctoral program.

97001. Special Studies (0-0-0)

Topics vary by semester.

98000. Nonresident Thesis Research (1-0-0)

Required of nonresident graduate students who are completing their theses in absentia and who wish to retain their degree status.

98001. Thesis Direction (0-0-0)

Research and writing on an approved subject under the direction of a faculty member.

ENGLISH

98600. Nonresident Dissertation Research (0-0-0)

Required of nonresident graduate students who are completing their theses in absentia and who wish to retain their degree status.

98601. Research and Dissertation (0-0-0)

Independent research and writing on an approved subject under the direction of a faculty member.

Faculty

Kate Baldwin, *Associate Professor*. B.A., Amherst College, 1988; M.A., Yale Univ., 1992; Ph.D., *ibid.*, 1995. (1997)

Joseph X. Brennan, *Professor Emeritus*. A.B., Providence College, 1945; M.A., Brown Univ., 1949; Ph.D., Univ. of Illinois, 1953. (1955)

Jacqueline V. Brogan, *Professor*. B.A., Southern Methodist Univ., 1974; M.A., *ibid.*, 1975; Ph.D., Univ. of Texas, 1982. (1986)

Gerald L. Bruns, *the William P. and Hazel B. White Professor of English*. B.A., Marquette Univ., 1960; M.A., *ibid.*, 1962; Ph.D., Univ. of Virginia, 1966. (1984)

Joseph A. Buttigieg, *the William R. Kenan Jr. Professor of English*. B.A., Univ. of Malta, 1968; Ph.D., State Univ. of New York at Binghamton, 1976. (1980)

James M. Collins, *Associate Professor of Film, Television, and Theatre and Concurrent Associate Professor of English*. B.A., Univ. of Iowa, 1975; Centres des Etudes Cinematographique, France, 1977; Ph.D., Univ. of Iowa, 1984. (1985)

Donald P. Costello, *Professor Emeritus*. A.B., De Paul Univ., 1955; M.A., Univ. of Chicago, 1956; Ph.D., *ibid.*, 1962. (1960)

Seamus Deane, *the Donald and Marilyn Keough Professor of Irish Studies and Professor of English*. B.A., Queen's Univ., Belfast, 1961; M.A., *ibid.*, 1963; Ph.D., Cambridge Univ., 1966. (1993)

Margaret Doody, *Director of the Ph.D. in Literature Program and the John and Barbara Glynn Family Professor of Literature*. B.A., Dalhousie Univ., 1960; B.A., Oxford Univ., 1962; M.A., *ibid.*, 1967; D.Phil., *ibid.*, 1968. (2000)

James P. Dougherty, *Professor Emeritus*. A.B., St. Louis Univ., 1959; M.A., Univ. of Pennsylvania, 1960; Ph.D., *ibid.*, 1962. (1966)

John Duffy, *Assistant Professor and Director, University Writing Center*. B.A., Boston College, 1977; M.A., Univ. College, Dublin, 1979; M.A., Columbia Univ., 1982; Ph.D., Univ. of Wisconsin, 2000. (1998)

Cornelius Eady, *Associate Professor*. (2005)

Maud Ellmann, *the Donald and Marilyn Keough Chair of Irish Studies*. B.A., King's College, Cambridge, 1975; M.A., *ibid.*, 1979; D. Phil., St. Anne's College, Oxford, 1982. (2005)

Stephen M. Fallon, *Associate Professor of Liberal Studies and Concurrent Associate Professor of English*. A.B., Princeton Univ., 1976; M.A., McGill Univ., 1978; Ph.D., Univ. of Virginia, 1985. (1985)

Christopher B. Fox, *Professor, Director of the Keough Institute for Irish Studies, and Chair of Irish Language and Literature*. B.A., Cleveland State Univ., 1971; M.A., State Univ. of New York at Binghamton, 1974; Ph.D., *ibid.*, 1978. (1986)

Stephen A. Fredman, *Professor*. B.F.A., California Inst. of the Arts, 1971; M.A., California State College, 1976; Ph.D., Stanford Univ., 1980. (1980)

Dolores Warwick Frese, *Professor*. B.A., College of Notre Dame of Maryland, 1958; M.A., Univ. of Iowa, 1961; Ph.D., *ibid.*, 1972. (1973)

Sonia G. Gernes, *Professor Emerita*. B.A., St. Teresa College, 1966; M.A., Univ. of Washington, 1971; Ph.D., *ibid.*, 1975. (1975)

Luke Gibbons, *the Grace Director of Irish Studies, the Keough Family Professor of Irish Studies, the Notre Dame Professor of English, and Concurrent Professor of Film, Television, and Theatre*. B.A., Univ. College, Galway, 1972; M.A., *ibid.*, 1976; Ph.D., Trinity College, Dublin, 1989. (2000)

Barbara J. Green, *Associate Professor*. B.A., Univ. of Chicago, 1983; M.A., Univ. of Virginia, 1985; Ph.D., *ibid.*, 1991. (1991)

Stuart Greene, *the O'Malley Director of the University Writing Program and Associate Professor of English*. B.A., State Univ. of New York at Binghamton, 1978; M.A., *ibid.*, 1980; Ph.D., Carnegie Mellon Univ., 1990. (1997)

Sandra Gustafson, *Associate Professor*. B.A., Cornell Univ., 1985; Ph.D., Univ. of California, Berkeley, 1993. (1993)

Graham Hammill, *Director of Graduate Studies and Associate Professor*. B.A., Louisiana State Univ., 1986; Ph.D., Duke Univ., 1992. (1995)

Susan Cannon Harris, *Associate Professor and Concurrent Associate Professor in the Keough Institute for Irish Studies*. B.A., Yale Univ., 1991; M.A., Univ. of North Carolina, 1993; Ph.D., Univ. of Texas, 1998. (1998)

Kevin Hart, *Professor*. B.A., Australian National Univ., 1976; Ph.D., Univ. of Melbourne, 1986. (2002)

Glenn Hender, *Associate Professor*. B.A., Brown Univ., 1984; Ph.D., Northwestern Univ., 1991. (1994)

Peter Holland, *Chair of Film, Television, and Theatre, the McMeel Professor in Shakespeare Studies, and Concurrent Professor in English*. B.A., Trinity Hall, Cambridge, 1972; Ph.D., *ibid.*, 1977. (2002)

Romana Huk, *Associate Professor*. B.A., College of William and Mary, 1981; M.A., Univ. of Notre Dame, 1984; Ph.D., *ibid.*, 1987. (2002)

Antonette K. Irving, *Assistant Professor*. B.A., Univ. of Virginia, 1992; M.A., Univ. of Kent, 1996; Ph.D., New York Univ., 2001. (2000)

Thomas J. Jemielity, *Professor Emeritus*. M.A., John Carroll Univ., 1958; Ph.D., Cornell Univ., 1965. (1963)

Cyraina Johnson-Roullier, *Associate Professor*. B.S.J., Ohio Univ., 1982; M.A., Ohio State Univ., 1985; M.A., State Univ. of New York at Buffalo, 1990; Ph.D., *ibid.*, 1991. (1991)

Christopher A. Jones (Drew), *Professor*. B.A., Univ. of the South, Sewanee, 1988; M.A., Univ. of North Carolina, 1990; Ph.D., Univ. of Toronto, 1995. (2004)

Kathryn Kerby-Fulton, *the Notre Dame Chair in English*. B.A. and B.Ed., Glendon College, York Univ. Toronto, 1977; M.Phil., Oxford Univ., 1979; D.Phil., Univ. of York, UK, 1986. (2005)

Edward A. Kline, *Professor Emeritus*. A.B., Muhlenberg College, 1961; Ph.D., St. Louis Univ., 1966. (1966)

William J. Krier, *Associate Professor*. B.A., Univ. of Notre Dame, 1965; M.A., Univ. of Michigan, 1966; Ph.D., Indiana Univ., 1973. (1969)

Greg P. Kucich, *Professor*. B.A., San Francisco State Univ., 1978; M.A., Univ. of Michigan, 1979; Ph.D., *ibid.*, 1983. (1983)

Jesse M. Lander, *Assistant Professor*. B.A., Columbia College, 1988; B.A., Univ. College, Oxford, 1991; M.A., Columbia Univ., 1992; M. Phil., *ibid.*, 1994; Ph.D., *ibid.*, 1998. (1999)

Michael Lapidge, *Professor Emeritus*. B.A., Univ. of Calgary, 1962; M.A., Univ. of Alberta, 1965; Ph.D., Univ. of Toronto, 1971. (1998)

Robert J. Lordi, *Professor Emeritus*. A.B., Holy Cross College, 1950; M.A., Boston College, 1955; Ph.D., Univ. of Illinois, 1958. (1958)

Jill Mann, *Professor Emerita*. B.A., Oxford Univ., 1964; Ph.D., Cambridge Univ., 1971. (1999)

John E. Matthias, *Professor Emeritus*. B.S., Ohio State Univ., 1963; M.A., Stanford Univ., 1966. (1967)

Sara Maurer, *Assistant Professor*, B.A. Rice Univ., 1995; M.A., Indiana Univ. 1997; Ph.D. Indiana Univ. (2003)

Orlando Menes, *Assistant Professor*. B.A., Univ. of Florida, 1980; M.A., *ibid.*, 1982; Ph.D., Univ. of Illinois at Chicago, 1998. (2000)

Lewis E. Nicholson, *Associate Professor Emeritus*. B.A., Univ. of Iowa, 1947; M.A., *ibid.*, 1948; M.A., Harvard Univ., 1951; Ph.D., *ibid.*, 1958. (1958)

Maura Bridget Nolan, *Assistant Professor*. A.B., Dartmouth College, 1988; A.M., Duke Univ., 1992; Ph.D., *ibid.*, 1998. (1996)

Katherine O'Brien O'Keeffe, *Chair and the Notre Dame Professor of English*. A.B., Fordham College, 1970; Ph.D., Univ. of Pennsylvania, 1975. (1992)

William A. O'Rourke, *Professor and Director of the Creative Writing Program*. A.B., Univ. of Missouri, Kansas City, 1968; M.F.A., Columbia Univ., 1970. (1981)

Paul A. Rathburn, *Associate Professor Emeritus and Artistic Director of the Shakespeare at Notre Dame Initiative*. B.A., Holy Cross College, 1956; M.A., St. Mary's Seminary, 1958; M.A., Marquette Univ., 1961; Ph.D., Univ. of Wisconsin, 1966. (1965)

Jamie Javier Rodriguez, *Assistant Professor*. B.A., North Texas State Univ., 1981; A.M., Harvard Univ., 1994; Ph.D., Harvard Univ., 2000. (2002)

Valerie Sayers, *Professor*. B.A., Fordham Univ., 1973; M.F.A., Columbia Univ., 1976. (1993)

John Sitter, *the Notre Dame Professor of English*. A.B., Harvard, 1966; Ph.D., Univ. of Minnesota, 1969. (2004)

Donald C. Sniogowski, *Associate Professor Emeritus*. B.A., Univ. of Notre Dame, 1956; B.A., Oxford Univ., 1958; M.A., Yale Univ., 1960; Ph.D., *ibid.*, 1966. (1961)

David Wayne Thomas, *Associate Professor*. B.A., Univ. of North Dakota-Grand Forks, 1988; M.A., UC Davis, 1991; Ph.D., *ibid.*, 1996. (2005)

Steve Tomasula, *Assistant Professor*. B.S., Purdue Univ., 1976; M.A., Univ. of Illinois at Chicago, 1982; Ph.D., *ibid.*, 1995. (1997)

Chris R. Vanden Bossche, *Professor*. A.B., Univ. of Notre Dame, 1972; Ph.D., Univ. of California, Santa Cruz, 1982. (1984)

Edward Vasta, *Professor Emeritus*. B.A., Univ. of Notre Dame, 1952; M.A., Univ. of Michigan, 1954; Ph.D., Stanford Univ., 1963. (1958)

James H. Walton, *Professor Emeritus*. A.B., Univ. of Notre Dame, 1959; M.A., Northwestern Univ., 1960; Ph.D., *ibid.*, 1966. (1963)

Thomas A. Werge, *Professor and Concurrent Professor in the Master of Education Program*. B.A., Hope College, 1963; M.A., Cornell Univ., 1964; Ph.D., *ibid.*, 1967. (1967)

Ivy Glenn Wilson, *Assistant Professor*. B.A., Stanford Univ., 1995; M.A., Yale Univ., 1998; Ph.D., Yale Univ., 2002 (2002).

History

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The Program of Studies

The graduate programs in history permit students to deepen their knowledge and understanding of selected historical specializations and to nourish the historical perspective that marks the educated citizen. Advanced work in history may prepare students for careers in scholarship and teaching, for certain public service careers, or for careers in research.

The history programs accept only students planning to pursue the Ph.D. degree. These students are normally awarded a master's degree in the course of pursuing their doctorates.

Admission

An applicant ordinarily should have completed at least 24 credit hours of undergraduate work in history. Language preparation is highly desirable; prospective medievalists must know Latin, and prospective modern Europeanists must know at least one modern European language. Both medievalists and those pursuing studies in other fields will be required to demonstrate proficiency in reading relevant foreign languages.

Incoming graduate students in the history programs begin studies in the fall semester. Students applying to enter in the fall should have complete dossiers (application, transcripts, writing sample, recommendations, and GRE scores) on file with Notre Dame's Office of Graduate Admissions no later than the preceding January 5. The "Statement of Intent" accompanying the application should describe the student's areas of interest as explicitly as possible and should list the departmental faculty members with whom they wish to study. (Please note that professors designated "emeritus" are retired.) The writing sample should demonstrate the applicant's skills in writing, analysis, and (if possible) historical research.

Fall applicants who wish to begin studies at Notre Dame the preceding summer should meet fall application requirements and also summer session admissions requirements stipulated in Notre Dame's Summer Session *Bulletin of Information*.

General Requirements

Before completing their doctorates, students must satisfy the departmental requirements for the master's degree. Doctoral students receive their master's after

completing 33 credit hours of study including one graduate-level seminar in history and 24 credit hours of graduate-level work (seminars, colloquia, directed readings, supplemental research, and readings) in history or related disciplines. The master's degree demands satisfactory completion of course work with a GPA of no less than 3.0. Students must also pass an M.A. exam (normally the candidacy exams count in place of a separate M.A. exam) and satisfy the language requirements (see below). In order to enter the doctoral program, students must satisfy the foreign language requirement and receive the approval of the departmental faculty. Students entering Notre Dame with a master's degree in history from another institution normally have the same course work, writing, and examination requirements as those entering without such a degree, but holders of the master's degree may be able to transfer as many as 24 credits into the history Ph.D. program, upon approval of the director of graduate studies. Normally, no more than three credits may be transferred and used to replace required courses in history.

In order to receive a Ph.D., a student must complete a total of 42 credit hours of study, including at least three graduate-level seminars in history (two for students in American history). Work must be in graduate-level courses (seminars, colloquia, directed readings, supplemental research and reading, dissertation research) in history or related disciplines.

In addition to completing prescribed course work, doctoral students must also pass Ph.D. candidacy examinations in their specialties. The candidacy examination will normally be taken in the student's third year of residence. Students wishing to take candidacy examinations earlier than the third year of residence may do so with the consent of their academic advisers and the director of graduate studies. To be eligible to take the candidacy examination, students must satisfy the foreign language requirement and complete the required course work in their specialization.

Before being advanced to Ph.D. candidacy, students must submit to the department an approved dissertation proposal (see procedures outlined below). Within eight years of enrollment into the history graduate program, students must complete a satisfactory doctoral dissertation or risk the loss of their candidacy status.

Specialization

The department offers three fields of study: United States History, Latin American History, Medieval History, and Modern European History. Incoming students must select one of these fields at the time of admission. The faculty prescribes course requirements in each field. In the first year of study a student must write a substantial original paper, which will figure in the department's screening of the student for the Ph.D. program. See the Graduate Handbook for specific field requirements.

Language Requirement

One basic requirement for all candidates for the doctorate in history is a reading knowledge of one modern foreign language. In each field additional

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languages or an appropriate skill are prescribed as the faculty in that field consider necessary. The following provisions are in force. Candidates in the field of medieval history must demonstrate competence in Latin and two modern foreign languages, one of which is normally French or German. Competence in Latin is demonstrated by a student's passing the examination in medieval Latin administered by the Medieval Institute. Candidates in modern European history must demonstrate competence in reading two foreign languages, one of which must be French or German. Candidates in American history must demonstrate competence in one modern foreign language. In all fields, language and skill requirements must have been completed by the student before the student will be permitted to take Ph.D. candidacy examinations. Candidates in Latin American history must demonstrate competence in two foreign languages, one of which must be Spanish.

To receive the M.A., doctoral students must demonstrate a reading knowledge of one modern foreign language by the end of their third semester in residence.

Examinations

First-year examinations in medieval and modern European history are oral examinations administered near the end of the student's second semester of residence. The examination board will consist, whenever possible, of three faculty members who have worked with the student during the year. Each faculty member may pose questions based on student course work during the year. The first-year examination will last approximately one hour. The first-year examination does not take the place of a master's exam.

Students will normally take receive their master's degree upon successful completion of their Ph.D. candidacy examinations. In order to receive the master's degree earlier, a student, upon completion of at least a year of course work, may take and must pass a written two-hour examination, administered by three history professors, normally with whom the student has taken course work.

Ph.D. candidacy boards will consist of four or five faculty members chosen by the student and his/her advisor, and approved by the director of graduate studies. The written exam shall consist of four or five two-hour essays on topics selected by the examination board within fields chosen by the student; the oral exam shall involve questioning by the board for not less than 90 minutes and not more than three hours. There must be a gap of at least five working days between the final written exam and the oral exam.

Students who fail a Ph.D. candidacy examination may appeal to the director of graduate studies to retake the failed portion one time.

Advancement to Candidacy for the Ph.D.

While preparing for the Ph.D. candidacy examinations, students should also be preparing a dissertation proposal in consultation with his or her advisor. The student will then present a dissertation proposal to the committee. The proposal should include a

statement of the subject to be addressed; a survey of the relevant sources, where they are located, and how the student expects to get to them; how this dissertation would contribute significantly to knowledge in the field; what languages or quantitative skills are required and how the student proposes to gain them; and the timetable and financial resources required. The proposal should be concise; normally 5-10 pages plus bibliography. The committee may accept, reject, or modify the proposal. If and when a proposal is accepted, the committee will notify the director of graduate studies who will, in turn, nominate the student to the Graduate School as a Ph.D. candidate. The proposal must be approved before the start of the student's seventh semester of enrollment.

Writing and Defense of the Dissertation

After advancement to Ph.D. candidacy, students must complete a doctoral dissertation, which the department understands to be a substantial piece of research based on primary sources that makes an original contribution to historical knowledge. Departmental procedures for approval of the dissertation are as follows:

1. The dissertation must be read and approved by the student's adviser.
2. The student then furnishes the department with three copies of the thesis. Copies must be furnished to the department at least six weeks before the date of the defense. These copies are to be read and approved within 30 days by three readers from the graduate faculty. Students are responsible for incorporating into the dissertation whatever changes the readers find necessary. At this time, the student submits a complete copy of the dissertation to the Graduate School for a preliminary formatting review.
3. Normally the student defends the doctoral dissertation by delivering a brief lecture that any member of the graduate faculty may attend. The academic adviser, three readers, and an outside chair appointed by the Graduate School must also attend. After the lecture and a period for questions and discussion, the committee must vote as to whether the dissertation defense has been satisfactory.
4. Two clean, corrected, unbound copies of the dissertation must be delivered to the Graduate School by the appropriate due date.

Financial Aid and Other Information

Financial aid is allocated to the department by the University each spring. A portion of this aid is available for incoming first-year graduate students and is assigned on the basis of merit after review of application dossiers. Students already in residence are assigned aid by faculty vote, after an annual general review of student performance. All available aid is reassigned annually for the term of one academic year. Students whose performance falls below University minima stipulated in the general regulations of this Bulletin or who do not satisfy other published

requirements for aid will have their aid withdrawn. Graduate assistantships are ordinarily reserved for students who have already completed a year of graduate work.

For general information concerning admissions procedures, course and hour requirements, grades, financial aid, procedures pertaining to graduate research, and other matters, consult the Graduate School regulations that introduce this Bulletin. Note that certain departmental degree requirements (for instance, foreign language proficiency) are more demanding than the Graduate School's general rules. Application forms and information concerning non-curricular aspects of graduate study at Notre Dame may be obtained by writing the University of Notre Dame, Graduate Admissions, 502 Main Building, Notre Dame, IN 46556.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

Except in the case of "required" courses for students in certain degree programs, courses offered for historians by other University departments are not shown.

66050. Directed Readings
(0-0-0)

Independent study of special topics under direction of a faculty member. Agreement by the faculty member and approval by the director of graduate studies required.

60260. Late Antiquity
(3-3-0)

This course will explore the transformation of the Roman World from about 300 to 600 AD. We will ask: was the "fall" of the Roman Empire a civilizational catastrophe? Or was it a slow, messy process blending continuity and change? Or was late Antiquity itself a dynamic and creative period? Our emphasis will fall on: The changing shape of Roman public life; the barbarians and their relations with Rome; the emergence of the Catholic Church; the triumph of Christian culture; literature, art, and architecture in the late imperial world. There will be a mid-term and a final. Students will write either one term paper or a series of shorter papers. Readings will emphasize primary sources.

60263. World of Charlemagne
(3-3-0)

The Carolingian (from Carolus, Latin for Charles: Charles the Great—Charlemagne—was the most famous Carolingian) period, roughly the eighth and ninth centuries, was foundational for western Europe. But this was also the time when the mid-Byzantine Empire consolidated its position and when the Abbasid family of caliphs introduced important and durable changes in the Islamic world. This course will focus on the West in the age of Charlemagne, but will draw frequent comparisons with

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and make continuous reference to Europe's Byzantine and Islamic neighbors. The course will explore such themes as: Europe's Roman and Christian inheritances from antiquity; the peoples of the Carolingian world; kingship and empire; political and social institutions and ideologies; religious and secular law; war and diplomacy; agriculture and trade; the church--popes, bishops, monks, and nuns; theology; art and architecture; Latin and vernacular literature. Reading assignments will combine modern scholarship and primary sources (in translation). Students will write mid-term and final examinations and will choose between several short papers or one long paper. Graduate students will meet weekly with the professor, carry out reading assignments different from those of the undergraduates, and submit a series of short papers.

60291. Politics and Religion in Medieval Europe (3-3-0)

This course considers the intersection between political action and religious claims in medieval Europe. Virtually all the powers -- kings and popes, princes and bishops -- claimed to act on religious principle and in accord with transcendent notions of virtue or world order. And yet they fought bitterly with each other, with words and with swords, and mutually condemned one another. The course will begin with the showdown between emperors and popes known as the Investiture Contest, then take up pivotal figures like Pope Innocent III, King Frederick II, and Pope Boniface IX, and conclude with sections on the Spiritual Franciscans and on conciliarism. Two papers based on primary sources, one midterm, and a final.

60435. Nineteenth-Century Ireland (3-3-0)

Drawing on monographs and general studies, this course invites students to consider how different social groups experienced the profound changes that transformed nineteenth-century Ireland. Although the course traces political developments, it pays equal attention to socioeconomic and cultural issues, including the shift from high fertility to sexual restraint; patterns of emigration, consumption and social unrest; improvements in education and literacy; linguistic change; changing devotional practices and cultural 'revival' in the late 1800s.

60451. Modern France (3-3-0)

Although it is not a superpower on the level of the United States, France continues to claim an important role in the world of international diplomacy. The French pride themselves also as being heirs to cultural and intellectual traditions that have been a major influence in both the West and the world. This course will survey the history of France from Napoleon to the present, and will balance a concern for political and social developments with an interest in French culture. The goal will be to help students understand the vitality of the French past and better appreciate the current role of France in Europe and the world. Lectures will be supplemented by frequent discussions, and students will view a number of films in addition to reading about five books. Students will be responsible for

making one brief class presentation and writing an essay of ten to twelve pages. There will be a mid-term and a final exam as well.

83000. The Historian's Craft (3-3-0)

This seminar is designed to introduce students to theoretical and practical foundations of historical method. Students are required to complete several written and oral assignments and to write a short primary research paper on a topic selected in consultation with the instructor. Those students who prefer to write a more substantial primary research paper with their PhD advisors should consult with the instructor as soon as possible. This course is required for all first year students.

87000. Supplemental Research and Reading (3-3-0)

Independent study under the direction of the student's graduate adviser. May be taken each semester.

83001. Reference Bibliography Workshop (0-3-0)

An introduction to research resources for historians at Notre Dame. Required for first-year students in United States and modern European history; optional for other students. (12 to 14 sessions).

83002. Graduate Teaching Practicum (3-3-0)

Required of all graduate students acting as a teaching assistant in the history department for the first time.

83003. Teaching Practicum II (3-3-0)

Required for all graduate students serving as teaching assistants in the Department of History, or those who have not taken it in the past.

87050. Special Studies (0-0-0)

Independent study of special topics under the direction of a faculty member. Agreement by the faculty member and the Director of Graduate Studies required.

83200. Introduction to Medieval Studies I (1-1-0)

Led by Thomas Noble with weekly visits by faculty in various fields of study, this course is a systematic introduction to the sources, research tools, and methodologies for medieval studies in the widest possible sense of the term. The course if offered on a non-graded basis but active participation in the hour-long weekly sessions is expected.

83201. Proseminars in the Early and Late Middle Ages (3-3-0)

This course is designed to introduce students to major historiographical issues and interpreters for the years between 450 and 1000. Students will learn to read critically, and must be prepared to write short summaries and discuss intelligently each week. The course will begin with the question

of Late Antiquity as a distinct historical era, examine the Merovingian and Carolingian kingdoms, and end with the state of Europe in the year 1000.

83202. Proseminars in the Early and Late Middle Ages (3-3-0)

This course is designed to introduce students to major topics under discussion in the history of the high and later middle ages, roughly the years 1100-1400. Among the topics to be treated, with the historians now at work on them, are: law, government and literacy; the church as an institutional and cultural force; social class and mobility as economic realities and cultural images; the university in society and culture; and the cultivation of the human person in literary sensibility and religious devotion. Most of the course will consist of intensive secondary readings, with regular written reports, occasional primary readings, and a major bibliographical paper at the end.

83205. Introduction to Medieval Studies II (1-1-0)

An introduction to the basic research tools of medieval studies including specialized library catalogues, reference books, editions, commentaries, and data bases. The emphasis will be on practical, hands-on experience necessary to do fundamental research.

83601. Colloquia: Europe and America, 15th-17th Centuries (3-3-0)

This course provides an introduction to the history of the Americas during the age of European expansion. It focuses on topics in the history of Europe that bear upon colonization and it explores the intertwined histories of the three continents. In a funnel-like fashion the course establishes global and trans-oceanic contexts for what eventually becomes a history of English North America. Topics in continental European history during the Early Modern period provide the social, cultural, and ideological foundation for comparative views of religion, science, gender, race, and politics. Spanish, French, and English (some semesters Portuguese) perspectives intersect with those of African and North and South American peoples. Since full historiographical coverage of these regions and topics is not possible in one semester, the course takes a selective topical approach that will vary from semester to semester.

83602. Colloquia in American History: to 1790, 1790 to 1890, since 1890 (3-3-0)

This colloquium provides an introduction to major historical and historiographical problems associated with the European colonization of the Americas from roughly 1680 through the beginning of the nineteenth century. The syllabus and bibliography incorporate a variety of methodological and philosophical perspectives on early American history--politics, culture, law, ethnicity, economy, geography, society, race, religion, philosophy, ideology, and gender are represented in the readings. There is also a mix of older and more recent writings. We will attempt, individually and collectively,

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to synthesize specialized studies into larger understandings of causality, continuity, and change.

83603. Colloquia in American History: to 1790, 1790 to 1890, since 1890 (3-3-0)

History 83603 is a colloquium designed to acquaint graduate students with United States history and historiography from roughly 1790 to 1890. The course will revolve around discussion of common assigned readings. Essays, based on these readings, will also be required. The course is required of doctoral students in American history, who will normally take it in their first or second year of graduate study. Undergraduates will NOT be admitted without prior written permission of the instructor, which will be given only in very exceptional cases.

83604. Colloquia in American History: to 1790, 1790 to 1890, since 1890 (0-0-0)

The colloquium is an intensive survey of recent historical writing on the United States from the late nineteenth century forward. Topics will include Progressive reform, gender and the early 20th century State, the culture of consumption, the new environmental history, the meaning of bohemia, the character of New Deal liberalism, the origins of the cold war and the shifting nature of American race relations.

83975. History of Science and Technology, Medieval Period to 1750 (3-3-0)

This course will be the first half of a two-semester survey of the main events in the history of natural philosophy and science from Greek antiquity to the early Enlightenment. The first half, taught by Prof. Robert Goulding, will begin with Presocratic reflections and carry the course to the Renaissance. The second half, taught by Prof. Sloan, will deal with the science of Galileo, Descartes, Boyle and Newton. The course is open to HPS graduate students, graduate students in History and Philosophy, and upper level undergraduates by permission.

97000. Candidacy Semester Readings (0-0-0)

A special reading course in which the student may enroll only in the semester in which he or she takes the Ph.D. candidacy examination. It permits the student to devote full time to preparation for the examination and, after its completion, to write a dissertation proposal. Regular graduate course work may also be pursued during the candidacy semester.

97050. Special Studies (0-0-0)

Independent study of special topics under the direction of a faculty member. Agreement by the faculty member and the Director of Graduate Studies required.

93075. Introduction to Mediterranean Islamic Society (3-3-0)

This colloquium intends to introduce students to the fundamentals of social and cultural life in the Middle East, ca. 600-1500 CE. There are no pre-requisites, but some familiarity with medieval Islamic political history is recommended. We will focus on the reading and analysis of key secondary studies. These will especially include those that might illuminate the study of the quaint peoples of the medieval Eurasian subcontinent, i.e., the place commonly known as "Europe". Book reviews and a long paper based on secondary research required

93210. Graduate Seminar: Apuleius (3-3-0)

An investigation of the historical Apuleius. The course examines the Romano-African context into which Apuleius was born, recreates the educational travels to Carthage, Athens and Rome which occupied his early life, and focuses especially on his trial for magic in Sabratha in 158/9, before following him back to Carthage where he spent the rest of his life. Notice will be taken of all of Apuleius' writings, but special attention will be paid to the Apology, and to the documentary nature and socio-cultural importance of the Metamorphoses. The course is open to students with or without Latin.

93250. Muslims and Christians in the Medieval Mediterranean World (3-3-0)

This course will examine contacts between Christianity and Islam in the period from the seventh century to the fifteenth century. Although issues of religion will be addressed, the course is more concerned with diplomatic, economic, military, cultural, technological, and intellectual encounters and exchange. Special attention will be focused on the regions of Spain, Sicily, and the Crusader States. The course is designed as a survey, but students may elect to write either a research paper or three shorter historiographical essays. Regular student presentations will also be required.

93251. Literacy, Piety, and Power in the High Middle Ages (3-3-0)

This course explores the impact of literacy on two aspects of high medieval history, on political administration and religious piety. It will examine the degree to which writing transformed the ways in which political power was conceived and implemented, and also the ways internal piety was understood and cultivated. While these two spheres of life may appear quite different at first glance, they also intersected in important ways, not only at royal or princely courts, but also, for instance, at the council of Constance in 1414-1418. The course will consist of a combination of secondary readings (at least one language beyond English required) and primary readings in Latin and Middle English. It will require weekly readings and discussion in class, and a major seminar paper as the final achievement.

93252. Medieval Nobilities (3-3-0)

Hereditary social elites of the type most distinctively called 'nobilities' were the dominant orders of most of the societies of Latin Europe from the time of the Roman Empire to about 1918, and after a hiatus between the wars, the study of these nobilities has been one of the principal themes of European historiography dealing with every part of the 'medieval' period. In practice, the historians of different national schools and different periods of modern historiography have tended to be interested in quite different aspects of nobiliary history, from the nature and origins of nobilities and their internal grades and strata to their distinctive cultures and attributes, and their relationships to castles, dominions, vassals, and peasants on the one hand, and to other nobles, prelates, kings, courts, and governments on the other. This course will introduce graduate students to the most important themes and scholarship in this area in a number of different countries, focusing on England, France, Spain, but including other countries that are of particular interest to the students. It will also familiarize them with a variety of different types of document collection and reference work of use for investigating or identifying noble persons.

93253. Colloquium: Medieval Cities (3-3-0)

This graduate colloquium will examine the development and structure of urban centers in Europe and the Mediterranean World from Late Antiquity to the later Middle Ages. Through a discussion of primary texts, secondary historical studies, and works on modern urban theory, we will track the history of urban life in the Middle Ages, with particular attention given to the topography, society, culture, and economy of cities in southern Europe.

93254. Medieval Coinage and Money (3-3-0)

This course will offer an introduction to numismatic methodology and monetary history with an emphasis on medieval Europe. Attention will also be given to the coinages of late Antiquity, Byzantium, the pre-modern Islamic world, and pre-modern Europe, as well as related phenomena such as medals, tokens, seals, and credit transactions. Among the topics under study will be archaeological and hoard study, scientific and statistical analysis of coins, and the relationship of numismatic evidence to other historical sources. In addition to participation in the scheduled discussions and workshops, students will pursue research projects related to the coinage of their field of specialization leading to periodic oral reports and a final paper.

93255. 12th Century Renaissance and Reform (3-3-0)

Since the publication of Charles Homer Haskin's Renaissance of the Twelfth Century in 1927 and Giles Constable's Reformation of the Twelfth Century in 1996, together with enormous literatures on the Gregorian Reform and on the emergent vernacular literatures, the years 1050-1200 have come to stand as a turning-point in European history, for some the hinge between the earlier and the later middle ages,

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for some the making of "Old Europe," a culture and society that persisted to the eighteenth century. This will be an intensive graduate-level reading course in the secondary literature surrounding these claims, and as well in selected primary sources. Beyond the themes already noted, the course will consider the rise of literacy, the new centers of culture (university, courts, episcopal courts), the place of women's writings in all this, and broader questions of commonality or diversity.

93256. Paleography
(3-3-0)

An introduction to Latin paleography from the beginnings of Latin writings to about 1500. Seminars will cover the developments of handwriting over the course of this period and practical exercises in reading various hands. Special emphasis will be given to the technique of describing medieval manuscripts, to the nature of paleographical research, and to the implications of paleography for other forms of research. Students are expected to have a working knowledge of Latin.

93257. Canon Law in the High Middle Ages
(3-3-0)

This course will introduce students to the study of canon law in the high middle ages. It will teach them the structure and usage of Gratian's *Decretum*, the university textbook, and of the papal *Decretales* (1234), the only truly authorized lawbook of the medieval church. In addition, students will learn to use and to read the extensive glossating and commentary literature that grew up around these authoritative texts. To focus the students' historical approach, this particular semester will focus on teachings about custom, arguably the most omni-present and socially significant form of law in the middle ages: its status in law, its authority over against positive legislation or court decisions, and quite particularly the venues and practices in the church where custom was presumed to prevail. As a seminar, the course will expect reading ability in Latin, and students will prepare a major seminar paper at the end.

93258. Merovingian Franks 450 - 750
(3-3-0)

This course will survey and analyze key literature and sources on the establishment, development, and eventual collapse of the Merovingian Frankish kingdom. Central issues will include: the nature, origins, and audiences of the major sources; Frankish ethnicity; Frankish kingship; central and local institutions in the Frankish kingdoms; the economy of Merovingian Francia; the Merovingian church; academic and intellectual institutions; problems of language and communications; Merovingian relations with their neighbors. Student responsibilities will include: substantial weekly reading assignments (most but not all sources will be read in translation; scholarly works in French and German will be assigned); periodic oral and written reports; two or three synthetic essays.

93259. Devotion and Dissent in the Later Middle Ages
(3-3-0)

Recent studies of religious culture in later medieval Europe have projected bi-polar, nearly contradictory

images: a time of unparalleled intensity in devotion, even of extremes and excesses, but also a time of dissent, among people as well as intellectuals, shaking the foundations of the established church. This seminar will study that religious culture in depth, focusing on the years 1350-1450 with wide reading in primary and secondary materials. It will examine in particular the role of vernacular writings, local social organization, women as writers and exemplars, and intellectuals as defenders of alternative religious views. Latin required.

93350. Topics in Reformation History
(3-3-0)

A colloquium to acquaint graduate students with significant scholarship on early modern Christianity, both geographically and thematically, in its political, social, and cultural contexts. Students will lead class discussions, write book reviews, and produce a historiographical essay on a topic of their choice. Reading ability in languages other than English desirable but not required.

93400. Modern European Social History
(3-3-0)

This course will explore some of the central themes in the historical scholarship on European society from the French Revolution to the present. Students will read both standard works in the field, such as E.P. Thompson's *The Making of the English Working Class*, and a selection of more recent studies that will suggest the variety of approaches used by social historians. Topics will include: class formation and identity; gender and family; popular culture; politicization and the relationship between state and society; the social impact of war. The class will be organized around student reports. Students will be responsible for writing several book reviews and developing a bibliography of journal articles and books related to their particular interests, which will serve as the basis for a final essay.

93401. Nationalism in Europe
(3-3-0)

Nationalism, one of the central themes of nineteenth and twentieth-century European history, remains a central political and cultural force despite the impact of globalism on the nation state. This course explores the rise of nationalism from the French Revolution to the explosion of ethnic genocide in the Balkans during the 1990s. Emphasis will be placed on historiographical questions, the social theories of nationalism, the nation, and the nation-state, and the politics of identity, embodiment, and community.

93402. Republicanism
(3-3-0)

Republicanism focuses on an early-modern European and transatlantic 'discourse' identified by J.G.A. Pocock as 'The Machiavellian Moment'. The core of course is the seventeenth and eighteenth-century Anglophone world, particularly the English Republicans - John Milton, Marchamont Nedham, Algernon Sidney, James Harrington - of the 1650s. We will also look back, however, to the theorists of the Renaissance city-states, above all Machiavelli, and beyond to their classical sources. And the English republicans will further be considered as a bridge to the eighteenth-century commonwealthmen and

the American founding fathers. The methodological stance is based on the concept of political 'languages' as pioneered by Pocock, Quentin Skinner and John Dunn, rather than on the canonical - great, timeless, books - approach once dominant in the history of political thought. The format is discussion-led, and students are expected to engage with the original texts.

93403. Fin De Siecle Europe
(3-3-0)

After an initial discussion of historiography, this course will concentrate on the political, intellectual and sociocultural currents in turn of the century Europe. The spate of publications on this period in the last decade has been stimulated by a growing debate on the history of countries concerned and on new historical approaches. Carl Schorske's collection of essays, *Fin de Siecle Vienna*, has been the subject of many conferences and his approach has been both lauded and rejected. His work has stimulated similar studies of other countries such as Eugen Weber's, *France, Fin de Siecle*, that have tried to be more encompassing. But these more broadly conceived studies have often been criticized for being too superficial. We will begin with three national history approaches (Austria, France and Germany) followed by topical approaches (gender, youth, crime). The readings for this course will, therefore, not only introduce you to some of the history of the period but will also introduce you to some novel approaches and important historical controversies.

93404. Religion and Society in Europe
(3-3-0)

This course will examine some of the major themes in the social history of religion as it has developed over the past two decades. For the first two weeks we will concentrate on the early modern period, focusing on seminal works by John Bossy, Natalie Davis, Jean Delumeau, Carlo Ginzburg, Christopher Hill, Keith Thomas, and others. Issues considered will include the process of confessionalization, the relationships between popular and institutional religion, and the role of religion and religious dissent in legitimizing political regimes and the opposition to them. We will then turn to the eighteenth century, and consider the status of religion in the age of "enlightenment," with particular attention paid to Methodism, Jansenism, and Pietism, movements that provided devotional and theological alternatives to established churches, and contributed to new understandings of the relationship between religion and civil society. In the last half of the course we will consider the challenges posed to religious institutions and believers in the era following the French Revolution. The emergence of powerful ideologies promoting nationalism and socialism, and the increasing reach of state power into the lives of citizens put pressure on established religions, and generated change and innovations both inside and outside of the traditional churches. In the twentieth century we will examine how religious identities and institutions were defined in the face of totalitarian and authoritarian regimes.

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93405. Gender in Modern Euro History
(3-3-0)

In this graduate colloquium we will explore how paying attention to gender can challenge and transform understandings of the more recent European past. The focus is on Central Europe since the 1780s, but we will also look east and west from that base. The approach will be both roughly chronological and thematic; rather than systematic coverage of two hundred years of European history, we can only sample the possibilities. Readings include some classic texts—primary and theoretical as well as secondary—along with newer and less familiar studies. For example, we will consider works by Frederick Engels, Virginia Woolf, Simone de Beauvoir, Otto Weininger, Alexandra Kollontai, Sigmund Freud, Michel Foucault, Lynn Hunt, Judith Butler, George Mosse, Isabel Hull, Antoinette Burton, Klaus Theweleit, Dagmar Herzog, and many others. Students who wish their major project to be a seminar paper rather than a historiographical essay should contact the professor before the semester begins.

93406. 19th- and 20th-Century European Intellectual History
(3-3-0)

Depending on the linguistic range and interests of students, this course will survey several of the following topics: the development of liberalism in England, France and Germany (Mill, Tocqueville, Hegel and the Hegelian tradition); variants of socialism (“utopian” socialism and Marxism); positivism and materialism; Darwin and Darwinism; Nietzsche; Freud, Jung, and psychoanalysis; Weber, Durkheim, and the development of modern sociology; Lenin, Bogdanov, and “Russian Marxism”; Heidegger’s rebellion against modernity.

93407. Totalitarianism in 20th-Century Europe
(3-3-0)

This graduate colloquium will explore origins, nature, and functioning of totalitarian regimes in 20th century Europe. Students will be asked to write a term paper analyzing a theme or an event dealt with in the readings. Those who prefer to write a primary research paper should consult with the instructor prior to taken the course.

93408. Modern Germany
(3-3-0)

This course provides an opportunity for graduate students to survey major events in German history over the last two centuries while familiarizing themselves with some of the classic and recent interpretations of that past. Both geographically and methodologically, our scope will be broad. In very real ways, the “German history” of the nineteenth and twentieth centuries has also been European and even world history, so do not be surprised if our discussions occasionally take us far from Berlin or Munich. Works from the subdisciplines of diplomatic, intellectual, social, political, cultural, and “everyday” history will be included among the required readings. The class is structured as a colloquium, with weekly readings, some common, others individual. Requirements include regular participation, oral presentations, short papers, and a major historiographical essay on a topic of your choice. Graduate

students who prefer to write a seminar paper should consult with me as early as possible.

93409. Political Violence in Modern Europe
(3-3-0)

This course will explore causes, consequences and modalities of violence in modern Europe, giving special attention to themes of terrorism and state violence. Students will be asked to write a longish paper -- 20 pages or so -- analyzing some theme or episode dealt with in our readings.

93410. 19th- and 20th-Century Polish History
(3-3-0)

This lecture course explores Polish history from the partitions to the present. Special emphasis will be placed on understanding Poland’s changing political, cultural, social, and physical geography. Politically effaced from the map of Europe twice in the two centuries under study, Poland ceased to exist as a political nation between 1797-1918 and 1939-1945. In the wake of World War II, moreover, Poland’s geographies shifted once more as the country changed physical shape and simultaneously came under Soviet rule. Each time independence melted away, the Polish nation grew stronger and experienced social, cultural, and political transformation, ultimately spearheading the drive of all of Eastern Europe to overthrow Communist rule. Although basically a lecture course, the instructor will provide ample opportunity for discussion and questions in class. About seven books will be assigned.

Graduate students will be expected to attend the undergraduate lecture class and to participate in a separate weekly discussion seminar. Seven short papers/exercises and a long final project are required.

93411. Europe in the Two World Wars
(3-3-0)

This graduate colloquium will explore how historians have approached and interpreted the two world wars that devastated Europe during the last century. We will consider classic and recent works of military and diplomatic history; political, social, cultural, and religious history; women’s and gender history; history of everyday life; personal accounts; and representations in film. The reading/viewing list may include works by Goetz Aly, Omer Bartov, Julien Benda, Richard Breitman, Vera Brittain, Joanna Bourke, Belinda Davis, Fritz Fischer, Paul Fussell, Michael Geyer, John Keegan, Victor Klemperer, Elem Klimov, Hans Mommsen, Bogdan Musial, Jean Renoir, Mary Louise Roberts, Gerhard Weinberg, Jay Winter, and others. There will be weekly assignments of various kinds, including work with textbooks on the subject and major journals in the field, as well as a historiographical essay. Those who wish to write a seminar paper instead should discuss their plans with the instructor in advance.

93610. History of American Women
(3-3-0)

This colloquium is intended to serve as an introduction to the field of U.S. women’s and gender history. It will provide a basic background to some of the major current methodological approaches and topical interests in the field, as well as acquainting the

student with the way approaches to women’s history have developed and changed over the past thirty-five years. Although the course will be organized chronologically, from colonial times through the twentieth century, the main focus will be historiographical. We will not attempt to “cover” all the important areas of U.S. women’s history. Students who wish to master this field, however, will emerge from the class with the requisite analytical tools to begin that task.

93611. Biography as History
(3-3-0)

This course will consider the art of writing biography and its relationship to the art of writing history generally. Most of the subjects will be Americans, including some known primarily for their religious roles and some who are not. No specialized knowledge of American history is a prerequisite and students may do papers on figures from other places. This course may be taken as either a colloquium or a seminar.

93612. Seminar/Colloquium: US Evangelicalism and Fundamentalism
(3-3-0)

A study of the development of Protestant evangelicalism in America with particular emphasis on fundamentalism and its near relations. The course will survey the rise of evangelicalism in the eighteenth and nineteenth centuries. It will then consider the rise of fundamentalism, its impact on other types of evangelicalism, and the new evangelicalism that grew out of fundamentalism after World War II. Other twentieth century developments, such as the rise of Pentecostalism, the charismatic movement, and the recent resurgence of many types of evangelicalism, will be studied as well.

Students taking the course as a seminar will be required to write a major research paper. Those taking it as a colloquium will be required to write two papers involving critical evaluation of the interpretative literature in the field.

93613. Colloquium: Frontiers and the Environment in US History
(3-3-0)

The West and how to occupy it has been a large concern of people from Cortes and Champlain, to William Bradford and Junipero Serra, to Frederick Jackson Turner and the New Western Historians, to the Latinos and Asians who have been pouring in since 1965. In the thirteen sessions of this colloquium we will read about and discuss many of the questions, topics, and events that have arisen in and about the West in the past five hundred years (and even before). Students will have considerable choice about these, since one semester is not enough to cover everything. Some written reviews and reports will be involved.

93614. Christian Thought and Culture in the US
(3-3-0)

This course examines the interactions among Christianity and other influential ideas, beliefs, and values that have helped shape American life since the Revolution. It looks especially at the thought of some leading figures and attempts to understand

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how their views were shaped by diverse American experiences and religious traditions. May be taken as a colloquium or a seminar.

93650. British-American Intellectual History 1650-1800
(3-3-0)

Readings in selected topics in Anglo-American intellectual history from the late seventeenth century through the late eighteenth. Though suitable for graduate students in history who intend to offer an examination field in Anglo-American intellectual history, it is by no means intended solely for them. "Anglo-American intellectual history," as used here, comprises those discourses common to Britain and anglophone North America. This does not preclude occasional French or German voices. Examples might include sensationalist psychology, evangelical Calvinism, Newtonian physics, republicanism, and Scottish common-sense philosophy. I have aspired to a focus on problems that were nodes of change rather than an even-handed survey. Inevitably, in this period the primary reading tilts toward British authors. The course will meet weekly for discussion of common assigned readings. Essays, based on the assigned readings, will also be required: the character of these to be worked out individually with the instructor.

93651. Slavery and the Modern World, 1500-1865
(3-3-0)

Was slavery an atavistic institution swept away by the forces of modernity, such as capitalism, nationalism, and democratic revolution? Or was its revival and extension a product, at least in part, of those forces? This will be a transatlantic inquiry with special attention to England, France, their colonies in North America and the Caribbean, and the early United States. Topics include the slave trade, colonialism, merchant and industrial capitalism, slave resistance and rebellion, the American Revolution, antislavery ideas and movements, relations between slaves and masters, the character of and differences between societies with slaves, racism, the role of slavery in US politics, and the forms of culture created by those who experienced the conjuncture of slavery and modernity.

93652. Puritanism in Colonial New England
(3-3-0)

A study of the interaction of Puritanism and the culture of seventeenth-century New England and of the legacy of Puritanism in the religion and culture of eighteenth-century New England through the era of the Great Awakening and Jonathan Edwards. Weekly class discussion will be based on assigned reading on which students are to prepare brief reviews. Students taking the course as a seminar will be required to write a research paper. Those taking it as a colloquium will be required to write two papers critically surveying literature in the field.

93653. Colloquium: US Civil War Era
(3-3-0)

The Civil War has generated not only the most popular interest of any topic in U.S. history but a huge, often eloquent, and always contentious historiography. The contest itself began with arguments

over the character of U.S. society and its history, and in so many ways the historiography always addresses central questions of U.S. history: slavery and race relations, the successes and failures of the political and constitutional system, expansion, sectional differences, ideology and myth, industrialization/modernization, and violence itself. We will cover the major developments in the scholarship and try to test the success of different subfields and methodologies in explaining the key events and developments of the era, including just how much of the nineteenth century, and American history generally, can be considered prelude or postscript to the Civil War.

93654. Humans and Nature in Americas
(3-3-0)

This colloquium imagines where earth-centered histories of the Americas, c.1450-1850, might begin. The course draws on works by eco-philosophers, cultural anthropologists, literary critics, and historians of early modern Europe and the Americas, in addition to a selection of writings and oral traditions from the historical subjects themselves. The course focuses on the period from the late medieval through the early modern; across space, it considers comparative questions about Africa, South Asia, East Asia, and the Pacific Rim. Collectively, the readings are intended to give us a foundation for reading classic historical texts through the prism of nature, alert to the ways that people saw the natural worlds in which they lived and constructed experience through their perceptions of themselves in nature.

93655. Seminar: Anglo-American Intellectual History
(3-3-0)

A research seminar in American and British intellectual history. Members of the seminar will complete an article-length paper (20-30 pages), based on original research in primary sources. Unless the member's scholarly interests strongly dictate otherwise, the topic should fall within the period from about 1775 to 1925. Cross-national topics are welcome, assuming that the member has any language skills needed. Topics should if possible involve archival research.

93656. Colloquium: Anglo-American Intellectual History II
(3-3-0)

Readings in selected topics in British and American intellectual history from the end of the eighteenth century through the late nineteenth. Though suitable for graduate students who intend to offer an examination field in Anglo-American intellectual history, it is by no means intended solely for them.

"Anglo-American intellectual history," as used here, comprises those discourses common to Britain and anglophone North America. This does not preclude occasional French or German voices. Examples might include evangelical reform movements, Romantic metaphysics, feminism, liberalism, Darwinian biology, and religious unbelief. But topics widely discussed only on one side of the Atlantic are excluded: a policy that eliminates important regional cultures (such as the American South) and major topics (such as African-American nationalism and Benthamite utilitarianism except as refracted

through J. S. Mill). I have aspired to a focus on problems that were nodes of change rather than an even-handed survey.

The course will meet weekly for discussion of common assigned readings. Essays, based on the assigned readings, will also be required: the character of these to be worked out individually with the instructor. Undergraduates are not admitted without the prior express permission of the instructor.

98699. Research and Dissertation
(0-0-0)

Individual conferences and consultation between the doctoral student writing the dissertation and the dissertation director. Required of students pursuing dissertation research in residence.

98700. Nonresident Dissertation Research
(1-1-0)

Continuing registration for the doctorate beyond 72 credits; required of students not in residence.

93800. Modern Religion, Conflict, and Violence
(3-3-0)

This course will focus on modern religion and its capacity for inspiring both deadly conflict and non-violent social change. The first part of the course examines politically charged religious resurgence around the world—origins, ideologies, social organization, leadership, political impact, cultural influence. Movements to be considered include Sunni Islamist parties and movements in Egypt, Algeria, Sudan, Jordan, Palestine, Pakistan, and Indonesia; Shiite movements in Iran and Lebanon; Jewish extremists in Israel and New York; Hindu nationalists in India; Sikh radicals in the Punjab, Buddhist nationalists in southeast Asia; Protestant fundamentalism and the Christian Right in the United States; Roman Catholic traditionalisms in the United States and Europe. The second part of the course compares modern religious communities, traditions and groups that pursue social change through conflict resolution, nonviolence, human rights activism, and the like. Cases include The Community of Sant Egidio, Socially Engaged Buddhists, the World Conference on Religion and Peace.

93973. Archives and Empires: The Inca and the Spanish
(3-3-0)

Traditionally, scholars have highlighted the differences between the Inca empire and that of its Spanish conquerors. These differences are indeed striking, and will be explored in this course. But there are also similarities between the two imperial polities, which we will likewise study. Attention will focus on the production, collection, ordering and storage of information by both imperial and local authorities, and on how this information was used. The Incas recorded administrative and narrative information on quipus (knotted cords) and with reference to indigenous Andean languages. The Spanish in the Andes briefly used this system before switching to alphabetic writing and the Spanish language. Questions we will address include: did this change affect the kind of information that was preserved, and if so how? And also, what role do culture and religion (as

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documented in imperial records) play in the creation and maintenance of imperial power?

93974. de las Casas: Context and Resonance (3-3-0)

The Spanish conquest of Central and South America generated a crisis of conscience in Spanish universities and in Spain at large. People wanted to know: was the conquest justified, and if not, seeing that it could not be undone, what were the invaders to do? In this prolonged and often bitter debate, Bartolomé de las Casas (1484-1566), Dominican friar and bishop of Chiapa in Mexico, formulated what still are among the most moving and intellectually incisive arguments for the equality of all human beings. He also wrote one of the earliest comparative histories of civilization (the *Apologética Historica*). The task of the course is to understand the thought of Las Casas and his followers in its sixteenth century context, and then to enquire into the connections between the ideas of Las Casas and contemporary theologians of liberation, in particular Gustavo Gutierrez.

93976. The Scientific Revolution (3-3-0)

This course will examine the changes in ideas about the natural world that took place in seventeenth-century Europe in terms of the disciplines that structured enquiry and demonstration. The approach will be thematic rather than chronological. Natural history or astronomy will be treated on equal terms with the study of language or the Bible.

93977. Social Uses of Science since 1800 (3-3-0)

This course is a comparative survey of modern scholarship on the normative uses of science. We shall begin in the early modern period, where many of the issues of the construction of this thing called science are delineated unusually clearly. Our main focus will be the U.S., Britain, France, and Germany in nineteenth and twentieth centuries.

93978. History of Modern Astronomy (3-3-0)

Traces the development of astronomy and cosmology from the late 17th century to the 1930s. Attention is given to the interactions of astronomy with other areas of science and with philosophical, religious, and social factors. Satisfies core history requirement.

93979. Science, Medicine, and Social Reform (3-3-0)

A comparative history of medicine, welfare, and the state in the United States and Europe from the late eighteenth to the mid 20th century. Topics include medical police, the rise of social statistics, public health and social control, eugenics, alternative medicine, and the role of religion.

93985. Development of Moral Doctrine (1-1-0)

An examination of how Catholic moral doctrine has developed in specific areas, viz. marriage and divorce; religious liberty; slavery; and usury. Attention will also be given to more general theory on the development of doctrine in the Catholic Church. Course requirement: One 12-page paper on any area

of moral doctrine, assessing development or lack of it in that area.

Faculty

R. Scott Appleby, *the John M. Regan Jr. Director of the Joan B. Kroc Institute for International Peace Studies, Professor of History, and Fellow in the Helen Kellogg Institute for International Studies*. B.A., Univ. of Notre Dame, 1978; M.A., Univ. of Chicago, 1979; Ph.D., *ibid.*, 1985. (1994)

Edward N. Beatty, *Associate Professor*. B.A., Princeton Univ., 1983; M.A., Univ. of New Mexico, 1992; Ph.D., Stanford Univ., 1996. (2000)

Gail Bederman, *Associate Professor*. B.F.A., New York Univ., 1978; M.A., Brown Univ., 1984; Ph.D., *ibid.*, 1992. (1992)

Doris Bergen, *Associate Professor, Fellow in the Nanovic Institute for European Studies, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Univ. of Saskatchewan, 1982; M.A., Univ. of Alberta, 1984; Ph.D., Univ. of North Carolina, Chapel Hill, 1991. (1996)

Rev. Thomas E. Blantz, C.S.C., *Professor*. A.B., Univ. of Notre Dame, 1957; S.T.L., Gregorian Univ., Rome, 1961; M.A., Univ. of Notre Dame, 1963; Ph.D., Columbia Univ., 1968. (1968)

D'Arcy Jonathan Dacre Boulton, *Professional Specialist in the Medieval Institute and Concurrent Associate Professor of History*. B.A., Univ. of Toronto, 1969; M.A., Univ. of Pennsylvania, 1970; Ph.D., *ibid.*, 1978; D.Phil., Univ. of Oxford, 1976. (1990)

Robert E. Burns, *Professor Emeritus*. B.A., Northeastern Univ., 1951; A.M., Harvard Univ., 1953; Ph.D., *ibid.*, 1961. (1957)

Paul Cobb, *Assistant Professor*. B.A., Univ. of Massachusetts, 1989; M.A., Univ. of Chicago, 1991; Ph.D., *ibid.*, 1997. (1999)

Jon T. Coleman, *Assistant Professor*. B.A., Univ. of Colorado, Boulder, 1992; M.A., *ibid.*, 1997; Ph.D., Yale Univ., 2003. (2004)

Olivia R. Constable, *Professor*. B.A., Yale Univ., 1983; Ph.D., Princeton Univ., 1989. (1995)

Laura A. Crago, *Assistant Professor and Fellow in the Nanovic Institute for European Studies*. B.A., Wesleyan Univ., 1983; M.A., Yale Univ., 1990; Ph.D., *ibid.*, 1993. (1991)

Michael J. Crowe, *the Rev. John J.avanaugh, C.S.C., Professor Emeritus of the Humanities and Concurrent Professor Emeritus of History*. B.A., Univ. of Notre Dame, 1958; Ph.D., Univ. of Wisconsin, 1965. (1961)

Vincent P. DeSantis, *Professor Emeritus*. B.S., West Chester Univ., 1941; Ph.D., Johns Hopkins Univ., 1952. (1949)

Jay P. Dolan, *Professor Emeritus*. A.B., St. John's Seminary, 1958; S.T.L., Gregorian Univ., 1962; M.A., Univ. of Chicago, 1968; Ph.D., *ibid.*, 1970. (1971)

Philip Gleason, *Professor Emeritus*. B.S., Univ. of Dayton, 1951; M.A., Univ. of Notre Dame, 1955; Ph.D., *ibid.*, 1960. (1959)

Daniel Graff, *Director of Undergraduate Studies and Assistant Professional Specialist*. B.A. Univ. of Illinois, 1990; M.A., Univ. of Wisconsin, 1993; Ph.D., *ibid.*, 2004. (2001)

Brad Gregory, *Associate Professor*. B.A., Inst. of Philosophy, Catholic Univ. of Louvain, 1984; B.S., Utah State Univ., 1985; Licentiate (M.A.), Inst. of Philosophy, Catholic Univ. of Louvain, 1987; M.A., Univ. of Arizona, 1989; Ph.D., Princeton Univ., 1996. (2003)

Gary M. Hamburg, *Professor and Fellow in the Nanovic Institute for European Studies*. A.B., Stanford Univ., 1972; A.M., *ibid.*, 1974; Ph.D., *ibid.*, 1978. (1979)

Christopher S. Hamlin, *Professor and Fellow in the Nanovic Institute for European Studies*. B.A., Antioch College, 1974; M.A., Univ. of Wisconsin, 1977; Ph.D., *ibid.*, 1982. (1985)

Nathan O. Hatch, *Provost of the University and Andrew V. Tackes Professor of History*. B.A., Wheaton College, 1968; M.A., Washington Univ., 1972; Ph.D., *ibid.*, 1974. (1975)

Ivan A. Jaksic, *Professor*. B.A., Univ. de Chile, 1975; M.A., State Univ. of New York at Buffalo, 1978; Ph.D., *ibid.*, 1981. (1994)

Rev. Robert Lee Kerby, *Associate Professor Emeritus*. A.B., Univ. of Notre Dame, 1955; M.A., *ibid.*, 1956; Ph.D., Columbia Univ., 1969. (1972)

Thomas A. Kselman, *Professor and Fellow in the Nanovic Institute for European Studies*. B.A., St. Joseph College, 1970; M.A., Univ. of Michigan, 1972; Ph.D., *ibid.*, 1978. (1979)

Semion Lyandres, *Assistant Professor and Fellow in the Nanovic Institute for European Studies*. B.A., St. Petersburg State Pedagogical Univ., 1980; M.A., Boston Univ., 1987; Ph.D., Stanford Univ., 1992. (2000)

Sabine G. MacCormack, *Rev. Theodore Hesburgh, C.S.C. College of Arts and Letters Chair, jointly appointed in History and Classics*. B.A., Oxford Univ., 1964; D.Phil., *ibid.*, 1974. (2003)

George M. Marsden, *the Francis A. McAnaney Professor of History*. B.A., Haverford College, 1959; B.D., Westminster Theological Seminary, 1963; M.A., Ph.D., Yale Univ., 1965. (1992)

John McGreevy, *Professor of History*. B.A., Univ. of Notre Dame, 1986; M.A., Stanford Univ., 1987; Ph.D., *ibid.*, 1992. (1997)

Margaret Meserve, *Assistant Professor*. A.B., Harvard Univ., 1992; M.A., Warburg Inst., Univ. of London, 1993; Ph.D., *ibid.*, 2001. (2003)

Rev. Wilson D. Miscamble, C.S.C., *Associate Professor*. B.A., Univ. of Queensland, 1973; M.A., *ibid.*, 1976; M.A., Univ. of Notre Dame, 1978; Ph.D., *ibid.*, 1980. (1986)

Dian Hechtner Murray, *Professor*. B.A., Cornell College, 1971; M.A., Cornell Univ., 1974; Ph.D., *ibid.*, 1979. (1984)

Thomas F. X. Noble, *the Robert M. Conway Director of the Medieval Institute and Professor*. B.A., Ohio Univ., 1969; M.A., Michigan State Univ., 1971; Ph.D.; *ibid.*, 1974. (2000)

Walter Nugent, *the Andrew V. Tackes Professor Emeritus*. A.B., St. Benedict's College, 1954; M.A., Georgetown Univ., 1956; Ph.D., Univ. of Chicago, 1961. (1984)

Rev. Marvin R. O'Connell, *Professor Emeritus*. B.A., St. Paul Seminary, 1952; M.A., *ibid.*, 1955; Ph.D., Univ. of Notre Dame, 1959. (1972)

Aideen O'Leary, *Assistant Professor*. B.A., Trinity College–Dublin, 1990; M.A., *ibid.*, 1993; Ph.D., Univ. of Cambridge, 1997. (2000)

Emily L. Osborn, *Assistant Professor and Fellow in the Kellogg Institute for International Studies*. B.A., Univ. of California–Berkeley, 1993; Ph.D., Stanford Univ., 2000. (2001)

Richard B. Pierce, *the Carl E. Koch Assistant Professor*. B.A., Valparaiso Univ., 1985; M.A., Univ. of Wisconsin, Milwaukee, 1988; Ph.D., Indiana Univ., Bloomington, 1996. (1996)

Marc S. Rodriguez, *Assistant Professor*. B.A., Univ. of Wisconsin, 1993; M.A., Northwestern Univ., 1994; Ph.D., *ibid.*, 2000; J.D., Univ. of Wisconsin Law School, 2001. (2003)

Thomas J. Schlereth, *Professor of American Studies and Concurrent Professor of History*. B.A., Univ. of Notre Dame, 1963; M.A., Univ. of Wisconsin, 1965; Ph.D., Univ. of Iowa, 1969. (1972)

Thomas P. Slaughter, *Director of Graduate Studies and the Andrew V. Tackes Professor of History*. B.A., Univ. of Maryland, College Park, 1976; M.A., *ibid.*, 1978; M.A., Princeton Univ., 1980; Ph.D., *ibid.*, 1983. (2001)

Phillip R. Sloan, *Professor in the Program of Liberal Studies and Concurrent Professor of History*. B.S., Univ. of Utah, 1960; M.S., Scripps Inst. of Oceanography, 1964; M.A., Univ. of California, San Diego, 1967; Ph.D., *ibid.*, 1970. (1974)

James Smyth, *Professor*. B.A., Trinity College, Dublin, 1985; Ph.D., Cambridge Univ., 1989. (1995)

Robert E. Sullivan, *Director of the Erasmus Institute and Concurrent Associate Professor of History*. B.A., Oakland Univ., 1968; M.Div., St. John's Seminary, 1980; Ph.D., Harvard Univ., 1977. (1998)

Julia Adeney Thomas, *Associate Professor*. A.B., Princeton Univ., 1981; M.A., Univ. of Chicago, 1984; Ph.D., *ibid.*, 1993. (2001)

James Turner, *Chair and the Rev. John J.avanaugh, C.S.C., Professor of the Humanities and Fellow in the Nanovic Institute for European Studies*. B.A., Harvard Univ., 1968; A.M., *ibid.*, 1971; Ph.D., *ibid.*, 1975. (1995)

John H. Van Engen, *Andrew V. Tackes Professor of History*. A.B., Calvin College, 1969; Ph.D., Univ. of California, Los Angeles, 1976. (1977)

Andrzej S. Walicki, *Professor Emeritus*. M.S., Univ. of Warsaw, 1953; Ph.D., *ibid.*, 1958. (1986)

J. Robert Wegs, *Professor and Fellow in the Kellogg Institute for International Studies*. B.A., Western Illinois Univ., 1963; M.A., Northern Illinois Univ., 1966; Ph.D., Univ. of Illinois, 1970. (1977)

History and Philosophy of Science

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The Program of Studies

The History and Philosophy of Science (HPS) Program at the University of Notre Dame is one of a handful of programs in the United States that offers graduate-level instruction up to the Ph.D. in the field of the history and philosophy of science. The organization of the Notre Dame HPS program is that of an interdepartmental "committee," leading to a degree satisfying a combination of requirements determined jointly by the HPS program and the relevant disciplinary departmental graduate program, either philosophy or history.

Because the Ph.D. in HPS incorporates the requirements for a doctorate in a standard disciplinary department, the HPS degree program leads to a doctoral degree inclusive of, but broader in scope than, the departmental degree. For this reason it is defined as a five-year program, rather than the normal four. Thus students who take the doctoral degree in the HPS program can claim to have satisfied both the disciplinary degree requirements and also those of an HPS degree. This allows Notre Dame graduates to situate their work within traditional disciplinary contexts and enables them to qualify for academic positions in regular disciplinary departments.

All designated HPS faculty members may serve as graduate student advisers, take part in examination committees, and act as the primary directors of dissertation research.

Courses are offered over a wide range of topics in the history of science, from medieval natural philosophy to the physics, biology, medicine, and technology of the 19th and 20th centuries. Particular emphases can be pursued in medieval natural philosophy and medicine, the scientific revolution of the 17th century, the history of astronomy, physics, and mathematics, 19th-century European and American science, technology and medicine, the history and philosophy of economic thought, and the history of life and physical science in the 20th century.

Course work in the philosophy of science draws upon the resources of the University's departmental strengths in philosophy of science, ethics, the history of philosophy, and analytic philosophy. The field itself tends to divide into four parts, all of which are dealt with at Notre Dame. The first is concerned with such themes as explanation, theory-evaluation, theory-change and rationality, and recent continental approaches to the philosophy of science. The second considers the philosophical issues raised by developments in specific fields of science, such as quantum mechanics, relativity, space and time, evolutionary biology, cognitive neuroscience, sociology of scientific knowledge, and the methodology of economics. The third concerns the history of the philosophy of science. The fourth considers the ethics of science and technology. The program offers a broad covering in its courses and seminars in more specialized topics.

An important feature of the program is its attention to the broader relationships between science and culture; science, technology, and values; and the interrelations of science and religion. The ability to conduct historical and philosophical examination of these issues in the Notre Dame program forms an important feature of the course of instruction.

Through a regular faculty-student reading and discussion seminar held each semester, coupled with a visiting speaker series, the discussions of the broad range of current issues in the history, sociology, and philosophy of science are actively pursued by the combined group.

The program draws upon the resources of three important research centers at the University of Notre Dame: the Reilly Center for Science, Technology, and Values; the Center for Philosophy of Religion; and the Medieval Institute, all of which organize regular seminars, speaker series, and major conferences on current topics.

Admissions

There are no "standard" requirements for students entering a field as diverse as history and philosophy of science. Ideally students will have had dual training in a relevant humanistic academic discipline and in some area of science. The extent of the background preparation in a science expected of a student will depend on the area of doctoral research chosen. Someone who elects to specialize in ancient or medieval natural philosophy will require other special skills (in language, for example) but need not have the kind of competence in a science expected of a student intent on studying the philosophy of quantum mechanics. Sufficient preparation is expected in a humanistic discipline, typically history or philosophy, to permit the disciplinary department to make a judgment concerning admission at the time of application. Admission to the doctoral program thus requires a joint admission decision by the HPS program and the disciplinary department.

Since financial support is given by the HPS program, initial application materials should be directed to HPS and not to the disciplinary department unless

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an applicant wishes to be considered independently for admission to some other program of the University.

Financial Aid

The Notre Dame program offers a limited number of fellowship-assistantships to entering students each year that include full-tuition scholarships. These provide a duty-free fellowship for the first year, with services expected for stipend continuation in the second, third, and fourth years. A fifth-year dissertation fellowship is awarded to students making satisfactory progress toward the degree. Duties will normally include teaching assistantship work in the selected disciplinary department (history or philosophy); in the undergraduate science, technology, and values concentration; or in the undergraduate Program of Liberal Studies.

Applicants are urged to apply for the competitive NSF and Andrew Mellon predoctoral fellowships in the history and philosophy of science. Deadlines for these applications are in November of the year preceding admission but may also be applied for in the first year of the program.

Master's Program

Because HPS is a doctoral program, applicants interested only in receiving a terminal M.A. degree will not be accepted. However, this rule does not apply to individuals concurrently enrolled in other doctoral graduate programs of the University who seek to earn a nonresearch HPS master's degree in order to complement their doctoral studies. Students whose primary enrollment is in HPS will be entitled to receive a master's degree once they have completed the written and oral examination for Ph.D. candidacy. In addition, in the event that an admitted HPS student decides to leave the program or is subsequently discontinued by the HPS program or the disciplinary department, the student may pursue a research (or thesis) terminal M.A. degree.

The nonresearch HPS M.A. degree requires the completion of 36 credit hours of course work. Three courses in history of science and three courses in philosophy of science form the core of this requirement. The student, in consultation with the HPS program director, selects the remaining courses. To be eligible for HPS credit, these courses must bear in significant ways on the concerns of history and philosophy of science. Students taking the nonresearch HPS M.A. concurrently with a Ph.D. in another Notre Dame program may count up to nine hours of course work toward both degree programs, subject to approval by the director of HPS and the director of graduate studies in the other program. Reading knowledge in one foreign language (ordinarily French or German) will be required. A one-hour oral examination, based on course work, will complete the requirements for the nonresearch degree. Students taking the terminal HPS research M.A. will prepare an extended research paper or formal M.A. thesis under the direction of a faculty member, for which six hours of thesis credit will be awarded. A one-hour oral comprehensive examination completes the requirements for this research M.A. degree.

Doctoral Program

HPS students pursue the Ph.D. degree in either a philosophy track or a history track.

Philosophy Track

Those who elect the philosophy track toward the Ph.D. in history and philosophy of science must satisfy the following course distribution requirements. In HPS, they will take a minimum of three courses in the general area of philosophy of science and four courses in history of science, plus the HPS Proseminar. Courses in the history of science will be selected from offerings designated as satisfying the examination fields for the history of science M.A. comprehensive. In addition, students will satisfy a slightly modified form of the philosophy graduate program's requirements, namely, the philosophy proseminar and a minimum of one course in each of the following areas: logic, history of ancient philosophy, history of medieval philosophy or science, and history of modern philosophy, and in two of the following three areas: ethics, metaphysics, and epistemology. Students may also be advised to take some extra work in one of the sciences, if this seems necessary for the specialized research they are planning. The language requirement for Ph.D. candidates in the philosophy track is a reading knowledge of two foreign languages.

Ethics of Science and Technology Concentration

Students on the philosophy track who elect the ethics of science and technology concentration will satisfy the philosophy-track course requirements, but with the following exceptions: (1) the student will take at least four courses in ethics or science and ethics; (2) 20th-Century Ethics will be taken as one of the three required philosophy core courses; (3) one of the four required history of science courses will be selected from a specified list of courses in the area of science, technology, and values; and (4) an additional course in ethics will be chosen from a specified list of philosophy courses.

In late summer after his or her second year, the student will take a written qualifying examination in the history of philosophy administered by the Philosophy Department. In the late summer after the third year, the student will take a written M.A. comprehensive examination in history of science. This will include examinations in the four following areas in the history of science: (1) ancient, medieval, and early-modern natural philosophy; (2) history of physical science 1700 to 1910; (3) history of life science 1700 to present; and (4) science, technology, and society (including history of medicine and technology). Students will also be expected to turn in at the end of the summer an advanced paper in philosophy normally expected of philosophy majors after the second year (see philosophy doctoral requirements). In the first semester of the fourth year, the student will take an oral qualifying examination in the philosophy of science, with a special focus on the problem area in which he or she intends to write a dissertation. The five members of the examination board will be appointed jointly by the HPS program

director and the director of graduate studies in philosophy.

Once Ph.D. candidacy requirements have been completed, the student will begin preparation of a dissertation proposal under the guidance of a research director of his or her choice. The proposal will be presented to a thesis evaluation committee, consisting of five faculty chosen jointly by the HPS program director and the director of graduate studies in philosophy. The committee can approve, reject, or request modifications in the candidate's proposal. When the proposal is approved, the student will work under the direction of his or her thesis director to prepare a dissertation that must be approved by the director and three readers appointed by the HPS program director. Readers are normally drawn from the committee that approved the original proposal, but one outside member of the committee may be substituted if deemed desirable for expert judgment of the dissertation. If the readers accept the dissertation, the HPS program director arranges for a dissertation defense. The defense committee is composed of at least the dissertation director, the three dissertation readers, and an outside chairperson appointed by the Graduate School. After the defense and ensuing discussion, the committee decides by majority vote whether the defense of the dissertation project has been satisfactory and determines whether any revisions of the dissertation are required as a result of weaknesses revealed in the oral defense.

History Track

Those who elect the history track toward the Ph.D. in history and philosophy of science will take a minimum of four courses in history of science, plus the HPS Proseminar, and three courses in the general area of philosophy of science. In addition, a student will take at least eight more courses (three of which must be research seminars) in two of these fields: American, Modern European, or Medieval History. These eight courses can include the history of science and technology.

The basic language requirement for Ph.D. candidates on the history track is a reading knowledge of one modern foreign language. In addition, competence has to be shown either in a second language or in a technical discipline bearing on the student's research work, such as one of the natural sciences.

In the late summer after the second year, the student will take a written M.A. comprehensive examination in history of science. This will include examinations in the four following areas in the history of science: (1) ancient, medieval, and early-modern natural philosophy; (2) history of physical science 1700 to 1910; (3) history of life science, 1700 to present; and (4) science, technology, and society (including history of medicine and technology). This will replace the long paper and examination requirements normally expected for certain tracks within the History Department (medieval, modern European) (see history doctoral requirements). In the spring of the third year, the student will prepare for the Ph.D. candidacy examination, taken in the late summer. This will consist of two parts, written and oral. The

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examination board will consist of five faculty members appointed jointly by the HPS program director and the director of graduate studies in history. Each examiner will set a two-hour written examination in one of five fields, two of which will be in specialized areas in the history of science and technology, two in other history fields, and one in the philosophy of science. The oral examination will be given shortly after the written and will involve the same five examiners.

Once Ph.D. candidacy requirements have been completed, the student will begin preparation of a dissertation proposal under the guidance of a research director of his or her choice. The proposal will be presented to a thesis evaluation committee, consisting of three faculty chosen by the HPS program director and the director of graduate studies in history, plus the student's research director. The committee can approve, reject, or request modifications in the candidate's proposal. When the proposal is approved, the student will work under the direction of his or her thesis director to prepare a dissertation that must be approved by the director and three readers appointed by the HPS program director, normally drawn from the committee that approved the original proposal. Substitution of one outside expert may be elected if deemed necessary for the student's dissertation work. If the readers accept the dissertation, the program director arranges for a dissertation defense. The defense committee is composed of at least the dissertation director, the three dissertation readers, and an outside chairperson appointed by the Graduate School. After the defense and ensuing discussion, the committee decides by majority vote whether the defense of the dissertation project has been satisfactory and determines whether any revisions of the dissertation are required as a result of weaknesses revealed in the oral defense.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

The listing includes courses that were offered in the past three academic years.

83100. HPS Colloquium (1-1-0)

Discussion of a prominent recent work in the field of HPS, and research presentations by visiting scholars. Required course for HPS students in the first and second years of the program. (Every semester)

83101. Introduction to History and Philosophy of Science (1-1-0)

An introduction to the research methods and the varied areas of specialization in the history and philosophy of science. This course also functions as an introduction to the graduate HPS program. Required of all entering HPS students. (Every fall)

83198. Human Nature vs. Kant Idealism (3-3-0)

This seminar compares and contrasts the philosophical aims of Hume's naturalism and Kant's transcendental idealism, with attention to the 18th-Century background of their views.

83199. Kant, Kuhn & Friedman (1-1-0)

This one-credit course is devoted to a close, critical reading of Michael Friedman's *Dynamics of Reason* and related works by Friedman and a few other authors on the role of the a priori in space-time theory.

83601. Science and Social Values (3-3-0)

This course will be the first half of a two-semester survey of the main events in the history of natural philosophy and science from Greek antiquity to the early Enlightenment. The first half, taught by Professor Robert Goulding, will begin with Presocratic reflections and carry the course to the Renaissance. The second half, taught by Professor Sloan, will deal with the science of Galileo, Descartes, Boyle and Newton.

83801. Philosophy of Science (3-3-0)

A survey of major problems, movements, and thinkers in twentieth-century philosophy of science. The course begins with a look at the historical background to logical empiricism, its rise to prominence, and its early critics, such as Popper. After a study of major problems in the neo-positivist tradition, such as confirmation, explanation, and the nature of scientific laws, historicist critiques of neo-positivism, chiefly Kuhn's will be studied next, followed by a consideration of the realism-instrumentalism debate. The course concludes with a brief look at new perspectives, such as social constructivism and feminist philosophy of science. (Satisfies core philosophy of science requirement.) (Every Fall.)

93201. The Computer as a Social Phenomenon (3-3-0)

Approaches to understanding the computer have until recently tended toward one of two extremes: either as a natural-technical object, generally the province of electrical engineering and/or the computer science departments; or else on the most superficial level, with texts on the "information society" or post-modernist riffs on cyberspace. It is beginning to be the case that individual disciplines are being forced to confront how computational themes might transform their previous research agendas; and some have even begun to worry about how the internet might transform the traditional university education. In this class we begin with the question of technological determinism, proceed through a combined social/technical history of the computer and the internet, and then consider some ways in which computers are changing the definition of the "human" (using my recent book *Machine Dreams*) and the definition of the economy.

93501. Theology after Darwin (3-3-0)

This course will be an upper-division undergraduate/graduate level survey of attempts by Christian

theologians (both Protestant and Catholic) to come to grips with the challenges raised by the Darwinian revolution. We will begin with an overview of the role of the so-called argument from design in eighteenth and nineteenth century Christian theology. Then we will consider two paradigmatic late nineteenth-century reactions to Darwin, that of Charles Hodge (*What is Darwinism?*) and of John Zahm, C.S.C. (*Evolution and Dogma*). From there we will study the largely negative mood of the early-twentieth century (with the exception of the liberal theology of Shailer Matthews and other members of the University of Chicago Divinity School), with particular attention to the rise of creationism. We will conclude by looking at three influential contemporary responses to Darwin: the modified creationist attack on Darwinism represented by the so-called intelligent design argument; the use of Darwin to attack the coherence of Christian faith by figures such as Daniel Dennett and Richard Dawkins; and the argument by John Haught and Denis Edwards (building on Teilhard de Chardin) that the Darwinian revolution can in fact support and enrich Christian faith and theology.

93631. The Scientific Revolution (3-3-0)

This course studies selected developments in science during the period from 1500 to the death of Newton in 1727. The focus will be on such major figures as Copernicus, Kepler, Galileo, Huygens, and Newton. Philosophical, religious, and historiographical issues will receive some attention. Satisfies core history requirement.

93635. Topics: Scientific Revolution (3-3-0)

Examination of selected topics in the medical, physical, and occult sciences of the Scientific Revolution period. The first half of the course will deal with life sciences, beginning with the work of Aristotle and Galen, and move into the work of Harvey, Descartes, Boyle and the interactions of the life and physical sciences in the early modern period. The second half will deal with topics in the history of vision and optics and their relations to other sciences and to magic, especially in the early-modern period.

93638. British-American Intellectual History 1650-1800 (3-3-0)

Readings in selected topics in Anglo-American intellectual history from the late seventeenth century through the late eighteenth. Though suitable for graduate students who intend to offer an examination field in Anglo-American intellectual history, it is by no means intended solely for them.

"Anglo-American intellectual history," as used here, comprises those discourses common to Britain and anglophone North America. This does not preclude occasional French or German voices. Examples might include sensationalist psychology, evangelical Calvinism, Newtonian physics, republicanism, and Scottish common-sense philosophy. I have aspired to a focus on problems that were nodes of change rather than an even-handed survey. Inevitably, in this period the primary reading tilts toward British authors.

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93647. Seminar: Anglo-American Intellectual History (3-3-0)

A research seminar in American and British intellectual history. Members of the seminar will complete an article-length paper (20-30 pages), based on original research in primary sources. Unless the member's scholarly interests strongly dictate otherwise, the topic should fall within the period from about 1775 to 1925. Cross-national topics are welcome, assuming that the member has any language skills needed. Topics should if possible involve archival research.

93711. History of Modern Astronomy (3-3-0)

This course will treat a number of topics in the history of astronomy in the period from 1700 to the present. About half the course will be devoted to the development of galactic and extra-galactic astronomy from the creation of the island universe; theory in the eighteenth century to the expanding universe theory of the present century. Another topic that will definitely be treated, although on a more limited scale, is the history of ideas of extraterrestrial intelligent life. Other areas that may be included are: the rise of astrophysics, planetary discoveries from Uranus to Pluto, astronomical instruments and observatories, radio astronomy, and American astronomy. Special attention will be given to philosophically and religiously significant aspects of the history of astronomy. Persons interested in philosophy of science, history of science, astronomy, physics, or the relations of astronomy to religion and literature may find this course of value. No specific background in astronomy is assumed.

93721. The Darwinian Revolution (3-3-0)

A combined historical and philosophical approach to the revolution created by the work of Charles Darwin. The course deals with the origins of Darwinism; the 19th-century debate over evolution; the subsequent development of mathematical and genetic approaches to natural selection theory; and the formulation of neosynthetic evolutionary theory. The course will close with consideration of more recent developments connected to developmental genetics, punctuated equilibrium theory, and chaos-theoretical approaches to evolution. Students will be introduced to the historical and philosophical literature of current interest. Satisfies core history requirement.

93722. The Molecular Revolution in Biology (3-3-0)

This course offers a historical and philosophical analysis of the origins and development of the molecular revolution in biology that broke into full public view in the early 1950s with dramatic discoveries of the molecular structure of DNA and the biophysical mechanism of the action potential in the nervous system. The course will approach this with an analysis of the development of the chemistry and physics of living materials from Lavoisier and the German biophysical school (Helmholtz), through the remarkable advances in physiology of the French school (Bernard) and the development of genetics. The course will terminate in the examination of molecular approaches in contemporary work in human

genetics (the Human Genome Project). Satisfies core history requirement.

93742. History of Economic Thought (3-3-0)

Introduction to the history of economic thought and methodological issues in economics. Survey of preclassical, classical, Marxian, marginalist, and other approaches. Issues in the philosophy of science concerning explanation, verification, and prediction.

93751. Science, Medicine and Social Reform, 1750 to 1950 (3-3-0)

A comparative history of medicine, welfare, and the state in the United States and Europe from the late-eighteenth to the mid-twentieth century. Topics include medical police, the rise of social statistics, public health and social control, eugenics, alternative medicine, and the role of religion.

93771. The Social Uses of Science, 1800 to the Present (3-3-0)

This course is a comparative survey of modern scholarship on the normative uses of science. We shall begin in the early modern period, where many of the issues of the construction of this thing called science are delineated unusually clearly. Our main focus will be the U.S., Britain, France, and Germany in the nineteenth and twentieth centuries.

93802. Scientific Realism and Anti-Realism (3-3-0)

The controversy regarding realism and anti-realism has been one of the two or three focal issues in the philosophy of science over recent decades. After a brief look at the historical origins of this controversy in early astronomy and in Newtonian mechanics, we shall go on to study the criticisms, defenses, and explanations of scientific realism in the writings of van Fraassen, Putnam, Fine, Hacking, Laudan, Psillos, Kukla, and Ganson. We will rely mainly on reproductions of selections from historical sources as well as of recent articles.

93805. Philosophy of Biology (3-3-0)

Central issues in the philosophy of science from the perspective of the life sciences with particular emphasis upon topics in evolution theory and sociobiology and upon the topic of intertheoretical integration in the life sciences (from organic chemistry to cognitive neuroscience). Topics to be covered include: teleology, reductionism and supervenience, the biological basis of cognition, explanation, scientific realism, theory change, and the critical appraisal of alternate research strategies.

93811. History of the Philosophy of Science up to 1750 (3-3-0)

This seminar begins by examining four conceptions of science: those of Plato, Aristotle, Epicurus, and Chrysippus. It then considers how the natural philosophies developed by their ancient traditions were transformed by medieval and modern thinkers, who significantly revised the goals of previous scientific

inquiry. Among the moderns, we will focus on Descartes, Boyle, and Newton.

93812. History of the Philosophy of Science 1750 to 1900 (3-3-0)

The second half of the history of "classical" philosophy of science. Themes: the epistemic status of scientific knowledge-claims; the presuppositions, techniques, and modes of inference appropriate to natural science; the ontological status of scientific constructs. We shall begin with Reid and Kant, go on to Comte, Whewell and Mill, and end with Mach and Poincaré.

93813. Leibniz, Newton and Kant's First *Critique* (3-3-0)

A close examination of central aspects of Kant's *Critique of Pure Reason*, considered as an attempt to resolve tensions between the model of intelligibility exemplified by Newton's physics and the model of intelligibility articulated in Leibniz's metaphysics. We will investigate some conflicts between Leibniz and Newton with respect to space, time, causality, and freedom, and we will critically study both the methods adopted by Kant to resolve these conflicts (transcendental arguments) and the results supposedly achieved thereby (transcendental idealism). The *Critique* as seen from this perspective will be contrasted with the *Critique* as it is understood by some contemporary philosophers. Classes will be held in seminar format. Short weekly writing and two papers will be required. Books will include *Leibniz and Clarke: Correspondence*, ed. by Roger Ariew (Hackett, 2000) and Kant's *Critique of Pure Reason*, eds. Paul Guyer and Allen Wood (Cambridge, 1998).

93822. Ethics and Science (3-3-0)

Prerequisite: Consent of instructor. Use of four ethical theories and five classical logical/analytical criteria to ethically evaluate case studies in contemporary science. Problems analyzed via contemporary science include practical issues of plagiarism, attribution, peer reviewing, data sharing, data ownership, collaborative science, scientific misconduct, paternalism, whistleblowing, conflicts of interest, secrecy in science, and advocacy in science. Methodological issues to be dealt with include scientists misrepresenting their opinions with confirmed science, cooking and trimming their data, failure to attend to the purposes for which their research may be used or misused, and scientists' use of evaluative presuppositions, questionable inferences and default rules, question-begging validation and benchmarking, and misleading statistics. (On demand)

93824. Environmental Justice (3-3-0)

This course will survey environmental impact assessment (EIA), ecological risk assessment (ERA), and human-health risk assessment (HHRA); ethical and methodological issues related to these techniques; then apply these techniques to contemporary assessments for which state and federal governments are seeking comments by scientists and citizens.

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The course is hands-on, will have no tests, but will be project-based, with students working on actual assessments which they choose (about 2500 are done in US each year). The goal will be to teach students EIA, ERA, and HHRA and how to evaluate draft analyses, particularly those used to site facilities or make environment-related decisions in which poor people, minorities, and other stakeholders are themselves unable to provide comments. Course will cover flaws in scientific method and flaws in ethics that typically appear in these assessments.

93871. Historical Foundations of Space-Time Theory
(3-3-0)

This seminar will address several of the more important contemporary problems in the philosophy of space and time, both from the point of view of conceptual problems in the foundations of physics and from the point of view of systematic metaphysics and epistemology. The seminar will start with a non-technical, but rigorous introduction to current physical conceptions of space and time (both special and general relativity). We will then turn our attention to various specific topics, such as: conventionalism and the structure of spacetime; the "hole" argument in general relativity; causality and spacetime; spacetime substantivalism; space, time, and individuation; temporal becoming; black holes and spacetime singularities. Each member of the seminar will be expected to prepare a presentation to the seminar and to write a term paper on some topic arising from the readings or seminar discussions.

93872. Historical Foundations of the Quantum Theory
(3-3-0)

This course is an historically organized survey of major issues in the philosophical foundations of quantum mechanics. Working with a mix of primary and secondary texts, we will first survey the development of the quantum theory through the emergence of wave and matrix mechanics in the 1920s, the aim being to understand the context in which Bohr's complementarity interpretation and debates about it first arose. A careful study of the Bohr-Einstein debate over the completeness of quantum mechanics will be followed by a review of the major controversies over interpretation in the second half of the twentieth century, including the measurement problem, hidden variables theories, and Bell's theorem. The course will conclude with a look at new questions of interpretation unique to the context of quantum field theory. The course will not assume advanced training in physics.

93881. Theology and the Natural Sciences
(3-3-0)

The rapid progress of the natural sciences over the last few centuries has raised numerous issues for Christian theology, just as Aristotelian natural philosophy did in the thirteenth century. Dealing with those issues had a transformative effect on theology at that earlier moment. Is something similar happening today? Ought it? To enter into issues of this sort involving two very different ways of knowing inevitably involves two other ways: philosophy and history. The contribution of these latter to the four-way dialectic will be emphasized. Such a dialectic

makes heavy epistemic demands, as case-histories will demonstrate.

93882. Science and Religion
(3-3-0)

One of the most interesting and important topics of the last 500 years is the relation of the newly emerging modern science to religious belief-in particular Christianity. This course deals with that topic. We'll begin by considering views according to which there really can't be intellectual interaction between science and religion (some of van Fraassen's work suggests this), move to views according to which there can be such interaction, but only if one or the other is over stepping its bounds (Gould), and then consider views according to which such interaction is perfectly proper. Clearly there can be many different sorts of contact: for example, one way support, mutual support, conflict (Daniel Dennett and Richard Dawkins), and the like. We'll be interested in particular in cases where there appears to have been conflict, as is widely alleged to be the case with the Copernican revolution and the advent of Darwinian evolution. In such cases, what is the rational response on the part of someone who is committed both to the central claims of Christianity and is also enthusiastic about science? How shall we think about the epistemology of such conflict? As a particular contemporary case in point we'll take a closer look at the contrast between Christian ways of understanding ourselves and some of the claims of sociobiology or evolutionary psychology.

96697. Directed Readings
(0-0-0)

Readings and discussion of chosen texts under the personal supervision of a member of the faculty.

Research and Direction

78599. Thesis Direction
(0-0-0)

Research and writing on an approved subject under the direction of a faculty member.

78600. Nonresident Thesis Research
(0-0-0)

Required of nonresident graduate students who are completing their theses in absentia and who wish to retain their degree status.

98699. Research and Dissertation
(0-0-0)

Independent research and writing on an approved subject under the direction of a faculty member.

98700. Nonresident Dissertation Research
(0-0-0)

Required of nonresident graduate students who are completing their dissertations in absentia and who wish to retain their degree status.

Faculty

J. Matthew Ashley, *Associate Professor of Theology and Fellow in the Center for Social Concerns*. B.S., St. Louis Univ., 1982; M.T.S., Weston School of Theology, 1988; Ph.D., Univ. of Chicago, Divinity School, 1993. (1993)

Katherine A. Brading, *Assistant Professor of Philosophy*. B.Sc., King's College, Univ. of London, 1992; B.Phil., Oxford Univ., 1996; D.Phil., Oxford Univ., 2001 (2004)

Michael J. Crowe, *the Rev. John J. Cavanaugh, C.S.C., Professor Emeritus of the Humanities, Program of Liberal Studies*. B.S., Univ. of Notre Dame, 1958; B.A., *ibid.*, 1958; Ph.D., Univ. of Wisconsin, 1965. (1961)

Christopher B. Fox, *Professor of English and Director of the Keough Institute for Irish Studies*. B.A., Cleveland State Univ., 1971; M.A., State Univ. of New York at Binghamton, 1974; Ph.D., *ibid.*, 1978. (1986)

Robert D. Goulding, *Assistant Professor in the Program of Liberal Studies*. B.Sc., Univ. of Canterbury, 1989; B.A., Univ. of Canterbury, 1990; M.A., Warburg Inst., Univ. of London, 1992; Ph.D., *ibid.*, 1999. (2003)

Gary M. Gutting, *the Notre Dame Professor of Philosophy and Fellow in the Nanovic Institute for European Studies*. A.B., St. Louis Univ., 1964; Ph.D., *ibid.*, 1968. (1969)

Christopher S. Hamlin, *Professor of History, Fellow in the John J. Reilly Center for Science, Technology, and Values, and Fellow in the Nanovic Institute for European Studies*. B.A., Antioch College, 1974; M.A., Univ. of Wisconsin, 1977; Ph.D., *ibid.*, 1982. (1985)

Don A. Howard, *Director, Professor of Philosophy, and Fellow in the Nanovic Institute for European Studies*. B.Sc., Michigan State Univ., 1971; A.M., Boston Univ., 1973; Ph.D., *ibid.*, 1979. (1997)

Anja Jauernig, *Assistant Professor of Philosophy*. B.A., Univ. of Bonn, 1994; B.S., *ibid.*, 1995; M.A., *ibid.*, 1997; M.A., Princeton Univ., 1999; Ph.D., *ibid.*, 2002. (2002)

Lynn S. Joy, *Professor of Philosophy*. A.B., Radcliffe College, Harvard Univ., 1971; A.M., Harvard Univ., 1981; Ph.D., *ibid.*, 1982. (2000)

Janet Kourany, *Associate Professor of Philosophy*. B.S., Columbia Univ., 1965; Ph.D., *ibid.*, 1977. (1982)

A. Edward Manier, *Professor of Philosophy*. B.S., Univ. of Notre Dame, 1953; A.M., St. Louis Univ., 1956; Ph.D., *ibid.*, 1961. (1959)

Vaughn R. McKim, *Associate Professor of Philosophy*. B.A., Oberlin College, 1962; M.A., Yale Univ., 1964; Ph.D., *ibid.*, 1966. (1966)

Rev. Ernan McMullin, *the John Cardinal O'Hara Professor Emeritus of Philosophy*. B.Sc., National Univ. of Ireland, 1945; B.D., Maynooth College, 1948; Ph.D., Univ. of Louvain, 1954. (1954)

Philip E. Mirowski, *the Carl E. Koch Professor of Economics*. B.A., Michigan State Univ., 1973; M.A., Univ. of Michigan, 1976; Ph.D., *ibid.*, 1979. (1990)

Lenny Moss, *Assistant Professor of Philosophy and Fellow in the Nanovic Institute for European Studies*. B.A., San Francisco State Univ., 1981; Ph.D., Univ. of California, 1989; Ph.D., Northwestern Univ., 1998. (1999)

Philipp L. Quinn, *the John A. O'Brien Professor of Philosophy*. B.A., Georgetown Univ., 1962; M.S., Univ. of Delaware, 1966; Ph.D., Univ. of Pittsburgh, 1969. (1985)

William M. Ramsey, *Associate Professor of Philosophy*. B.S., Univ. of Oregon, 1982; Ph.D., Univ. of California, San Diego, 1989. (1989)

Kristin Shrader-Frechette, *the F. J. and H. M. O'Neill Professor of Philosophy, Concurrent Professor of Biological Sciences, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.Sc., Xavier Univ., 1967; Ph.D., Univ. of Notre Dame, 1972. (1998)

Phillip R. Sloan, *Professor in the Program of Liberal Studies and Concurrent Professor of History*. B.S., Univ. of Utah, 1960; M.S., Scripps Inst. of Oceanography, 1964; M.A., Univ. of California, San Diego, 1967; Ph.D., *ibid.*, 1970. (1974)

Thomas A. Stapleford, *Assistant Professor in the Program of Liberal Studies*. B.A., B.M.E., Univ. of Delaware, 1997; M.Sc., Univ. of Edinburgh, 1998; Ph.D., Harvard Univ., 2003. (2003)

James C. Turner, *the Rev. John J. Cavanaugh, C.S.C., Professor of the Humanities and Fellow in the Nanovic Institute for European Studies*. B.A. Harvard Univ., 1968; M.A., *ibid.*, 1971; Ph.D., *ibid.*, 1975. (1995)

Literature

Program Director:

Margaret A. Doody

Director of Graduate Studies:

Collin Meissner

Telephone: (574) 631-0481
Location: 336 O'Shaughnessy Hall
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The Ph.D. in Literature at the University of Notre Dame is an innovative interdisciplinary program that focuses on the study of literature from a transnational and intercultural perspective. The program combines the forces of a number of departments and programs—Classics (Arabic, Greek, Latin, Syriac), East Asian studies, French and Francophone studies, German, Iberian and Latin American studies (Portuguese, Spanish), Irish studies, and Italian studies. Close ties with Philosophy and Theology (exponents of sources of much basic literary theory) are encouraged; each student takes at least one course from each of those two departments. The Ph.D. in Literature brings together outstanding faculty and resources to enable doctoral students to study literature both within traditional disciplines and across disciplinary and national boundaries.

Designed for the intellectually creative student, the Ph.D. in Literature requires both depth and breadth of language study while offering students curricular flexibility in the design of a degree that is responsive to their own interests in literature. Uniquely tailored to take advantage of the University's many resources, the program offers an unprecedented level of intellectual and financial support.

Intellectual Strength and Support

Notre Dame is well known as an intellectual center for the study of the ancient world, religion and literature, medieval life and culture, Irish literature and culture, the Renaissance, and modernism. Admitted students enjoy the company of their peers and close association with a diverse and lively group of faculty, not only within the departments listed above but also in numerous other departments and institutes at Notre Dame, such as the Department of English, the Devers Program in Dante Studies, the Erasmus Institute, the Kellogg Institute for International Studies, the Keough Institute for Irish Studies, the Kroc Institute for International Peace Studies, the Nanovic Institute for European Studies, and the Medieval Institute. These institutes, like the departments, bring distinguished scholars as visiting professors and speakers to campus and hold conferences of international repute. Students will be welcomed as valued and contributing members of this community of scholars.

Notre Dame's library system houses nearly three million volumes and subscribes to more than 23,000 serial publications. In addition to its general holdings, the system's main library, the Theodore M. Hesburgh Library, also has world-renowned special collections in Dante, the Byzantine world, the Italian Renaissance, the French Revolution and Enlightenment, the Spanish Inquisition, Southern Cone literature, Irish literature, and medieval literature and history. Students can also access the art exhibits and collections housed in Notre Dame's Snite Museum, one of the top university art museums in the country.

Financial Assistance and Funding for Professional Activity

The full range of financial assistance, including fellowships (University Presidential Fellowships, first-year fellowships, ethnic minority fellowships, and others), teaching assistantships, and tuition scholarships, described in the front section of this Bulletin is available to students in the Ph.D. in Literature. All admitted doctoral students will be fully funded for at least five years with stipends and full-tuition scholarships. Stipends will come in the form of teaching fellowships, research fellowships, and graduate fellowships. While all admitted students will receive stipends and full tuition waivers, merit-based fellowships of \$22,000 will be awarded to selected applicants.

The Ph.D. in Literature emphasizes the development of linguistic expertise as well as training in criticism, theory, and research. To this end, the program will either provide directly or facilitate the acquisition of grants, fellowships, or other forms of funding through various agencies to support advanced students in a research-oriented year abroad.

Admissions

The program in literature admits only students intending to pursue the doctorate. Students who have already completed the M.A. degree in a relevant literary field or in a related nonliterary field (such as anthropology, history, theology, philosophy, etc.) are encouraged to apply. Work completed at another institution may, upon determination by the program's administrative board, be credited toward the Ph.D. degree. An advanced level of preparation in the languages relevant to a student's proposed course of study is requisite for all applicants to the program and indispensable for students in the program.

Incoming students begin studies in the fall semester. Students applying to enter in the fall should have complete dossiers (application, transcripts, writing samples (one in English and one demonstrating facility examining literature in a foreign language), three letters of recommendation, and GRE scores (general test only) on file with Notre Dame's Office of Graduate Admissions no later than February 1. Applicants should describe their areas of interest as explicitly as possible on the "Statement of Intent" accompanying the application and ideally should list the prospective faculty with whom they wish to study. The writing samples should demonstrate the applicant's skills in writing, analysis, and literary research.

Online Application

The URL for the Graduate School's online application is <http://graduateschool.nd.edu>.

General Requirements for the Doctoral Degree

The Ph.D. in Literature offers an innovative academic framework for the formation of future scholar-teachers in both the classical and modern languages and literatures. Guided by the director and by faculty advisers in their primary field, students are expected to fashion individualized courses of study bringing together an integrated blend of courses in their primary field, in related field(s), and/or in literature more broadly construed. The doctoral program has been designed in recognition of and in anticipation of more dramatic changes in the way literature is being taught and studied. The program's design allows for the development of graduates with multiple interdisciplinary competencies: in a national literature, in a cross-cultural field or genre, in the multiple valencies of a literature as understood from a transnational and even global perspective, and in the instruction of one or more foreign languages.

Students in the program will be required to complete a minimum of 54 credit hours of study (18 courses) during three years of course work, including a minimum of six courses in their primary field of study, five in the primary field and/or related fields, and five specially designed seminars in literature. Students must complete during their first two years of study the program's specially designed course in literary theory, as well as a team-taught course in world literature that will focus attention on multiple regions, periods, and languages within and beyond the borders of Europe and the Americas. Before the end of their second year of course work, students will

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be expected to complete at least one course each in philosophy and theology so as to better understand the historical disciplines that have shaped the ways we talk and think about literature.

Course Requirements

Primary field*	6 courses	18 credit hours
Secondary and/or related fields	5 courses	15 credit hours
Literature seminars	5 courses	15 credit hours
Philosophy	1 course	3 credit hours
Theology	1 course	3 credit hours

* Primary field and related fields may be organized around periods (e.g., late antiquity, medieval, Renaissance, Enlightenment, fin de siècle, etc.); around genres (e.g., epic, tragedy, comedy, the ancient and/or modern novel, etc.); around literary movements (e.g., modernism, symbolism, the avant-garde, etc.); or around languages (e.g., ancient Greek, Latin, French, Spanish, German, Italian, etc.).

Reading Courses. Given the innovative nature of the program and the encouragement of a wide variety of pursuits, some courses taken by graduate students will be individual study conducted with an individual professor. The program's Graduate Studies Manual outlines the rules and procedures governing such courses.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

61601. Romance Language Acquisition and Instruction (3-3-0)

An introduction to theories of foreign language acquisition and methods of foreign language instruction related to them, including the direct, cognitive, communicative, and input (natural) approaches. Required of teaching assistants in the department.

61603. Foreign Language Acquisition and Instruction (3-3-0)

An introduction to theories of foreign language acquisition and methods of foreign language instruction related to them, including the direct, cognitive, communicative, and input (natural) approaches. Required of teaching assistants in the department.

61604. Practicum in Spanish (1.5-1.5-0)

This weekly practicum is designed for graduate students who serve as Spanish Teaching Assistants in the Department of Romance Languages. The course focuses on the development of organizational and presentation skills needed to excel as a foreign language teacher. Students carry out micro-teaching projects and collaborate to develop a portfolio of

their own activities based upon the principles learned in the course.

61605. Practicum in French (1.5-1.5-0)

This course will prepare students to teach elementary French courses. It will cover basic teaching techniques/methods used in the ND French curriculum, setting up and maintaining a grade book, course management, as well as test design and evaluation techniques.

61606. Practicum in Italian (1.5-1.5-0)

This course is designed for graduate students in the M.A. program and the Ph.D. in Literature Program with concentrations in Italian and is mandatory during their first year of teaching. It complements the theoretical basis for foreign language teaching methodology provided in LLRO and gives students hands-on practice with the organizational tasks and pedagogical procedures that are pertinent to their daily teaching responsibilities.

63614. Latin Lyric (3-3-0)

This course examines the lyric poetry of Catullus and Horace, with the basic goal of training the student in the language, preoccupations, and meter of Roman lyric. In the latter part of the course we will look at some examples of Roman Elegy, Propertius, Ovid, and Sulpicia, for purposes of comparison.

63618. Socratic Literature (3-3-0)

This course will study the character and philosophical significance of Socrates within the context of the intellectual ferment of late Fifth Century Athens. The Greek primary texts that constitute the heart of the course are Plato's *Laches* and *Lysis* and sections of Xenophon's *Memorabilia*. Issues that arise from those texts, like the ideal of rational character and Socrates' great interest in Eros, will provide opportunities for student research and classroom discussions.

63801. Goethe and His Time (3-3-0)

In this course we will examine some of the major works written during the Classical period of German literature, between 1750 and 1830. In addition to Goethe himself, we will focus on writings by Klopstock, Lessing, Schiller, Hölderlin, Kleist, and Tieck. All readings will be in the original, class discussions and presentations will be in English.

63832. Senior Seminar (3-3-0)

Prerequisite: Senior Spanish majors only. This course may cover an in-depth study of a particular author, theme, genre or century. In addition to treating primary texts, some critical material will be required reading. The course culminates in a substantial research paper. May be taken either fall or spring term.

73610. The Sufferings of the Roman Martyrs (3-3-0)

The course will be concerned with a corpus of some thirty Latin *passiones* of martyrs who were executed at Rome before the Peace of the Church

(A.D. 313), and who then were culted at Roman churches throughout the Middle Ages. Although the *passiones* were composed several centuries after the martyrdoms they describe, they are a unique witness to the topography of sixth-century Rome and to its spirituality, as well as to the origin and development of the cult of saints. The texts are generally brief and only of intermediate difficulty (some elementary knowledge of Latin is a prerequisite for the course), but they provide a good introduction to 'sermo humilis' of the early Middle Ages.

73611. The Age of Cicero (3-3-0)

Readings in historical and literary texts of the Late Roman Republic, to include the speeches and letters of Cicero, Sallust's *Catilinarian Conspiracy*, and the poems of Catullus.

73612. Classical Epic (3-3-0)

Homer's *Iliad* and *Odyssey* and Virgil's *Aeneid* stand at the head of the tradition of European literature. The work of Dante, Milton, and many other major European writers is substantially influenced in both form and theme by the classical epics, and contemporary literature and film continue to explore the questions posed sharply by these Greek and Roman epics. We will read Homer's *Iliad* and *Odyssey*, Vergil's *Aeneid*, and Ovid's *Metamorphoses*. We will consider both the cultural contexts in which these texts are embedded, and the literary habits that these texts rely upon for their aesthetic and emotional power.

73613. Ovid's *Metamorphoses* (3-3-0)

In this course, we translate and discuss selected passages from the *Metamorphoses*, Ovid's idiosyncratic poetic history of the world. Topics for our discussions include the spiritual, moral, religious, political, and physical transformations portrayed between the creation story at the beginning and the deification of Caesar at the end of the text; the tension between Ovid's adherence to Roman traditions and his irreverent, sometimes subversive, artistic originality; the poem's narrative techniques, poetic style, and structure; the significance of intertextual allusions to Greek drama, Virgilian epic, and Ovid's own love poetry; the instability of gender; portraits of the poet within the work; and the innumerable faces of love, as presented through characters who are pious, raging with passion, inseparable, violent, infatuated, lovesick, devoted, and much more. Above all, this course aims at clarifying how Ovid's inexhaustible playfulness and delightful wit contributed to shaping a work of both epic grandeur and lyric intimacy that continues to inspire poets, composers, novelists, painters, and at least one playwright whose version recently made it all the way to Broadway. Daily preparation and active participation in class are essential components of the course; brief written assignments, one mid-term exam, one brief project, and a final exam also count towards the final grade.

73615. Roman Epic: Virgil (3-3-0)

An introduction to the poetry of Virgil, covering selections from the *Georgics* and the *Aeneid*.

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73617. Greek Tragedy
(3-3-0)

Texts selected from Aeschylus, Sophocles, and Euripides. Tragedy as a dramatic genre and as a view of life. Introduction to scholarship in this subject.

73619. Greek and Roman Mythology
(3-3-0)

The major mythical tales and figures from the classical world which have influenced world literature. Study of the Olympic and vegetation cults. Homer and Hesiod, national and local myth, Syncretism, Mysteries.

73620. Graduate Seminar: Apuleius
(3-3-0)

An investigation of the historical Apuleius. The course examines the Romano-African context into which Apuleius was born, recreates the educational travels to Carthage, Athens and Rome which occupied his early life, and focuses especially on his trial for magic in Sabratha in 158/9, before following him back to Carthage where he spent the rest of his life. Notice will be taken of all of Apuleius' writings, but special attention will be paid to the Apology, and to the documentary nature and socio-cultural importance of the Metamorphoses. The course is open to students with or without Latin.

73621. Medieval Literature
(3-3-0)

Readings of representative plays by Cervantes, Lope de Vega, Tirso de Molina, Ruiz de Alarcón, and Calderón de la Barca in their historical and cultural context. The works will be studied in the light of the theatrical theory of the period as well as the contemporary criticism.

73631. Plato Before the Republic
(3-3-0)

Plato is the philosopher most difficult to interpret. The range of his interests, the innovative nature and the complexity of his thought, finally the fact that he does not speak in first person but has his main ideas exposed by different characters in his dialogues contribute to this difficulty. After a general introduction into the main problems and positions of Plato scholarship today, we will read some of his dialogues written before his most important work, the "Republic", dealing with as various topics as virtues, the nature of art, the relation of ethics and religion, the politics of Athens and the essence of knowledge. We will analyze both his arguments and the literary devices by which he communicates them and partly withholds and alludes to further ideas. The dialogues to be read are *Ion*, *Hippias Minor*, *Apology*, *Crito*, *Euthyphro*, *Laches*, *Protagoras*, *Gorgias*, *Menexenos* and *Menon*.

73633. Dante and Petrarch Minicourse
(1-3-0)

This one credit course consists of a series of seminars dedicated to an exploration of the literary relations between Dante Alighieri (1265-1321) and Francis Petrarch (1304-1374). The seminar will meet on four Tuesday afternoons for two and one half hours during the semester and will feature nine contributions by Albert R. Ascoli (UC Berkeley), Zygmunt Baranski (Cambridge), Theodore Cachey (Notre

Dame), Roland Martinez (Brown), Giuseppe Mazzotta (Yale), Christian Moevs (Notre Dame), Lino Pertile (Harvard), Justin Steinberg (University of Chicago), and Sara Sturm-Maddox (University of Massachusetts).

73645. Livy
(3-3-0)

This course will cover selections from Livy's history, including the foundation legends, Hannibal's attack on Rome, and the suppression of the Bacchanalian cult. Topics to be considered will include Livy's use of sources; Roman military techniques and tactics; Roman expansionism; Livy's relation to the Augustan literary and social agenda; and Livy's place in the history of Latin prose.

73652. St. Augustine's Confessions
(3-3-0)

This course provides an introduction to St. Augustine's Confessions, through reading of extensive selections from the Latin text, a careful reading of the entire work in English translation, and the application of a variety of critical approaches, old and new.

73660. Lyric and Narrative in Medieval French Literature
(3-3-0)

This course will examine the ideology of troubadour poetry and its influence on French literature of the twelfth, thirteenth, and fourteenth centuries. We will trace this influence from the narrative response to lyric poetry in the romances of Lancelot, Tristan & Iseult, and Guillaume de Dole, through the erotic pseudo-autobiographies (*Roman de la Rose*, *Remède de fortune*), to the tendency of lyric cycles to recount stories (Christine de Pizan's *Cent Ballades*). In these works and others, the confrontation of lyric and narrative tendencies, the combinations of song and speech, and the intertextual implications of hybrid works will be of particular interest. The course will be conducted in French or English, depending on the preferences of the class. Modern French will be provided for all Old French texts, but good reading knowledge of modern French is required. Requirements: One 15-20 page research paper; several class presentations.

73662. Old English Literature
(3-3-0)

This introduction to the study of Old English will focus on the elements of the language preparatory to reading and analyzing a variety of prose and verse texts. Issues for discussion and study will include: current and past constructions of philology, the canon, and the politics of editing, issues in translation, interpretative strategies, subject formation, issues in period construction, research tools, possibilities for future work. No prior experience with Old or Middle English is necessary.

73663. Old English Biblical Verse
(3-3-0)

The Anglo-Saxons were the earliest people in western Europe to translate the Bible into their vernacular, and a substantial proportion of surviving Old English verse consists of biblical translation and paraphrase. The principal focus of the course will be

the biblical poems preserved in the so-called 'Junius Manuscript' (Genesis A, Genesis B, Exodus, Daniel), but these and other relevant poems will be studied in the wider context of early medieval biblical exegesis, in particular the contribution made to biblical interpretation by Anglo-Saxon exegetes such as Archbishop Theodore, Bede, Alcuin and Ælfric.

73664. Dante's World of Books
(3-3-0)

Dante's World of Books aims to examine the oeuvre and career of, arguably, the most original and influential writer in Western culture from three closely interlinked perspectives. First, the course provides an overview of all Dante's writings, the books he actually produced. Second, it explores his intellectual formation and his attitude towards the literary tradition—the books that were probably present in his 'library'. Third, it will assess the manner in which Dante synthesized his different ideological and poetic interests in order to develop an incisive and powerful assessment and critique of humanity's position in the order of divine creation. In the Middle Ages, the created universe was often metaphorically described as "God's book" or the "book of creation". The course thus attempts to investigate the complex inter-relationship that Dante forged between his books and the 'book' of the Supreme Artist, a popular and highly influential medieval image for God the Creator.

73665. Dante II
(3-3-0)

Dante's *Comedy* is one of the supreme poetic achievements in Western literature. It is a probing synthesis of the entire Western cultural and philosophical tradition that produced it, a radical experiment in poetics and poetic technique, and a profound exploration of Christian spirituality. Dante I and II are a close study, over two semesters, of the entire *Comedy*, in its cultural (historical, literary, artistic, philosophical) context. Dante I covers the works that precede the *Comedy* (*Vita Nuova*, *Convivio*, *De vulgari eloquentia*) and the *Inferno*, Dante II covers the *Purgatorio* and *Paradiso*, along with the *Monarchia*. These are separate courses, and can be taken independently, though they do form an integrated sequence. The course and all discussion will be conducted in English. Dante's minor works will be read in English translation; all critical articles will be in English. The *Comedy* will be read in facing-page translation, and we will refer to it in Italian. Acquaintance with Latin or a Romance language is therefore helpful, though not strictly necessary.

73666. Language, Symbolism, Vision
(3-3-0)

Our aim will be to study three issues which are absolutely central to medieval thought and culture from the end of the patristic period to the Renaissance (and indeed also beyond these limits). The danger of excessive generality in such an approach will be avoided 1. by isolating a group of seminal texts from the last ancient or early medieval period for careful scrutiny (wherever possible, in English translation); 2. by treating these texts as conceptual nuclei for broader linguistic, hermeneutic, and psychological theories which were widely held and discussed. The

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texts will be drawn from Origen, Ambrose, Augustine, Jerome, Macrobius, Boethius, Dionysius the Areopagite, and Isadore of Seville. Although a major aim of the course is to introduce important writers to the students and to pursue historical and literary matters, we will also find time to reflect on philosophical questions raised by such a tradition. What is the relation between divine and human language? Why is it necessary to connect language and symbol through psychic activity? What is the relation between secular myth and sacred symbol?

73667. Petrarch: The Soul's Fragments
(3-3-0)

Before taking up the Canzoniere we'll consider the life of Petrarch, his intellectual activity and his other works, including selections from his epistolary collections (*Letters on Familiar Matters* and *Letters of Old Age*) and other Latin works, especially the *Secretum* (*Petrarch's Secret*). Our reading of the Canzoniere will utilize Santagata's recent edition and commentary and will engage critically a variety of hermeneutical and philological approaches to the book. The seminar will be conducted in English but reading knowledge of Italian is essential.

73668. Boccaccio
(3-3-0)

Though one of the most entertaining texts in literature, Boccaccio's *Decameron* has been called "the most enigmatic of medieval texts, richly difficult to fathom." The text that lies behind Chaucer's *Canterbury Tales*, and that created the modern short story, the *Decameron* is one of the most important and influential works in literature: it is a profound meditation on the grounds of faith and the meaning of death, on the relation between language and reality, on literature as a response to human suffering and mortality, on the nature of crisis and historical change, and it is a subtle exploration of the concepts of fortune, human intelligence and creativity, love, social hierarchy and social order, and religious language and practice. We shall also pay special attention to the representation of women in the *Decameron*, and to the book's apparent "feminism." Students will be free to explore other topics as well, such as magic, the visual arts, mercantile culture, travel and discovery, and new religious practices. We will read the text in its entirety in Italian; a reading knowledge of Italian is thus required, but the enrollment will determine the language of discussion. Open to advanced and qualified undergraduates by permission.

73669. Canon and Literature of Islam
(3-3-0)

This course is an introduction to the religious literature of the Arab-Islamic world. Emphasis is on works from the classical and medieval periods of Islam, roughly from the seventh to the fourteenth century of the common era. We will read selections from the Qur'an (the sacred scripture of Islam), the Hadith literature (sayings attributed to the prophet Muhammed), the biography of the Prophet, commentaries on the Qur'an, historical and philosophical texts, and mystical poetry. All texts will be read in English translation. No prior knowledge of Islam and its civilization is assumed, although helpful.

73702. Love Poetry of the Renaissance
(3-3-0)

An in-depth reading of the love lyrics of Ronsard or Maurice Scève, particularly as they relate to the Italian Petrarchist tradition.

73703. Boccaccio's Decameron
(3-3-0)

One of the most important and influential works of the middle ages-and a lot funnier than the *Divine Comedy*. Boccaccio's *Decameron*, written in the midst of the social disruption caused by the Black Death (1348), may have held readers attention for centuries because of its bawdiness, but it is also a profound exploration into the basis of faith and the meaning of death, the status of language, the construction of social hierarchy and social order, and the nature of crisis and historical change. Framed by a story telling contest between seven young ladies and three young men who have left the city to avoid the plague, the one hundred stories of the *Decameron* form a structural masterpiece that anticipates Chaucer's *Canterbury Tales*, the Renaissance epics, and the modern short story. Students will be encouraged to further explore in individual projects the many topics raised by the text, including (and in addition to the themes mentioned above) magic, the visual arts, mercantile culture, travel and discovery, and new religious practices. We will read the text in its entirety and in Italian; a reading knowledge of Italian is thus required, but the enrollment will determine the language of discussion.

73725. European Romanticism
(3-3-0)

This course will present the figure of Giacomo Leopardi, the outstanding romantic Italian Poet, and his striking similarities with some of the protagonists of that season of poetry: Wordsworth, Keats, Hölderlin, and, later, Baudelaire. We will also delve into the *Operette morali* and the private diary called *Zibaldone* to illustrate the surprising depth of Leopardi's thinking, one of the most original and perceptive explorations of the human condition ever prospected. We will show that this isolated poet and thinker was one of the founders of modern nihilism, and we will compare his most stunning ideas to the ones elaborated by his great contemporary Schopenhauer and by the modern existentialist thought.

73726. Poetry and Politics, 1541-1688
(3-3-0)

The political poetry of the period 1541-1688 will be discussed and analyzed against the historical background. The primary focus will be the mentality of the native intelligentsia as it is reflected in the poetry and as it responded to the momentous changes of the period. The origins and rise of the cult of the Stuarts will be examined and the historiography of the period will be assessed.

73727. Ideology, Poetry & Politics
(3-3-0)

Jacobitism, or allegiance to the course of the House of Stuart (from Latin Jacobus "James" the deposed James II), was the common voice of political dissent in 18th century Ireland, Scotland and England. Irish Catholic advocacy of the Stuart cause had already become a political orthodoxy in the course of the

17th century and when the Stuarts were deposed by William of Orange ("King Billy") later succeeded by the Hanoverians (1714) the culture of dispossession and displacement and the rhetoric of return and restoration became firmly entrenched in the political ideology of Catholic Ireland. This course will examine the development of Irish Jacobitism in its various literary, historical and ideological aspects in addition to placing it within its wider British and European context in the 18th century.

73750. Novel as an Agent of Change
(3-3-0)

The course title is suggested by Elizabeth Eisenstein's book title *The Printing Press as an Agent of Change*. The Novel and the development of print are often connected. Ian Watt's "Rise of the Novel" is associated with the same period as that allotted to what we term "the Enlightenment." This view of the history of the genre may well seem defective, once we look at the novels of antiquity. It might be truer to say that the novel as a genre has always served as a means of what we can call "enlightenment," at various stages of its being. The Novel has recently been valued as a mirror of history, dealing with the manners and practices of persons within a culture. But the Novel itself may be considered as "an Agent of Change," not just a reflector of it. The Novel enacts the processes (historical and psychological) of change and recognition. Novelistic anagnorisis (recognition, or coming to know in a new way) is not seeking a stable ending (as in the oversimplified version of Aristotelian theatre) but enacting a process in which, after every recognition, subsequent recognition must be absorbed. The individual character has to interact with a multifaceted and changeable world, without being allowed the leisure for lengthy abstract philosophical reflection. (Indeed, what that individual may be is a novelistic subject in itself.) As Philip Sidney and others have noted, fiction comes between history and philosophy, offering us something different from either though related to both. Novels are also (unlike most traditional works of history and philosophy) often penned by outsiders, foreigners, and women. If we want to know how and why we think both personal and social change is possible, we should look first at the Novel as the biggest and most pervasive cultural exemplar of both cultural and personal metamorphosis.

73751. Gaelic Gothic
(3-3-0)

This seminar will discuss the development of the Enlightenment and the Gothic in Irish culture in relation (i) to "internal" excluded others - Catholics, Gaelic culture, (ii) questions of gender, and, (iii) the diversity Irish responses, both at home and abroad, towards other excluded peoples: African-Americans, indigenous peoples in America and Australia, and other cultures on the receiving end of Empire. As if affording a culture of consolation, Romanticism and primitivism became a refuge for many "doomed peoples," (including the Celts), while the Gothic and racial theory provided new modes of countering the threat on the "other" under modernity. The seminar will begin with eighteenth century debates focusing on 'the sublime' in Edmund Burke and the painter, James Barry; the emphasis will then shift to the rise of the Gothic, questions of cultural nationalism, and

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the emergence of Irish modernity, concentrating on Joyce; and will finish with an analysis of how these concepts have played out in cinema, especially the Irish-American cinema of John Ford, and depictions of immigration in recent Irish films.

73757. Schiller (in German)
(3-3-0)

In this course, we will consider Friedrich Schiller as a dramatist, poet, aesthetic philosopher, and historian. We will read several of Friedrich Schiller's most important plays, including *Die Räuber*, *Kabale und Liebe*, *Die Verschwörung des Fiesko*, *Wallenstein*, *Maria Stuart*, and *Die Braut von Messina*. In addition, we will read from his letters on beauty (Kallias), and the essays *Über Anmut und Würde*, *Über naive und sentimentalische Dichtung* and *Die Ästhetische Erziehung des Menschen*. Finally, we will also read selections from his historical works on the Thirty Years' War and on the Netherlands.

73802. 19th-Century German Literature
(3-3-0)

This course will provide the students with an opportunity to read, discuss, and analyze representative 19th century novellas by such authors as Kleist, Keller, Meyer, Storm, and Hauptmann. These texts will be treated as both literary and historical documents. The course will examine the literary techniques common to the novella and offer a historical survey of the various theories of this rich and especially German genre. It will also attempt to access the works through the contextual framework of the social and politico-economic events and trends of the 19th century in German-speaking countries. Finally, particular emphasis will be placed on the psychological implications of the works.

73803. The Fantastic: Theory and Practice
(3-3-0)

This course will focus on different forms of the fantastic in Latin American fiction in the 20th century. Beginning with an overview of the works of major 19th century practitioners of the fantastic mode (Hoffmann, Poe, Maupassant, Mérimée, Nerval), the course will concentrate on the following authors and texts: short fiction by Jorge Luis Borges, Julio Cortázar, Gabriel García Márquez, Elena Garro, and Rosario Ferré; selections from *The Book of Fantasy* (by Borges et al.); the short novel *Aura* (Carlos Fuentes); and the novel *The Invention of Morel* (Adolfo Bioy Casares). Critical literature on the fantastic by Tzvetan Todorov, Irène Bessière, Rosemary Jackson, Rosalba Campa, and others will also be discussed. This course is crosslisted with the Ph.D. Program in Literature and will be taught in English. Final grade will be based on class participation, one oral presentation, and a final paper (15 pages).

73804. Spanish American Short Story
(3-3-0)

An overview of the principal tendencies of short narrative in 20th-century Spanish America, as well as major trends in narratological theory. Among the authors discussed are Horacio Quiroga, Jorge Luis Borges, Julio Cortázar, Rosario Ferré, Antonio Skarmeta, and Luisa Valenzuela.

73805. Memory, Meaning & Migration
(3-3-0)

Walter Benjamin's much-quoted 1936 essay, "The Storyteller: Reflections on the Works of Nikolai Leskov" notes that while "people imagine the storyteller as someone who has come from afar, they enjoy no less listening to the man who has stayed at home, making an honest living, and who knows the local tales and traditions." This tension between going away and staying at home, found at the heart of oral storytelling, plays itself out in important ways in the history of Irish migration. A large proportion of those obliged by famine and poverty to migrate from Ireland to the United States and Britain in the 19th and early 20th centuries could neither read nor write, and many spoke only Irish. Oral storytelling was therefore a major means through which migrants communicated their experiences to younger generations and, through return visits by a few, to those at home. Various genres of oral storytelling in Irish and English deal, sometimes obliquely, with migration, while a number of recent scholarly and creative works have compared oral traditions of Irish migration with other narratives of the same experience. Participants in this course will study legends and folktales told in Irish, as well as dictated and transcribed memoirs, scholarly studies, literary texts, and films. Students will be expected to prepare topics for and contribute to class discussion, and to write a total of three papers, the third of which may be a revised draft of the first or second. Translations of Irish-language texts will be available, so no prior knowledge of Irish is required; students taking Irish language, however, will have an opportunity to work with primary material in Irish, and to compare Irish-language texts with their English translations.

73830. Modernization in Latin America
(3-3-0)

An overview of the major trends in Spanish-American poetry from the *vanguardia* to the present, with an emphasis on poetics and the social inscription of the works. Authors studied include Vicente Huidobro, César Vallejo, Pablo Neruda, Jorge Luis Borges, Gabriela Mistral, José Lezama Lima, Octavio Paz, Ernesto Cardenal, Alejandra Pizarnik, and others.

73831. Dictatorships in Luso-Brazilian Fiction and Film
(3-3-0)

A literary and cinematic study of 20th-century dictatorships in Brazil and Portugal, with readings in Luso-Brazilian fiction, history, film and cultural theory. Topics will include authoritarianism, torture, censorship and resistance; colonial wars and the ruin of empire; gender, family and revolution; and the relationship between history, fiction and memory. Close reading and discussion of major works by Ignácio Loyola Brandão, Antonio Callado, Lygia Fagundes Telles, Ivan Ângelo (Brazil); António Lobo Antunes, Lídia Jorge and Maria Isabel Barreno et al (Portugal). Viewing of films by Maria de Medeiros, Manoel de Oliveira, João Botelho (Portugal); Glauber Rocha, Sérgio Rezende and Bruno Barreto (Brazil). Course requirements will consist of active class participation and oral presentations (30%), one short paper (25%), and a research paper (45%). Primary

texts available in English and Portuguese. Conducted in English (discussion group available in Portuguese).

73834. Modern Italian Poetry
(3-3-0)

Addressed to graduate and advanced undergraduates, this course focuses on Italian poetry in the twentieth century. Major Italian poets and poet/translators to be studied include D'Annunzio, Gozzano, Marinetti, Ungaretti, Saba, Montale, Pavese, Quasimodo, Fortini, Pasolini, Sanguineti, Zanzotto, Rosselli, Giudici, Magrelli, Valduga and D'Elia. The role of translation in the evolution, transmission and diffusion of modern Italian poetry will also be considered.

73835. Poetic Language Theory, and Performance
(3-3-0)

In the 1930s a small group of American poets, following the lead of Ezra Pound and William Carlos Williams, launched a movement called "Objectivism," which concretized one of the major strains that runs through the entire history of American poetry. This Objectivist strain values facts over myths, Imagist precision over rhetorical sublimity, the vernacular over traditional poetic diction, an investigation of language over an adherence to traditional poetic forms, social and historical subject matter over lyric introspection. In its initial form, Objectivism was also a potent speaker on issues of class and ethnicity, informed most particularly by the Jewish secularism that defined its early immigrant practitioners. Although it would be difficult to locate more than a handful of "pure" Objectivists, the Objectivist strain exerts a powerful influence upon a vast range of poets and poetries. This semester we will investigate the contribution of Objectivism to the poetry and poetics of Pound, Williams, Charles Reznikoff, Louis Zukofsky, Lorine Niedecker, George Oppen, Charles Olson, Jack Spicer, Robert Duncan, Lyn Hejinian, and Susan Howe

73836. Intertexts: France and North Africa
(3-3-0)

This course will explore textual relations between French and North-African literary works as one possible opening onto inter-cultural dialogue. We will first look at French writers and artists who visited or resided in Morocco and Algeria from the early nineteenth through the late twentieth centuries and who were seemingly guided by an aspiration to understand the cultures they encountered. We will examine aesthetic representations as well as the travel diaries and correspondence of painters such as Eugène Delacroix, Théodore Chassériau, Eugène Fromentin, and Henri Matisse; the travel narratives of Fromentin (*Une année dans le Sahel*), Pierre Loti (*Au Maroc*), and Isabelle Eberhardt (excerpts from *Écrits sur le sable*); short stories by Eberhardt, and novels by Albert Camus (*L'Exil et le royaume*), J.M.G. Le Clézio (*Désert*), Michel Tournier (*La Goutte d'or*), and Didier Van Cauwelaert (*Un aller simple*). In the latter part of the semester we will explore North-African texts that respond in some way to the works previously examined. Writers will include the Algerians Assia Djebar (*Femmes d'Alger dans leur appartement*, *L'Amour la fantasia*) and Malika Mokeddem (*Le Siècle des sauterelles*), as well

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as the Moroccans Driss Chraïbi (*Le Passé simple*) and Tahar BenJelloun (*Cette aveuglante absence de lumière*). Studies by Edward Saïd (*Orientalism*) and Fatimah Mernissi (*Beyond the Veil: Male-Female Dynamics in a Modern Muslim Society*), among others, will enable us to approach Islamic culture as well as the issues of French colonialism and the condition of women in North Africa. Discussions conducted in French.

73837. Luso-Brazilian Literature and Society
(3-3-0)

This course will focus on questions of national identity in the Luso-Brazilian world. We will examine how social and cultural issues are perceived, conceptualized, represented, and understood in and by literature. The course will pay particular attention to how literature depicts important human problems such as gender and race relations, the crafting of national identity and national heroes, class conflict, family structure, and some ideological values such as success, love, happiness, fairness, misfortune, destiny, honesty, equality, and faith. Authors to be studied will include Manuel Antônio de Almeida, Machado de Assis, Jorge Amado and Guimarães Rosa, on the Brazilian side, and Miguel Torga, João de Melo, José Saramago and Lídia Jorge, on the Portuguese side. Conducted in English with readings in Portuguese or English (discussion group available in Portuguese). Requirements will include active class participation, two oral presentations, and two papers.

73838. Minority German Writers
(3-3-0)

This course explores German-language literature written by authors of non-German heritages. As a seminar it opens up the possibilities of reading a more diverse body of post-1945, and more specifically post-Wende, German literature. Secondary texts will help us to understand the social and historical context in which these authors write. The primary reading selections will include works by authors of African, Turkish, Sorbian, Roma and Arab heritages.

73839. 20th-Century German Literature
(3-3-0)

This survey course introduces students to the major writers in 20th-century German-language literature. We will be reading, discussing, and writing about poems, short stories, and dramas by authors such as George, Hofmannsthal, Rilke, Trakl, Thomas Mann, Kafka, Musil, Brecht, Celan, Bachmann, Frisch, Duerrenmatt, Enzensberger, Christa Wolf, Peter Schneider, Brinkmann, Hahn, and Koenigsdorf. By also considering these writers' contexts--the trends and movements they were part of, the activities in the other arts that influenced them, the contemporary discourses that surrounded them--we may be able to add depth and nuance to our readings. Thus, depending on student interest and ability, we will familiarize ourselves with the larger environs of 20th-century German-language culture.

73840. History of Italian Cinema
71840. History of Italian Cinema I Lab
(3-3-2)

This course will trace the history of Italian cinema and the development of film culture from the arrival of Edison and the Lumières to the fall of the Fascist

regime. For the early period, topics will include: the cinema of attractions and the transition to narrative cinema; film genres and film style: comedies, historical spectacles, melodrama; the discourse of the author; divismo; distribution and exhibition practices; cultural reception: literary intellectuals and the origins of cinema literature: early film criticism, film theory, and "film fiction." For film in Italy between the wars, topics include: the transition to sound and the questione della lingua; the rebirth of the film industry and discourses of national identity; film comedy, melodrama, and spectacle; Hollywood in Fascist Italy; film magazines and movie-fan culture; the origins of film historiography; the Fascist regime, the Church, and cinema in the 1930s; colonialism in film; theatricality and calligraphism; Ossessione and the discourse of proto-neorealism. Requirements will include: extensive readings in film history and criticism; critical analysis of films; mandatory film screenings; participation in class discussion; a number of class presentations; a research paper.

73841. 20th-Century Spanish Prose
(3-3-0)

A study of the development of the novel as an artistic genre in 20th-century Spain, from the Spanish-American War of 1898 to modern Spain examined within the context of the social, political, aesthetic, and intellectual crisis of the times in which they were written.

73843. Self-Definition and the Quest for Happiness
(3-3-0)

Prerequisite: Four semesters of German or the equivalent. Everyone from the ancients to the most technologically conscious CEOs tell us that those who succeed know the difference between the important and the unimportant and they allocate their time accordingly. But how does one make these choices? If in fact success and happiness are synonymous, as some would claim, which way lies success, lies happiness? And what are the guideposts? What really matters? In an age such as ours, does anything have lasting value? Do I really matter? If I am most assuredly defined by my beliefs and my deeds, what then do I believe, what do I do? In the final analysis, who am I? If literature, as so many maintain, not only mirrors but also foretells world events, how have several 20th-century authors representing diverse national traditions formulated the answers to these seminal questions? Readings will include F. Scott Fitzgerald, *The Great Gatsby*; Albert Camus, *The Stranger*; Max Frisch, *Homo Faber*.

73845. Colonial Indigenism in Modern Literature
(3-3-0)

An in-depth study of a particular theme, author or genre in colonial Latin American literature.

73846. Spanish-American Poetry: Avant-Garde and Surrealism
(3-3-0)

We will trace the images and metaphors with which Spanish American writers and interested foreign travelers have described Latin American Nature. Earthly paradise, green inferno, a wasteland to be populated, or most nurturing aspect of the "madre patria," these images and others we will discuss have both reflected ideological biases and shaped national cultures

and identities. We will read a diverse collection of texts (from the *Popol vuh* to Sarmiento's *Facundo* to Neruda's *Canto General*) from the 19th and 20th centuries, with a few incursions in key colonial texts (Columbus's *Diario*), along with theoretical texts focusing on nature and identity. In addition to the weekly readings, students will be responsible for one class presentation and the preparation of a significant research paper by semester's end.

73847. Evil and the Lie (English and German)
(3-3-0)

In an attempt to define the nature of evil and its relation to such phenomena as lying and the preservation of a self-image, this seminar will carefully analyze works spanning the years 1890-1972. Among them will be Wilde, *The Picture of Dorian Gray*; Gide, *The Immoralist*; and Frisch, *Andorra*. Further courses acceptable for comparative literature majors will be found listed by the Department of English. Consultation of program director is required.

73848. The Wane in Spain
(3-3-0)

Despite the reputed cultural belatedness of the Iberian peninsula during the high Middle Ages, by the fourteenth century the Spanish kingdoms had caught up with their European neighbors and entered a period of general decline. The late Spanish Middle Ages is uniquely defined by the ascendancy of the Trastámaras, a bastard line that seizes the throne in 1369 when Enrique de Trastámara murders his half brother, King Pedro I of Castile. The Trastámara dynasty engineers the emergence of Spain as Europe's first modern nation-state and world empire and the construction of an orthodox, patriarchal "Spanish" and Catholic identity purified of its ethnic, religious, and political others through propaganda, conquest, conversion, colonization, expulsion, and inquisition. The foundational union of Isabel (Castile) and Fernando (Aragon) marked the culmination of the Trastámaran enterprise of political legitimization, centralization, and expansion; the Catholic Monarchs brought to closure seven hundred years of Reconquest, launched Europe's invasion of a new world, laid the foundations for Spain's Golden Age, and crafted the moral, political, and social recuperation of Hispania.

73849. Drama on Political Conflicts (in English)
(3-3-0)

To understand politics and the moral conflicts involved in it, we have three sources: philosophy, social science, and the arts. The arts are often neglected, but wrongly so, for the insights Aeschylus, Sophocles, Aristophanes, Shakespeare, Schiller, Kleist, Grillparzer--the authors we will read--have to offer into the logic of power and the morality of political choices are flabbergasting. At the same time, we will develop esthetical criteria that will allow us to evaluate the dramas on literary grounds.

73852. Native American Literature
(3-3-0)

This course serves as an introductory exploration of the literatures written by Native American authors--oral literatures, transitional literatures (a combination of oral and written expression), and contemporary poetry and prose.

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73880. Life-Writing: Biography and Autobiography (3-3-0)

Writing about a life, giving a shape to something called a life his is a perpetual concern of writers in different parts of the world, and of many different kinds of writers—historians, novelists, psychologists included. Life-writing seems intimately related to theology, as we may see in the New Testament, as in the stories of Moses or Buddha, and in the meditations of Augustine in the fourth century or the Sufi mystic al-Ghazali in the twelfth century. Travel writing (including stories of discovery seem largely life-writing in masquerade, while history engages in extensive accounts of individual life and experience. Poets and novelists have long played with writing lives, and presenting individuals engaged in life-writing, wherein (as in theological discourse) the life is a paradigm and an emblem. The life may involve seeking, wandering through a labyrinth or wilderness, searching for some desired object or relief in alienation and loneliness. The exile or wanderer may turn to autobiography, yet such life-writing is perilous for the writer, the narrator inviting decoding him-/herself while offering us various tropes and devices endeavoring to conceal as well as to reveal.

73881. Foreign Language Acquisition and Instruction (3-3-0)

Literature, according to Martin Walser, descends just as irrefutably from religion as human beings do from the apes. Indeed, there is no denying that even during aesthetic modernism, literature, art, and religion are closely intertwined. When art achieved autonomous status in the second half of the 18th century, it did, to be sure, shed its subservient function relative to religion, yet in terms of its topics, themes, and, most particularly, its claim to interpret and give meaning to human existence literature remained tied to religion, in fact became its great rival.

This seminar will examine several stations of this development. Beginning with church hymns during the Renaissance and Barock, we will see how the Bible was discovered as a literary text in the 18th century. At the end of the century, art is conceived as an autonomous, even holy artifact. Poetry, for some, even becomes the medium of human self-definition and the place in which new myths are created. In the Romantic period art and religion become fused into a single unity. A century later, art and religion again come into close contact in lyric poetry of the fin-de-siècle. The seminar concludes with a consideration of the psalm form in 20th-century poetry. Readings will include works by Luther, Paul Gerhardt, Klopstock, Hölderlin, Wackenroder, Stefan George, Rilke, Trakl, Brecht, Celan, and Bachmann.

73883. European Literature and the Vernacular in the Middle Ages (3-3-0)

The seminar will show how the vernacular literature of the Middle Ages constitutes the basic root of European literature, acting as a new model as well as a bridge between classical antiquity and modern culture. The approach will be comparative and intertextual, works from different languages being examined

together. Images and themes will be selected in order to show continuity and change: for instance, the theme of love and the “noble heart,” the characters of Cipolla and the Pardoner, Troilus from Boccaccio to Chaucer and Shakespeare, the stories of Francesca and Criseyde, the recognition scenes in *Odyssey* XXIII, *Purgatorio* XXX, and *Perciles*, as well as those in *Inferno* XV, T.S. Eliot’s *Little Gidding*, and Seamus Heaney’s *Station Island*.

73887. Transatlantic Literature and the History of Travel (3-3-0)

This course approaches early modern Europe and its interactions with the Americas through the lens of a theoretical and practical preoccupation with the history and literature of travel. We’ll begin with a preliminary theoretical part focused by two primary texts (Gilgamesh and Italo Calvino’s *Invisible Cities*) together with selected theoretical writings (E. Leed, C. Kaplan, D. McCannel, T. Todorov). A “cartography and literature” section dedicated to cartographical and literary sources documenting the transition from medieval to modern (“Atlantic”) travel will follow: medieval mappamundi, “Dante’s Ulysses,” Boccaccio’s “De canaria,” Petrarch “viator,” portolan charts, Ptolemy’s *Geografia*. The balance of the course will be dedicated to the study of a series of early modern Transatlantic “auctores,” including Columbus, Vespucci, Vaz de Caminha, Antonio Pigafetta, Luís de Camões, Jean de Léry, Philip Sidney, the Inca Garcilaso de la Vega. Discussion of primary texts will be complemented by an anthology of critical readings to include selections from Tom Conley (*The Self-Made Map*), Stephen Greenblatt (*Marvelous Possessions*), David Harvey (*Spaces of Hope*) Frank Lestringant (*Mapping the Renaissance World*), Tvetzan Todorov (*The Conquest of the New World*), Michel de Certeau (*The Writing of History*), and Roland Greene (*Unrequited Conquests*) among others. Participants in the seminar are invited to develop a research paper based on sources in their primary “national” literary field but with a significant “transatlantic” comparative and/or theoretical component.

73890. Poetry and Philosophy in the 12th Century (3-3-0)

This course will aim to provide a close reading of Bernard Silvestris’ “Cosmographia” and Alan of Lille’s “De Planctu Naturae” against the background of early twelfth-century philosophical thought and grammatical-rhetorical theory. Although it will be initially necessary to cover the philological and historical ground with some care, the course will also attempt to explore in a more speculative and creative manner the question of the kind of relation between philosophy and literature in general that works like the “Cosmographia” and “De Planctu” suggest. As stimuli to such reflections, we shall pause to examine in some detail such textual phenomena as the philosophical allegory, the hermeneutical and metaphysical implications of number, the notion of self-reflexivity, and the negative symbol. The course is intended to be accessible to students without skill in Latin (although the latter would, obviously, be an advantage). Requirement: one final paper of ca. 20 pp.

73900. Literature of History & Ethnography (3-3-0)

The course on World Literature will focus on the way in which different cultures have told the story of history. Peoples, places, and religious practices have long attracted the attention of historians and travel writers (functions often combined as in the case of Herodotus and Ibn Khaldun). History deals with problems, pain and change, and the literature of history offers a vision of ways of approaching the world. The course, which is team-taught, deals with three major areas of history production: the Arab World, China, and the Western world (with particular focus on ancient Greece).

73902. Philology and Weltliterature (3-3-0)

Eric Auerbach’s essay, from which this course derives its title, serves as a point of departure for exploring the possibility of developing an approach to literary history and literary interpretation that: (a) attends to the historical, cultural and aesthetic specificity of the individual literary work and (b) at the same time, brings into relief the complex ways in which cultures interact, overlap, and modify one another. The course will focus primarily on the pertinent works of Vico, Herder, and the German Romantics, Auerbach (and other historicists), Arnold, C. L. R. James, Raymond Williams, and Edward W. Said, as well as selections from the writings of Fanon, Ngugi, Lamming, Césaire, and others.

73903. Love, Desire and Identity (3-3-0)

A team-taught course treating literature from different traditions, including European, Near Eastern, and Far Eastern. This is a required course for the Ph.D. in literature and should normally be taken in the first year of study.

Themes and topics covered by various works include erotic love, filial and familial love, and love of God, but there are other loves too, such as the love of animals, or pursuits, or of objects. Desire evokes philosophical questions about need, necessity, and the structure of the self, all of which can be and have been dealt with in a variety of ways by different cultures. Both love and desire imply a notion of identity, or of identities to which the individual may be attached or which he or she may be incorporating (or rejecting). Texts studied include ancient Greek novels and some medieval and modern fictions of both East and West. (*The Tale of Genji*; *Troilus and Criseyde*; *Wuthering Heights*). The poetry we read ranges chronologically from the very early Shih jing (the first collection of Chinese poems) and the Song of Songs to Sappho and other Greek and Roman authors, through works by Petrarch and Dante to poems and popular songs in Asia and Europe of the present day. A variety of meditative and religious work exploring the nature of love and longing will be included.

76950. Directed Readings - Latino Studies (3-3-0)

Directed Readings: Latino Studies

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76951. Directed Readings
(3-3-0)

Directed readings for East Asian Studies: contemporary Japanese fiction from a sociological perspective.

83951. Directed Readings - East Asian Studies
(3-3-0)

Directed readings for East Asian Studies: 20th Century Novel:

83952. Directed Readings Literature
(3-3-0)

Readings in the Philippine Novel.

87961. Special Studies in Native American Literature
(3-3-0)

Special studies with Collin Meissner on Selected Native American Indian texts with a 20 page paper due at the end of the term.

87962. Special Studies: Neruda
(3-3-0)

A conscientious analysis of the *Canto General* by Pablo Neruda. Themes are autobiography, indigenism, and contemporary criticism of Neruda's work—contrasting and assessing them in relation to other similar critical studies. Two essays are required.

Languages

The basic requirement for all doctorate candidates in the program is three languages, two of which must be in addition to the native tongue. Students in literature are minimally required to demonstrate near-native proficiency in the language of their primary field and a scholarly reading knowledge of an additional language, but the language component will vary according to the individualized program of study. Language requirements are designed to provide a rigorous base for in-depth study of two or more literary traditions and to ensure that students will successfully compete for placement in national literature departments as well as interdisciplinary programs.

Examinations

The permission-to-proceed examination in the program will be administered in August, prior to beginning the second year in residence.

The Ph.D. candidacy examination will normally take place at the end of August in the third year of residence. It will consist of a written and an oral component. One take-home exam, focused on a special reading list created by the student and his/her advisers, will function as a bridge to the dissertation proposal.

Preparation for the Profession

Notre Dame's innovative literature Ph.D. considers a national literature's disciplinary integrity as part of the underlying foundation that supports a truly interdisciplinary and translinguistic course of study. The built-in flexibility of the program promotes ways of relating literary material across disciplinary divisions in order to facilitate the development and

training of future scholars who will be well prepared and positioned to respond to current and developing needs in the language and literature job market.

As a natural component of their professional development, students will apply their teaching assistantships in a variety of venues—language courses, mythology, ancient literature, English composition, and junior-level courses in English literature.

The program also offers a "Preparing for the Profession" doctoral colloquium that discusses a number of issues related to the study of literature from a professional perspective. This will include discussion of new developments in the field as well as the examination of topics of germane importance to the study of literature. In addition, the colloquium will address issues surrounding the development of a dissertation topic, research strategies, and the timely production and completion of a dissertation. Also, this seminar will introduce students to professional scholarly activities such as preparing papers for academic conferences, submitting essays for publication to academic journals, and developing strategies for entering the job market. The program's job placement apparatus works locally with students through everything from producing a letter of application to mock interviews to the production of a "job talk." In addition, the program's faculty make use of their extended network of contacts throughout the profession to make hiring institutions aware of Notre Dame candidates on the job market.

Participating Faculty

The following is a partial list of Notre Dame faculty who came together to develop the Ph.D. program in literature. They form a core group of outstanding scholars who will be joined by numerous other faculty whose interests and expertise will enable students to craft doctoral degrees responsive to their own particular interests in world literatures. For a complete listing of participating faculty and their scholarly interests and current graduate students please visit our Web site at <http://www.nd.edu/~litprog>.

Faculty

Martin Bloomer, *Associate Professor of Classics*. B.A., Yale Univ., 1982; M.A., *ibid.*, 1983; M.Phil., *ibid.*, 1984; Ph.D., *ibid.*, 1987. (1998)

Keith R. Bradley, *Chair and the Eli J. Shaheen Professor of Classics and Concurrent Professor of History*. Litt. D., Sheffield, 1997.

Joseph A. Buttigieg, *the William R. Kenan Jr. Professor of English and Fellow in the Nanovic Institute for European Studies*. B.A., Univ. of Malta, 1968; B.Phil., Univ. of Oxford (Heythrop College), 1970; M.A., Univ. of Malta, 1974; Ph.D., State Univ. of New York, Binghamton, 1976. (1980)

Theodore J. Cachey Jr., *Director of Graduate Studies and Professor in Romance Languages and Literatures (Italian)* and the Albert J. Ravarino Director of the Devers Program in Dante Studies. B.A., Northwestern Univ., 1978; M.A., Univ. of California, Los Angeles, 1982; Ph.D., *ibid.*, 1986 (1990).

Seamus Deane, *the Donald and Marilyn Keough Professor of Irish Studies and Professor of English*. B.A., Queen's Univ., Belfast, 1961; M.A., *ibid.*, 1963; Ph.D., Cambridge Univ., 1966 (1993).

Margaret Doody, *Director of the Ph.D. Program in Literature and the John and Barbara Glynn Family Professor of Literature*. B.A., Dalhousie Univ., Halifax, 1960; B.A., Oxford Univ., 1962; M.A., *ibid.*, 1967; Ph.D., *ibid.*, 1968; Honorary L.L.D., Dalhousie Univ., 1985. (2000)

Julia V. Douthwaite, *Assistant Provost for International Studies, Professor of French Language and Literature, and Fellow in the Nanovic Institute for European Studies*. B.A., Univ. of Washington, 1980; M.A., *ibid.*, 1984; Ph.D., Princeton Univ., 1990. (1991)

Christopher Fox, *Director of the Keough Institute for Irish Studies, Professor of English and Chair of Irish Language and Literature*. B.A., Cleveland State Univ., 1971; M.A., State Univ. of New York, Binghamton, 1974; Ph.D., *ibid.*, 1978. (1986)

Luke Gibbons, *the Grace Director of Irish Studies, Professor of English, and Concurrent Professor of Film, Television, and Theatre*. B.A., Univ. College, Galway, 1972; H.Dip.Ed., National Univ. of Ireland, Maynooth, 1976; M.A., Univ. College, Galway, 1976; Ph.D., Trinity College, Dublin, 1989. (2001)

Howard Goldblatt, *Visiting Research Professor of Chinese*. B.A., Long Beach State College, 1961; M.A., San Francisco State Univ., 1971; Ph.D., Indiana Univ., 1974.

Lionel M. Jensen, *Chair and Associate Professor of East Asian Languages and Literatures, Concurrent Associate Professor of History, and Fellow in the Helen Kellogg Institute for International Studies*. B.A., Williams College, 1976; M.A., Washington Univ., 1980; Ph.D., Univ. of California, Berkeley, 1992. (2000)

Collin Meissner, *Assistant Professor American Studies, Ph.D. in Literature, Director of Graduate Studies*. B.A., Univ. of British Columbia, 1985; Ph.D., University of Notre Dame, 1995

Robert E. Norton, *Chair and Professor of German and Russian Languages and Literatures (German) and Fellow in the Nanovic Institute for European Studies*. B.A., Univ. of California, Santa Barbara, 1982; M.A., Princeton Univ., 1985; Ph.D., *ibid.*, 1988. (1998)

Mark W. Roche, the I. A. O'Shaughnessy Dean of Arts and Letters, *Rev. Edmund P. Joyce, C.S.C., Professor of German Language and Literature, and Concurrent Professor of Philosophy*. B.A., Williams College, 1978; M.A., Univ. Tübingen, 1980; Ph.D., Princeton Univ., 1984. (1996)

Dayle Seidenspinner-Núñez, *Chair and Professor of Romance Languages and Literatures (Spanish)*. B.A., Univ. of California, Berkeley, 1968; M.A., *ibid.*; Ph.D., Stanford Univ., 1977. (1997)

Alain Toumayan, *Associate Professor in Romance Languages and Literatures (French) and Fellow in the Nanovic Institute for European Studies*. B.A., Univ. of Pennsylvania, 1976; M.A., Yale Univ., 1978; M.Phil., *ibid.*, 1980; Ph.D., *ibid.*, 1982. (1989)

Medieval Studies

Robert M. Conway Director:

Thomas F. X. Noble, *Professor of History*

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 E-mail: medinst@nd.edu
 Web: <http://www.nd.edu/~medinst>

The Medieval Institute

The Medieval Institute, established in 1946 and located on the seventh floor of the Hesburgh Library, is a center of research and advanced instruction in the civilization of the Middle Ages, with particular strengths in religious and intellectual history, Mediterranean civilization, Old and Middle English, medieval Latin, theology and philosophy, Dante studies, medieval musicology, and liturgy. The graduate studies curriculum combines programmatic interdisciplinary course work, training in the technical skills of medieval studies, and linguistic preparation.

The institute's library contains more than 95,000 volumes and various collections of pamphlets, reprints, and photographic materials. The reference collection contains major primary source collections, bibliographic and reference materials, catalogues, journals, and indexes.

The institute's library has long held extensive collections relevant to the Latin culture of the Middle Ages. Holdings in the history of medieval education are unrivalled in North America. Recently, the institute has enlarged its focus to include vernacular and Latin literatures, musicology, liturgy, medieval Judaism and Islam, and art history. Microfilms of more than 3,000 medieval manuscripts from European libraries and a collection of more than 200 facsimiles of medieval seals supplement this collection. Over the years the institute has accumulated a valuable collection of medieval manuscripts, incunabula, and other manuscripts, and rare books that are preserved in the Department of Special Collections. Also found there is the John Augustus Zahm, C.S.C., Dante Collection containing early and rare editions and an extensive and valuable set of literary studies of the *Divine Comedy* from the nineteenth and early twentieth centuries. Recently, the institute acquired 90 medieval coins, likewise housed in Special Collections.

What sets Notre Dame's institute apart is its convenient gathering in one place of most of the printed materials essential to medieval studies. The Reading Room holds major dictionaries, bibliographical guides, reference works, and primary source collections. The Astrik L. Gabriel Universities Collection

in a separate room offers remarkable resources, both published and unpublished, for the history of medieval universities. The institute's Paleography Room contains an extraordinary collection of catalogues, facsimiles, and reference tools to assist research on manuscripts.

Research in the institute is also supported by the University's Milton V. Anastos Collection in Byzantine studies, which has extensive holdings in the intellectual history of the Byzantine empire.

The Frank M. Folsom Ambrosiana Microfilm and Photographic Collection consists of microfilms of the 12,000 medieval and Renaissance manuscripts held in the Biblioteca Ambrosiana in Milan. The collection also contains about 50,000 photographs and negatives of miniatures and illuminated initials from the manuscripts, supplemented by some 15,000 color slides. The Mary Davis Drawings Collection contains photographs, negatives, and color slides of the 8,000 drawings in the Ambrosiana. The institute purchases all volumes related to the Ambrosiana materials and maintains a bibliography of all citations to Ambrosiana manuscripts.

The institute regularly sponsors major conferences and hosts a variety of guest lectures and seminars every year. In fall 2002, the institute inaugurated the Conway Lectures, an annual series of three lectures delivered by a distinguished medievalist and published under institute auspices.

Degree Programs

The Medieval Institute does not accept candidates for a terminal Master's degree but does require the Master of Medieval Studies of all students whom it admits into the doctoral program. The programs of the Medieval Institute are rigorous and interdisciplinary, and make high demands in terms of language skills. Accordingly, the Master of Medieval Studies (hereafter MMS) degree requires two years of full-time study and the Doctor of Philosophy in Medieval Studies requires a further year of full time study plus a dissertation. Each degree requires a specified number of credit hours, language exams, oral and/or written exams, proficiency in paleography, and research projects. The Graduate School requires that students maintain a 3.0 Grade Point Average in order to be in good standing. Students must also be continuously enrolled on a full-time basis (the number of courses/credit hours necessary to maintain full-time status varies depending on a student's year in the program).

Students admitted with a master's degree from another institution, or from another department at Notre Dame, may take the M.M.S. exams after completing MI 501 and six graduate-level courses; passing the M.M.S.-level Latin exam; passing an exam in at least one modern language; and passing the paleography course if it was offered in the student's first year of enrollment (if paleography was not offered it may be postponed until the following summer or academic year).

The Master of Medieval Studies

The M.M.S. requires the successful completion of 31 credit hours of graduate-level work but fully and continuously enrolled M.M.S. students will normally earn forty or more credits in their first two years of study. The apparent discrepancy is attributable to the fact that M.M.S. students are, in fact, prospective Ph.D. students in transition. The credits which M.M.S. students earn above those required for the M.M.S. degree will apply to the Ph.D. provided that a student has been admitted to Ph.D. candidacy.

The program for an M.M.S. student will normally be arranged as follows:

Semester 1:

Christian Latin
 (or graduate intermediate Latin)
 Elective
 Elective
 Elective
 MI 501 (one credit, non-graded)

Semester 2:

Medieval Latin
 Elective
 Elective
 Elective

Summer:

Medieval Latin or Paleography

Semester 3:

Paleography
 Second-year Research Tutorial I
 Elective

Semester 4:

Elective
 Second-year Research Tutorial II
 Exam Preparation

Among the eight courses designated as "electives," four must be chosen so as to satisfy the following requirements: One course each in history (Seminar I or II), philosophy or theology, vernacular language or literature, art or music. Students have considerable flexibility in choosing the remaining four courses, the research tutorial, and the exam preparation course.

In May of their first year of study each first-year student will meet with the director to discuss his or her progress. All teachers with whom a student has worked in the first year will be asked to submit written reports on that student's work in specific classes. The director will advise students on their progress with two perspectives in mind: Completion of degree requirements and intellectual growth.

By the end of his or her second year an M.M.S. student must have:

1. Passed the M.M.S.-level Latin examination.
2. Passed an examination in one modern language.
3. Passed paleography (if it was offered).

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4. Submitted a satisfactory second-year research paper.
5. Passed a 90-minute oral examination.

The M.M.S. oral examination will provide students with an opportunity to display their general competence in two or three fields of study and their emerging mastery in one field. It is expected that the student will be examined by four different professors who represent three fields (for a list of fields, see below). One field (which may be defined chronologically or thematically) will therefore be examined by two professors. It is expected that this field will form the core of the eventual Ph.D. major field. Accordingly, this field will be examined in somewhat greater length and detail than the other two. Students must submit to the director of the Institute, not later than the last day of classes of their third semester of enrollment, the reading lists over which they expect to be examined. These lists must be signed by the professor who will examine the student in that area. The M.M.S. examinations will be administered in the third week of April, unless that is Holy Week in which case the exams will be administered in the fourth week of April.

Second-year research projects will be submitted and collaboratively evaluated on or before April 1 of a student's second year. Prior to the beginning of their third semester of study each student will select a member of the faculty with whom he or she will undertake an intensive program of reading in primary sources (preponderantly in the original language) and scholarly literature with a view to identifying a worthwhile, original research project. Once the topic has been identified, the student and teacher will settle on a plan of work such that the resulting paper can be submitted to the teacher, the director, and one additional member of the faculty. A student who has produced a substantial seminar paper in his or her second semester, or who expects to do so in the third semester, may petition the director to use that paper for the second-year research project. In such cases, students will be expected to expand and polish the paper during the early part of the fourth semester. When this option is elected, students may substitute a different class for the Second-year Research Tutorial I but must still register for Second-year Research Tutorial II.

The Medieval Institute's M.M.S.-level Latin examination will be administered each fall semester in the week after Thanksgiving and each spring semester in the week after spring break.

In the first week of May of each year the director and the graduate committee will review the accomplishments of the members of the second-year class. There will be four possible recommendations:

1. Permission to proceed to the Ph.D.
2. Permission to repeat/complete a deficient element in the M.M.S. requirements with the expectation that the M.M.S. will be terminal.
3. Award of the M.M.S. as a terminal degree.
4. Dismissal without the M.M.S. degree.

The Doctor of Philosophy in Medieval Studies

The Ph.D. requires one additional year of course work beyond the M.M.S., the successful completion of at least 60 credit hours of study altogether, one additional examination in a modern language, completion of paleography if it was postponed from year two of the M.M.S., successful completion of five written examinations (one of three hours' and four of two hours' duration), one oral examination (of 60 to 90 minutes' duration), presentation of a dissertation proposal, presentation and defense of a satisfactory dissertation.

Third-year course work will involve three elements. First, students will deepen their field of emphasis by adding one examiner to the two who served as M.M.S. examiners. Once again, fields may be defined chronologically or thematically. The student's adviser will set a three-hour written exam and may take more time than the other examiners in the oral exam. Second, students will add an examiner within their general field of study but normally outside the Medieval Institute. Third, students will be examined by one of their M.M.S. examiners in a field outside their field of emphasis but closely allied to it (e.g. a student of high medieval intellectual history might be examined in scholastic theology or a student in Middle English might be examined on Dante). Third-year students must submit to the director signed reading lists for their examination fields by January 15 of their third year of study. Normally a third-year student will take two or three courses in the fall semester and then devote the spring semester to intensive preparation for the comprehensive examination. Ph.D. written examinations will be administered in the third week of April and oral examinations in the fourth week of April, with adjustments as necessary to accommodate Holy Week.

In the first week of May each year the director and the graduate committee will review the accomplishments of the members of the third-year class. There will be three possible recommendations.

1. Permission to proceed to the dissertation proposal.
2. Requirement to re-take the Ph.D. examinations in the following September with the possibility at that time to recommend continuation or dismissal.
3. Dismissal with only an M.M.S. degree.

The dissertation proposal will be submitted by December 1 in the fall semester of the student's fourth year. To facilitate preparation of the proposal, rising fourth-year students will be provided with summer stipends to permit them several months of continuous work after the Ph.D. examinations. The dissertation proposal may consist of as many as three parts. Every student must submit a dissertation proposal of 20 to 25 pages. This proposal should answer three basic questions: What questions/problems/issues will this dissertation address? Why should this dissertation be written at all, in other words what will be its original and significant contribution to scholarship? What is the envisaged plan of work? The proposal

should include 3 to 5 pages of annotated bibliography. Proposals will be discussed in 60 to 90 minutes by the adviser, the director, another professor from the field of emphasis, and the interdisciplinary examiner from the Ph.D. exams (or an appropriate substitute). At the discretion of the adviser and after consultation among the student, the adviser, and the director students may be asked to submit to the director a polished translation of five continuous pages of a text/source representative of those with which he or she would expect to work. These texts may be in any relevant medieval language. The texts must be chosen jointly by the student and his or her adviser and approved by the director. If possible, only those texts should be chosen which have never been translated into a modern language. Second, students may be asked to submit to the director a highly accurate transcription of at least 100 continuous lines from a manuscript representative of the student's field of research. As far as possible the transcription should be executed on the basis of a manuscript whose contents have never been edited and published.

When a student and his or her adviser agree that a dissertation is ready to be defended, documents should be filed in the Medieval Institute and the Graduate School to initiate a defense. Defense committees will consist of five members of the faculty, one appointed by the Graduate School and four chosen by the student and his or her adviser in consultation with the director. The director may appoint himself as an examiner of any dissertation submitted to the Medieval Institute. At least one dissertation examiner must come from a department other than the one in which the student's field of emphasis resides.

Fields of Study

Each of these fields of study is vast. No student, or professor, can be expected to know all there is to know within any one of them. Accordingly, fields will be defined, for purposes of study and examination, by reading lists created by students in close consultation with their professors. Reading lists may emphasize primary sources, modern scholarship, or a combination of the two. Students and faculty members will be expected to strike the appropriate balance. As rough guidelines, M.M.S. lists should amount to 25 to 30 books (or the equivalent in articles) and Ph.D. lists should amount to 50 to 60 books (or the equivalent in articles).

Fields of Study (with subfields, or examination fields, as relevant and available):

Art History

Late Antique Art
Early Medieval Art
Later Medieval Art
Byzantine Art
Renaissance Art

History

Late Antiquity
The Early Middle Ages
The High Middle Ages
The Late Middle Ages
The Renaissance
The Mediterranean World

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The Islamic World
Byzantium
The Medieval Church
Medieval Intellectual History

Language and Literature

Arabic
Dante and/or Petrarch and/or Boccaccio
Old English
Middle English
Old French
Middle French
Old High German
Middle High German
Patristic and Byzantine Greek
Hebrew
Late Antique Latin (secular and/or religious)
Medieval Latin (secular and/or religious)
Renaissance Latin
Medieval Spanish Literature

Manuscript Studies

Codicology
Paleography
Text Editing

Music

Musicology
Music History

Philosophy

Late Antique Philosophy
Early Medieval Philosophy
High Medieval Philosophy
Late Medieval Philosophy
Islamic Philosophy
Medieval Jewish Philosophy

Theology

Greek Patristic Theology
Latin Patristic Theology
Early Medieval Theology
High Medieval Theology
Late Medieval Theology
Byzantine Theology
Medieval Judaism
Medieval Islam

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Lecture hours per week—laboratory or tutorial hours per week—credits per semester)
- Instructor
- Course description
- (Semester normally offered)

Relevant courses in other departments are cross-listed in the Medieval Institute and vice versa.

60001. Introduction to Medieval Studies (1-1-0)

A one-credit-hour course designed to introduce students to the basic bibliographies, handbooks, and

research tools in medieval studies. Professors from various disciplines will participate.

67001. Second-Year Research Tutorial I (3-3-0)

An intensive program of reading in primary sources (preponderantly in the original language) and scholarly literature with a view to identifying a worthwhile, original research project, for completion in the following semester.

67002. Second-Year Research Tutorial II (3-3-0)

Second-year graduate students in medieval studies produce a substantial, original research paper based on the intensive program of reading in primary sources (preponderantly in the original language) and scholarly literature undertaken with a teacher in the previous semester. Alternatively, by permission of the Medieval Institute's director, students may use the tutorial to expand and polish a paper prepared originally for a previous research seminar.

60003. Introduction to Christian Latin Texts (4-4-0)

"Introduction to Christian Latin Texts" has two goals: to improve the student's all-around facility in dealing with Latin texts and to introduce the student to the varieties of Christian Latin texts and basic resources that aid in their study. Exposure to texts will be provided through common readings which will advance in the course of the semester from the less to the more demanding and will include Latin versions of Scripture, exegesis, homiletic, texts dealing with religious life, formal theological texts, and Christian Latin poetry. Philological study of these texts will be supplemented by regular exercises in Latin composition.

60004. Medieval Latin (3-3-0)

Prerequisite: Both elementary and intermediate Classical Latin or the equivalent, taken recently for college credit. This course is an introduction to the Latin language and literature of the late antique and medieval periods (ca. A.D. 200-1500). Designed to move students toward independent work with medieval Latin texts, the course will emphasize the close reading and careful translation of a variety of representative Medieval Latin texts and documents, with attention to vocabulary and word formation, orthography and pronunciation, morphology and syntax, and prose styles and metrics. The course will also provide an introduction to the principal areas of medieval Latin scholarship, including lexis, bibliographies, great collections and repertoires of sources, and reference works for the study of Latin works composed in the Middle Ages.

60005. Paleography (3-3-0)

Prerequisite: Both elementary and intermediate Classical Latin or the equivalent, taken recently for college credit, or MI 40004/60004 or the equivalent. This course is an introduction to the study of medieval writing materials and practices and of Latin scripts from antiquity to the early Renaissance. Designed to provide students with the skills necessary to make use of Latin manuscripts in their research, the

course will focus on practical exercises in identifying, transcribing, dating, and localizing the various scripts. It will be of interest (1) to a wide variety of students whose courses are centered in or touch upon the Middle Ages and who wish to work with unpublished Latin materials of the medieval period; (2) to professional Latinists and other humanists who study the classical tradition and the transmission of texts before the age of printing; and (3) to librarians and others with an interest in manuscripts, diplomata, incunabula, and rare books.

60020. Intensive Latin Review (1-1-0)

This course is an intensive, two-week review of the principal construction of classical Latin syntax, designed for those who have completed elementary and intermediate classical Latin or the equivalent and wish to study medieval Latin.

66020. Directed Readings (for Graduate Students) (0-0-0)

Offers graduate students a possibility, normally in their second or third year, to work closely with a professor in preparing a topic mutually agreed upon. Student and professor must sign a form that records the readings.

67020. Editing Medieval Latin Texts (3-3-0)

In this course, students will be introduced to the principles and basic procedures involved in editing later medieval Latin texts from manuscripts: the reading and transcription of manuscripts, the collation of manuscripts, the preparation of an *apparatus criticus* and an *apparatus fontium*, the presentation of critically edited texts in print, etc. Students will learn the importance of paleographic, codicological, philological, and historical-bibliographical analysis in critical editions executed according to the "historical method." By reference to exemplary critical editions of later medieval Latin works, students will also be introduced to hermeneutical issues involved in editing. Moreover, students will be introduced to the techniques, sources, and instruments of primary research among the manuscripts, and will prepare a term-long heuristic project. Having passed the Medieval Institute Latin examination (or some equivalent) is a prerequisite for enrolling in the course; any exceptions to the prerequisite must be approved by the teacher, after consultation with him.

60021. The Medieval Book (3-3-0)

A historical survey of the medieval book as a cultural, archaeological, artistic, and commercial object from about A.D. 300 to 1500.

60100. Introduction to Critical Theory (3-3-0)

Investigation of the principal figures and approaches to literary criticism that developed in the modern era.

60101. Problems in Textual Criticism (1-1-0)

Textual criticism is the art and science of evaluating evidence of manuscript-readings in the process of establishing a text, and involves understanding of

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the vagaries of medieval manuscript transmission. This compact spring seminar will offer an opportunity to discuss the problems that are posed by the transmissional histories of texts composed (in Latin and Old English) during the Anglo-Saxon period, but comparative material from earlier (classical and biblical) and later texts will also be brought into play. In particular, attention will be given to ways of adjudicating the *apparatus criticus* that accompanies “critical” editions, and to the different sorts of problems that are posed by texts transmitted in single manuscripts, in autograph or idiograph manuscripts, or in multiple copies, and the ways of determining the genealogical relationship (and representing it in a *stemma codicum*) between individual manuscripts in cases where a work is preserved in more than one manuscript.

60110. Introduction to Old English
(3-3-0)

Training in reading the Old English language, and study of the literature written in Old English.

60111. Beowulf
(3-3-0)

Beowulf is the longest and earliest surviving heroic poem in any medieval Germanic language, and has been recognized for over two centuries as a literary masterpiece. Yet, on examination, the reasons why it is reckoned a masterpiece are not always clear: its narrative design is frequently oblique and obscure; its language is dense and often impenetrable; and it relates to a Germanic society which can barely be reconstructed, let alone understood, by modern scholarship. The aims of the course will be to understand the narrative design and poetic language of Beowulf, and then to attempt to understand these features of the poem in the context of early Germanic society. The language of Beowulf is difficult and therefore a sound training in Old English grammar and a good reading knowledge of Old English literature, especially poetry, are essential prerequisites for the course.

60115. Constructing Subjects in Anglo-Saxon England
(3-3-0)

This course addresses the question of the very existence of the subject in the early Middle Ages. To frame the question, participants in the course will read some contemporary theorists of subjectivity as well as some patristic writers on the self. The rest of the course will investigate constructions of subjectivity in mainly prose texts written in England before approximately 1100.

60116. The Poetry of Cynewulf
(1-1-0)

Among Old English poets, Cynewulf is an enigmatic figure, since nothing is known about him except his name; but he is widely—and rightly—regarded as one of the major pre-Conquest literary figures. Four major poems have come down to us under his name: *The Fates of the Apostles*; *Elene*; *Juliana*; and *Christ II*. Each meeting of the seminar will focus on one of these poems (in the order given above); the intention will be to assess the style and diction of each poem (rather than to translate them mechanically) through discussion of individual passages. Passages for discussion will be circulated beforehand.

60118. Them ‘n’ Us: Geography and Identity in Anglo-Saxon England
This course seeks to explore the structures of identity through which Anglo-Saxons recognized themselves and others. We will focus primarily on Old English writings that explore the larger category of the “not-us” and “our” relation to it: translations of Orosius’s history, Bede’s history, the *Letter of Alexander to Aristotle*, *Wonders of the East*, *Apollonius of Tyre*, portions of the *Anglo-Saxon Chronicle* and other texts. We will be looking particularly at the ways in which Anglo-Saxons peopled the category of “other” and, conversely, imagined themselves. Topics for analysis will include contemporary approaches to identity, ethnicity in early England and the difficulties posed for us by analytic terms deriving from nineteenth- (and twentieth-) century nationalism, Anglo-Saxon geographic imaginings, contemporary maps, notions of borders (within and without England), foreigners (and laws relating to them), and Anglo-Saxon “orientalism.” Requirements: A short, exploratory paper, a final paper (with an eye to publication), a midterm (ungraded but evaluated), two oral presentations.

60130. Latin Literature of Anglo-Saxon England
(3-3-0)

A close study of the principal Anglo-Latin authors and texts.

60142. Chaucer: *The Canterbury Tales*
(3-3-0)

A study of the *Canterbury Tales* read in the original Middle English. Chaucer’s comic genius will shape the approach to the text, which has been carefully constituted by its author as a virtual anthology of medieval fictional forms—everything from bawdy stories to saints’ lives engaged Chaucer’s most mature imaginative energies in this, his last great work. The class will work its way toward an appreciation of the kaleidoscopic subtleties involved in his poetic shaping of this wide, deep, and humanly envisioned text-world.

60143. Early Chaucer
(3-3-0)

If Chaucer had never written the *Canterbury Tales*, his claim upon our attention as one of the greatest poets ever writing in the English language would be secure based on the earlier works that will occupy us as readers/writers/discussants during this term: *Book of the Duchess*, *House of Fame*, *Parliament of Fowls* and the magnificent *Troilus and Criseyde*. Additionally we will certainly read some—or all—of the short poems that—along with *Canterbury Tales* (which we will not read)—comprise the Chaucer canon. No prior experience with Middle English is required. Requirements: a midterm, a final, and a term paper. Text: Larry Benson’s *The Riverside Chaucer* or any scholarly edition of the early poems named above.

60144. Chaucer and Medieval Narrative
(3-3-0)

Whether writing at the epic length of *Troilus and Criseyde*, or compacting his story to the brief compass of the “Manciple’s Tale” or “Physician’s Tale,” Chaucer is a master of narrative. This course will study the features of his narrative style, and analyze the ways in which they create meaning. We shall compare and contrast his works with other examples

of medieval narrative, and assess it in the light of modern narratology. We shall consider such things as beginnings and endings, time, the narrating voice, rhetoric, verse-forms, dialogue, the locus of action, structure, mood, and the implied audience. *The Canterbury Tales* will occupy a central position in the course, but we shall take in other works as it seems profitable to do so.

60145. Writing and Politics in Middle English
(3-3-0)

An examination of Middle English political writings.

60160. Works of the Pearl Poet
(3-3-0)

A study of the works of the Pearl Poet

60196. Old Norse
(3-3-0)

A study of the surviving Norse and Icelandic literature, both in prose and verse, through the medium of the Old Norse language.

63201. Proseminar in Medieval History I
(3-3-0)

A chronological proseminar in substance and bibliography required of all students in medieval history.

63202. Proseminar in Medieval History II
(3-3-0)

This course is designed to introduce students to major topics under discussion in the history of the high and later middle ages, roughly the years 1100 to 1400. Among the topics to be treated, with the historians now at work on them, are: law, government, and literacy; the church as an institutional and cultural force; social class and mobility as economic realities and cultural images; the university in society and culture; and the cultivation of the human person in literary sensibility and religious devotion. Most of the course will consist of intensive secondary readings, with regular written reports, occasional primary readings, and a major bibliographical paper at the end.

60210. Late Antiquity
(3-3-0)

This course will explore the transformation of the Roman World from about A.D. 300 to 600. We will ask: was the “fall” of the Roman Empire a civilizational catastrophe? Or was it a slow, messy process blending continuity and change? Or was Late Antiquity itself a dynamic and creative period? Our emphasis will fall on: the changing shape of Roman public life; the barbarians and their relations with Rome; the emergence of the Catholic Church; the triumph of Christian culture; literature, art, and architecture in the late imperial world. There will be a mid-term and a final. Students will write either one term paper or a series of shorter papers. Readings will emphasize primary sources.

60212. World of Charlemagne
(3-3-0)

The Carolingian (from *Carolus*, Latin for Charles; Charles the Great—Charlemagne—was the most famous Carolingian) period, roughly the eighth and ninth centuries, was foundational for western

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Europe. But this was also the time when the mid-Byzantine Empire consolidated its position and when the Abbasid family of caliphs introduced important and durable changes in the Islamic world. This course will focus on the West in the age of Charlemagne, but will draw frequent comparisons with and make continuous reference to Europe's Byzantine and Islamic neighbors. The course will explore such themes as: Europe's Roman and Christian inheritances from antiquity; the peoples of the Carolingian world; kingship and empire; political and social institutions and ideologies; religious and secular law; war and diplomacy; agriculture and trade; the church--popes, bishops, monks, and nuns; theology; art and architecture; Latin and vernacular literature. Reading assignments will combine modern scholarship and primary sources (in translation). Students will write mid-term and final examinations and will choose between several short papers or one long paper. Graduate students will meet weekly with the professor, carry out reading assignments different from those of the undergraduates, and submit a series of short papers.

60213. History of Science, Technology, and Medicine to 1750
(3-3-0)

This course will be the first half of a two-semester survey of the main events in the history of natural philosophy and science from Greek antiquity to the early Enlightenment. The first half, will begin with Presocratic reflections and carry the course to the Renaissance.

63214. Italian Renaissance
(3-3-0)

This course surveys the intellectual, cultural, social, and political history of Italy in the "long" Renaissance (ca. 1275 to 1525). The course, though proceeding chronologically, will engage with specific themes in turn, including the economic and political development of the late medieval city-state; humanism, antiquarianism, and the revival of classical learning; the "rebirth" of the figurative arts; republicanism and despotism; courtly life; social order (and disorder); religious devotion; political upheaval, and intellectual crisis. A constant theme underscoring these various topics, and one which will serve as an organizing principle for the course, is the Renaissance fascination with the past, with origins, antiquity, lineages and pedigree, ancient rights, historical liberties, first principles, and claims to authority. Readings will be drawn from primary and secondary sources in roughly equal measure. Students will write either a long research paper or three short bibliographical and historiographical essays.

60250. Introduction to Medieval Islamic Society
(3-3-0)

This colloquium intends to introduce students to the fundamentals of social and cultural life in the Middle East, ca. 600 to 1500 C.E. There are no prerequisites, but some familiarity with medieval Islamic political history is recommended. We will focus on the reading and analysis of key secondary studies. These will especially include those that might illuminate the study of the quaint peoples of the medieval Eurasian subcontinent, i.e., the place commonly known

as "Europe." Book reviews and a long paper based on secondary research required

60255. Twelfth-Century Renaissance and Reform
(3-3-0)

Since the publication of Charles Homer Haskin's *Renaissance of the Twelfth Century* in 1927 and Giles Constable's *Reformation of the Twelfth Century* in 1996, together with enormous literatures on the Gregorian Reform and on the emergent vernacular literatures, the years 1050 to 1200 have come to stand as a turning-point in European history, for some the hinge between the earlier and the later middle ages, for some the making of--Old Europe--a culture and society that persisted to the eighteenth century. This will be an intensive graduate-level reading course in the secondary literature surrounding these claims, and as well in selected primary sources. Beyond the themes already noted, the course will consider the rise of literacy, the new centers of culture (university, courts, episcopal courts), the place of women's writings in all this, and broader questions of commonality or diversity.

60256. Cultures in Contact
(3-3-0)

This course will examine contacts between Christianity and Islam in the period from the seventh century to the fifteenth century. Although issues of religion will be addressed, the course is more concerned with diplomatic, economic, military, cultural, technological, and intellectual encounters and exchange. Special attention will be focused on the regions of Spain, Sicily, and the Crusader States. The course is designed as a survey, but students may elect to write either a research paper or three shorter historiographical essays. Regular student presentations will also be required.

60279. Medieval Legal History
(2-2-0)

Studies the formative period of the Anglo-American legal system using fourteenth-century yearbooks and other materials from the same period.

60280. Rome, the Christians, and Early Europe
(3-3-0)

The course studies continuity and discontinuity in the Mediterranean world during a formative period, the transition from Roman Empire to early medieval European kingdoms. Christianity played a vital role during this transformation, but not the only one. Beginning with a review of Roman institutions, law, culture, and religion, we will observe the changes they underwent between ca. 150 C.E. and ca. 750 C.E. At this latter point in time, some people were still thinking of themselves as living within the Roman empire, even though the local potentate was a non-Roman king. Also, Roman law had become Christian law, and Latin was beginning to generate the languages now collectively described as "Romance." On the fringes of Europe, in England and Ireland, meanwhile, missionaries shared with their converts not just Christianity but also the Latin language and Latin literature along with certain Roman concepts of culture and political organization.

60300. Early Medieval Philosophy
(3-3-0)

A survey of medieval philosophical literature from ca. 400 to ca. 1200 based on original texts. We shall review the most well-known authors and works in the first instance: Augustine (*Soliloquies*, *De Libero Arbitrio*, *Confessions*), Boethius (*Opuscula Sacra*, *De Consolatione Philosophiae*, logical works), Eriugena (*Periphyseon*), Anselm of Canterbury (*Monologion*, *Proslogion*), the "School of Chartres" (Commentaries on Boethius). However, considerable emphasis will be placed on major traditions ignored by earlier histories of medieval philosophy: glossing of Plato Latinus, Aristotle Latinus, Macrobius, and Martianus Capella.

60302. Ancient Philosophy for Medievalists
(3-3-0)

An examination of ancient philosophical writings in the context of their importance for the development of medieval philosophy. We will focus on those sources that form the basis of philosophical systems during the Middle Ages.

60320. Introduction to Plotinus
(3-3-0)

The course will be divided into two parts: (1) A general survey of Plotinus's philosophy based on writings of his early and middle periods; (2) A close study of Plotinus's longest treatise (divided into four parts by Porphyry): *Enneads* III.8, V.8, V.5, II.9. In both parts of the course, our aim will be not only to understand Plotinian thought as a system of emanative monism but also to evaluate the expository and argumentative techniques by which this thought is organized into verbal discourse.

60321. Boethius: An Introduction
(3-3-0)

This course will attempt a study of Boethius, one of the foundational figures of medieval culture, in an interdisciplinary and open-ended manner. Our approach will be interdisciplinary in that we shall simultaneously study philosophical-theological and literary subject matter and simultaneously apply philosophical-theological and literary methods. It will be open-ended in that students will be expected to react creatively to the topics under review in terms of their own independent studies and research (e.g., in connecting Latin and vernacular materials). During the course we shall read a broad selection of passages in Latin and in English translation drawn from Boethius's work in the fields of science (arithmetic, music), logic, and theology. Part of the course will be devoted to a close study of *De Consolatione Philosophiae*. We shall study Boethius as reading intertextually the Greek philosophers Plato and Aristotle and the Greek scientists Nicomachus and Ptolemy, without forgetting the Latin theology of Augustine. Turning from Boethius to Boethius in quotation marks and Boethius "under erasure," we shall study Boethius read intertextually by glossators, commentators, and other writers from the eighth to the fourteenth century. Requirement: one final essay (ca. 20 pp.)

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60330. Augustine and Philosophy (3-3-0)

An introduction to Augustine's work concentrating on his reaction to earlier philosophical materials (a reaction naturally conditioned by his Christian outlook). During the course, we shall examine his relation to scepticism (e.g., in *Contra Academicos*), to Stoic linguistic theory (in *De Dialectica*), to Pythagoreanism (in *De Quantitate Animae*), and especially to Neoplatonism (e.g., in *De Ordine*, *Soliloquies*, *De Immortalitate Animi*, *De Vera Religione*, *Confessions*). Augustine's relation to the philosophical generalities of the handbook tradition will also be an issue. Part of the course will be devoted to the philosophical readings in *De Civitate Dei*. Part of the course will be devoted to the transmission of "philosophical" Augustinianism to the Middle Ages.

60331. Augustine and Anselm (3-3-0)

An introduction to the thought (philosophical and theological) of Augustine and Anselm of Canterbury. Since Augustine is one of the few intellectual fore-runners mentioned by name in Anselm's main works, we shall assume that a reading of the Latin Church Father forms an indispensable foundation for any serious study of the eleventh-to-twelfth-century archbishop's writings. Although we shall study either at length or in briefer selections the following works in roughly chronological sequence: (Augustine) *On Free Choice of the Will*, *On the True Religion*, *Confessions*, *On the Trinity*, *On the City of God*, (Anselm) *Monologion*, *Proslogion*, *On Truth*, *On Freedom of the Will*, and *On the Fall of the Devil*, certain thematically-connected ideas will be placed in relief in order to reveal the profound coherence and continuity of the Augustinian and Anselmian speculative systems. These ideas will include Being, Truth, Mind, and Will together with associated ontological, epistemological, and ethical questions.

60360. Medieval Theory of the Will (3-3-0)

This course will trace the origin and evolution of the concept of the will from Anselm of Canterbury to Duns Scotus, focusing in particular on the emergence of voluntarism at the end of the thirteenth century, according to which the will became a completely self-determining, rational power.

60362. Hermeneutics, Deconstruction, and Medieval Thought (3-3-0)

The aims of this course are both methodological and historical. The methodological part will consist of an introduction to hermeneutics (in a broad sense) as theorized and/or practiced in certain areas of modern continental philosophy. After a brief look at the crucial innovations of Husserl, we shall study carefully chosen extracts (in English translation) of Heidegger (*Being and Time* and *What is Called Thinking*), Gadamer (*Truth and Method*), and Derrida (*Of Grammatology*, *Writing and Difference*, *Dissemination*) in order to illuminate the different (even opposing) ways in which the idea of "herme-

neutics" can develop. This general discussion will be combined with specific consideration of the themes of allegory and negativity. The historical part of the course will concentrate on late ancient, patristic, and early medieval readings (Origen: *On First Principles*; Augustine: *On Christian Teaching*, *Literal Interpretation of Genesis*; Proclus: *Commentary on Plato's Timaeus*). Here, we shall attempt to advance our comprehension of ancient literature by 1) looking for parallels with modern hermeneutic techniques, and 2) applying the modern techniques in test cases. The course is intended to be relatively open-ended, i.e., students will be expected to think about the way in which these discussions are internally coherent and also relate to their own areas of interest (which may be elsewhere in philosophy, theology, or literature (Latin or vernacular). Requirement: one final essay of ca. 20 pp.

60363. Poetry and Philosophy in the Twelfth Century (3-3-0)

This course will aim to provide a close reading of Bernard Silvestri's *Cosmographiae* and Alan of Lille's *De Planctu Naturae* against the background of early twelfth-century philosophical thought and grammatical-rhetorical theory. Although it will be initially necessary to cover the philological and historical ground with some care, the course will also attempt to explore in a more speculative and creative manner the question of the kind of relation between philosophy and literature in general that works like the *Cosmographiae* and *De Planctu* suggest. As stimuli to such reflections, we shall pause to examine in some detail such textual phenomena as the philosophical allegory, the hermeneutical and metaphysical implications of number, the notion of self-reflexivity, and the negative symbol. The course is intended to be accessible to students without skill in Latin (although the latter would, obviously, be an advantage). Requirement: one final paper of ca. 20 pp.

60400. Early Christianity: An Introduction (3-3-0)

This course provides an introduction to the history and thought of the first five hundred years of the Christian church. The approach taken will be largely that of social history: we will try to discover not only the background and context of the major theological debates but also the shape and preoccupations of "ordinary" Christian life in late antiquity. Topics to be studied will therefore include canon formation, martyrdom, asceticism, Donatism, Arianism, and Pelagianism. The class will stress the close reading of primary texts. Requirements include class participation, a final examination, the memorization of a few important dates and places, and two papers, one of which will be an exercise in the close reading of an additional primary source and the other an exploration of early Christian exegesis.

60401. Historical Theology: Medieval (3-3-0)

Development of Christian theology in medieval Western Europe up to the fourteenth century and medieval theologians from Boethius to Ockham. Themes include monastic, scholastic, apocalyptic theology; "authorities" (e.g., Aristotle, Augustine, Pseudo-Dionysius); and reading of the Bible.

63402. Medieval Theology Seminar (3-3-0)

Seminar on a selected theological topic in the medieval period.

60403. Theology of Early Christianity (3-3-0)

This course provides an introduction to the sources, settings, development, and debates of early Christian thought. Concentrating on primary sources in translation from the late first to early sixth century, it will allow students to attain a basic understanding of the early Christian literature that expresses the doctrine (including philosophy and ethics), ritual, and patterns of institutional and personal life of communities spread from the western Mediterranean to Mesopotamia. Secondary treatments will supplement the translated texts.

60410. Jews and Christians through History (3-3-0)

In the closing days of the Second Vatican Council *Nostra Aetate* (*Declaration on non-Christian Religions*) reversed a negative attitude of the Catholic Church toward Judaism and the Jewish people. This remarkable change promoted "dialogue" with Jews, and positive changes in the ways in which Judaism was presented in liturgy and catechesis. Reactions from the Jewish communities were diverse: from rejection to welcoming. This course will explore a number of issues which emerge from the history of Christian thought and theology: How did a negative image of Judaism develop within Christianity? In what ways did these unfavorable teachings contribute toward violence against the Jews? What is the relationship between Christian anti-Jewish teachings and Antisemitism? Is there any correspondence to Christian hostility within Judaism? In what ways have Jewish authors reacted to Christian tradition? We shall also want to construct a more positive theology for the future. How can Jews and Christians develop religious responses to modernity? In what senses can a study of Judaism by Christians, or Christianity by Jews, help either community to understand itself better? How can Christians and Jews develop a theology of "the other" which is not triumphalist, but empathic.

60420. Topics in Early Christianity (3-3-0)

Course topic varies each semester.

63421. Early Christianity Seminar (3-3-0)

Seminar on a selected theological topic in the patristic period.

63440. Moral Theology Seminar: Thomas Aquinas (3-3-0)

In recent years, there has been a resurgence of interest in Aquinas's ethical thought, but without attention to the context from which it emerged. Yet Aquinas's moral thought cannot be fully understood or appreciated unless it is placed in relationship to the views of his immediate predecessors and interlocutors. Furthermore, this approach to the study of

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Aquinas's moral theology also provides us with a case study for examining how moral concepts develop over time, and how they are shaped by social and cultural, as well as intellectual factors. In this course, we will examine Aquinas's writings on the natural law in the context of relevant texts from selected twelfth and thirteenth century authors, including Abelard, Gratian, William of Auxerre, Bonaventure, and Albert the Great. All texts will be made available in translation, although students who wish to read them in Latin will be given the opportunity to do so. Course requirements will include several short papers and a longer paper on a topic to be determined in consultation with the instructor.

63451. St. Bonaventure: Theology and Spirituality in Thirteenth-Century Scholasticism (3-3-0)

Along with Thomas Aquinas and Albertus Magnus, St. Bonaventure is considered one of the leading and most influential theologians of the high Scholastic period. Although he had to abandon his promising career as a university teacher in order to lead the fledgling Franciscan Order as its Minister General, Bonaventure continued his theological work until the end of his life. Critical of the growing influence of Aristotelian thought within theology, he deliberately chose the tradition of St. Augustine, Ps.-Denis, and Hugh of St. Victor as the basis for his theology. The recent emphasis on his spiritual writings notwithstanding, Bonaventure developed a highly speculative and consistent theology, which spans the whole horizon of Scholastic theology. Providing an introduction to Bonaventure's life and writings, the course will focus on central aspects of his theology such as the Trinity, creation, Christology, anthropology, and theological epistemology.

60460. Development of Moral Doctrine (1-1-0)

An examination of how Catholic moral doctrine has developed in specific areas, viz. marriage and divorce; religious liberty; slavery; and usury. Attention will also be given to more general theory on the development of doctrine in the Catholic Church.

60461. Philosophical Theology: The Metaphysics of Creation (3-3-0)

How does free creation challenge a reigning world-view? What key philosophical issues are at stake, and why? We shall trace the debate that ensued among Jewish, Christian, and Muslim thinkers, beginning with al-Farabi and Ibn Sina, and then filtered through Moses Maimonides to Aquinas. By exploring their attempts to secure the primacy of actuality over possibility, in their efforts to formulate the creator as a cause-of-being—a notion novel to the Greeks and apparently less than intelligible to moderns—we hope to unveil the specific challenges which classical and contemporary attempts to formulate the creator/creature relation pose to conventional philosophical discourse, suggesting a relation between faith and reason more internal than often suspected.

60462. The Jewish-Christian Debate in the High Middle Ages (3-3-0)

The growth of urban centers in Europe and Iberia during the Middle Ages rekindled the literary debates between Jews and Christians that began in the Early Church. Both Jews and Christians constructed images of the Other that were grounded in earlier arguments from Scripture and augmented them with the new tools of reason and linguistic knowledge. Our seminar will read both Jewish and Christian documents analyzing them in light of the work of modern historians such as Gilbert Dahan, Jeremy Cohen, David Berger, and Gavin Langmuir. In addition to reading disputation literature, we shall analyze papal policy, noble patronage, and canon law.

60463. Study of the Bible in Church and Synagogue (3-3-0)

The Bible formed the core revelatory text of both the synagogue and the early church. Although both communities developed differing collections of books considered to be sacred writings, there was a large body of works shared by the two communities. Students in this course will explore three dimensions of how Scripture was studied in Judaism and Christianity: The first consideration will be the material nature of the Bible. What were the physical characteristics of the book or books that Christians and Jews studied? A consideration of scroll and codex will form the basis for an investigation of how manuscripts transmitted the biblical text from antiquity to the Middle Ages. A second dimension will be the development of lectionary and liturgical approaches to Scripture. Students will explore how the Bible was read in the public worship of the church and synagogue. The genres of homily, Midrash, and liturgical poems or hymnody as liturgical contexts for Scripture will constitute the primary texts for this section of the course. The third part of the course will trace the hermeneutics of both Jews and Christians. What could one know of God and the divine will from the Scriptures?

Works such as Origen's *Peri Archon*, Augustine's *De Doctrina Christiana*, St. Benedict's Rule, Hugh of St. Victor's *Didascalicon*, and Thomas Aquinas's *Summa* will provide evidence for the Christian community. From the Jewish perspective, students will read portions of the Babylonian Talmud, Saadia Gaon's *Book of Beliefs and Opinions*, Maimonides's *Guide of the Perplexed*, and Nachmanides's *Introduction to the Commentary on the Pentateuch*. Course requirements: 1) preparation of the readings and participation in the seminar, 2) an oral presentation on a topic decided with the instructor, and 3) a seminar paper due at the end of the course.

60464. Medieval Exegesis (3-3-0)

Our focus during the semester will be on the relationship between biblical interpretation and the polemical literature written by Jewish and Christian authors from 1050 to 1200. Students will read the recent accounts of this literature by Gavin Langmuir, Anna Sapir Abulafia, Gilbert Dahan, and Jeremy

Cohen, along with excerpts from medieval Christian authors such as Abelard, Gilbert Crispin, Guibert of Nogent, Bernard of Clairvaux, Peter the Venerable, Petrus Alfonsi, and Alan of Lille. Passages from Jewish authors such as Rashi, Rabbi Joseph Kara, Rabbi Samuel ben Meier, and Rabbi Joseph of Orleans will also be studied. Students will be expected to make an oral presentation and write a paper that provides an explication of the arguments in a polemical work.

60465. Topics in Medieval Theology: The Sacraments (3-3-0)

Pastoral necessity as well as heresies and uncertainties about the nature of the sacraments made it unavoidable for the medieval church to reflect upon its most distinctive liturgical rites. Within the context of the formation and growth of scholasticism, the sacraments provided an excellent training ground to test the strength of western theological thought. Due to the influence of Peter Lombard's collection of patristic *Sententiae* the sacraments finally became a major field within the institutionalized theology at the universities. Our course will focus on those events and texts of the earlier Middle Ages which challenged theologians like Paschasius Radbertus, Berengar of Tour, and Lanfranc of Bec to specify their views about the Eucharist. It will consider the formation of a systematic treatise on the sacraments in the French schools of the twelfth century, and finally present the synthesis of high scholastic sacramental theology in Thomas Aquinas and Bonaventure. Besides the generic questions on the nature of the sacraments as such, special attention shall also be paid to baptism, the Eucharist, confirmation, and penitence.

60466. Eucharist in the Middle Ages (3-3-0)

The eucharist stands at the heart of western European Christianity in the high Middle Ages. The insistence of church officials on regular reception of the eucharist; the numerous scholastic treatments of the theoretical issues associated with the eucharist; the recourse by spiritual authors, especially women, to the eucharist to express their most profound religious and devotional insights; the pointed reference to the Christ eucharistically-present to establish Christian identity and to distinguish the members of Christ from others, both within and outside of western Europe; the development of new rituals focused on aspects of the eucharist; the burgeoning of artistic representations of eucharistic themes—all testify to the centrality of the eucharist in medieval theological and religious consciousness. Through the close reading of representative texts by a wide variety of thirteenth-century authors, and, the study of the different kinds of 'eucharistic' art, this course examines the uses made of the eucharist by a broad spectrum of high medieval Christians. A special concern of the course is the relation between eucharistic doctrine and religious practice—to what extent have teachings about transubstantiation and real presence shaped religious expression? How has religious experience itself occasioned the refinement of these doctrines?

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60467. Medieval Liturgy
(3-3-0)

The purpose of this seminar is to examine the various sacramental rites in the Middle Ages, especially the Eucharistic liturgy, and to attempt to reconstruct them within the context of liturgical enactment, architectural space, artistic and musical decoration, etc. The seminar must necessarily deal with liturgical texts, but this is only a first step for understanding the broader dimensions of the liturgy. Architectural, artistic, and musical components will be taken into consideration. Numerous commentaries on the liturgy are also an important source for garnering the medieval understanding of the liturgy, especially in its allegorical interpretation. A tangential but key element for the understanding is the devotional and spiritual practices that grew up alongside the official liturgy. Therefore, some attention will be given to these dimensions, including liturgical drama.

60471. Islamic Origins
(3-3-0)

Few questions in religious studies have proven more contentious than that of Islamic origins. Formerly western scholars debated whether Islam originated from Christianity or from Judaism. In reaction to that earlier debate, contemporary scholars have often portrayed Islam as a fully-independent religious movement, due either to the genius of Muhammad or the inspiration of the Qur'an. At the same time, new theories have sporadically arisen that present profoundly new visions of Islamic origins, theories based on non-Islamic historical sources (Crone/Cook), theological analogies to Judaeo-Christianity (Lueling), or Syro-Aramaic readings of the Qur'an (Luxenberg). The present seminar, then, is devoted to an investigation of the past and present debate over Islamic origins.

60501. Medieval Spanish Literature: From Reconquest to Renaissance
(3-3-0)

The literature of medieval Spain in light of recent developments in critical theory.

60504. Cervantes: *Don Quijote*
(3-3-0)

A close reading of Cervantes' *Don Quijote* in relation to the prose tradition of the Renaissance: novella, the pastoral romance, the romance of chivalry, the humanist dialogue, and the picaresque novel. We will also pay attention to the historical, social, and cultural context of the work.

60531. Introduction to Old French and Anglo-Norman
(3-3-0)

This course is designed to be an introduction to the language and dialects of medieval France, including Anglo-Norman. Readings will include texts written between the twelfth and the fourteenth centuries, such as the *Lais* of Marie de France, *trouvere* poetry, the prose Lancelot, Machaut, and Froissart.

60535. Lyric and Narrative in Medieval French Literature
(3-3-0)

A study of narrative transformations of the themes of the courtly lyric in the thirteenth and fourteenth centuries.

60536. Lyric Poetry of the Renaissance
(3-3-0)

An in-depth study of the oeuvre of one or two poets (e.g., Du Bellay), including non-amatory poetry.

60537. Love Poetry of the Renaissance
(3-3-0)

An in-depth reading of the love lyrics of Ronsard or Maurice Scève, particularly as they relate to the Italian Petrarchist tradition.

60550. History of the Italian Language
(3-3-0)

An advanced introduction to the history of the Italian language from *Le origini* to the High Renaissance with special emphasis on Dante, Petrarch, and Boccaccio during the medieval period and Bembo, Castiglione, and Machiavelli for the Renaissance.

60552. Dante I
(3-3-0)

Many have considered Dante's *Comedy* to be the greatest poetic achievement in Western literature. It is also perhaps the most perfect synthesis of medieval culture, and the most powerful expression of what even today remains the foundation of the Catholic understanding of human nature, the world, and God. This course is an in-depth study, over two semesters, of the entire *Comedy*, in its historical, philosophical, and literary context, with selected readings from the minor works (e.g., *Vita Nuova*, *Convivio*, *De vulgari eloquentia*). Lectures and discussion will be in English; the text will be read in the original, but all who can follow with the help of a facing-page translation are welcome.

60553. Dante II
(3-3-0)

An in-depth study, over two semesters, of the entire *Comedy*, in its historical, philosophical and literary context, with selected readings from the minor works (e.g., *Vita Nuova*, *Convivio*, *De vulgari eloquentia*). Lectures and discussion in English; the text will be read in the original with facing-page translation. Students may take one semester or both, in either order.

60554. Petrarch: The Soul's Fragments
(3-3-0)

Before taking up the *Canzoniere* we'll consider the life of Petrarch, his intellectual activity and his other works, including selections from his epistolary collections (*Letters on Familiar Matters* and *Letters of Old Age*) and other Latin works, especially the *Secretum* (Petrarch's *Secret*). Our reading of the *Canzoniere* will utilize Santagata's recent edition and commentary and will engage critically a variety of hermeneutical and philological approaches to the book. The seminar will be conducted in English but reading knowledge of Italian is essential.

60555. Boccaccio
(3-3-0)

Though one of the most delightful and engaging texts in literature, Boccaccio's *Decameron* has been called "the most enigmatic of medieval texts, richly difficult to fathom." The text that lies behind Chaucer's *Canterbury Tales*, and that created the modern short story, the *Decameron* is a profound meditation on the relation between language and reality, on literature as a life-giving response to human suffering and mortality, and it is a subtle exploration of the concepts of fortune, human intelligence and creativity, love, social order, and religious language and practice. We shall also pay special attention to the representation of women in the *Decameron*, and to the book's apparent "feminism." We will read the text in Italian; a reading knowledge of Italian is thus required, but the enrollment will determine the language of discussion. Open to advanced and qualified undergraduates by permission.

63556. Italian Senior Seminar
(3-3-0)

Prerequisite: A 30- or 40-level course taught in Italian. An in-depth study of a particular author, theme, genre, or century. In addition to treating the primary texts, some critical material will be required reading. This course culminates in a substantial research paper. Taught in Italian.

60600. Latin Literature and Stylistics
(3-3-0)

Provides an introduction to the advanced study of Latin literary texts through close reading of selected texts combined with practice in Latin composition.

60604. Postclassical Satire
(3-3-0)

This survey will begin with introductory readings in classical satire and satiric invective and narrative, and then move on to consider specimens of a variety of late antique and medieval texts written in a satiric mode: satire, invective, parody, mock epic, etc. A sound knowledge of Latin is required. Course requirements include in-class reports, an annotated translation, and an interpretative essay.

60606. Family and Household in the Roman World
(3-3-0)

A survey of the life-course in Roman antiquity. Topics studied will include: marriage, divorce, child-rearing, old age, the way in which family and household were conceptualized by the Romans, and the demography of the Roman world.

60607. The Roman Revolution
(3-3-0)

This course examines the climactic events in Roman history of the late first century B.C. and early first century A.D. that changed Rome from an open republic to a repressive military monarchy. Chronologically the course begins with the appearance on the Roman political stage of the unabashedly ambitious Julius Caesar, and ends with the accession of a hereditary autocrat in the person of the morose ruler Tiberius. Exploring a variety of sources, the course focuses on the political tensions and civil commotions of the revolutionary era associated with

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warlords like Pompey, Crassus, Caesar, and Antony, and concentrates especially on the rise to power of Augustus, the most ruthless warlord of all, and his creation of a personal political regime that was to last in style for centuries.

60633. Medieval Latin Texts
(3-3-0)

A survey of medieval Latin texts, designed to introduce intermediate students to medieval Latin literature and to help them progress in translation skills.

60634. St. Augustine's *Confessions*
(3-3-0)

This course provides an introduction to St. Augustine's *Confessions*, through reading of extensive selections from the Latin text, a careful reading of the entire work in English translation, and the application of a variety of critical approaches, old and new.

An introduction to modern standard Arabic. This course is the equivalent of a full academic year (two semesters) of elementary Arabic. The student will be able to read vocalized literary Arabic texts, have a working knowledge of Arabic grammar and an active basic vocabulary of more than 450 words and/or productive roots (from which many lexical items can be formed).

60661. Islam: Religion and Culture
(3-3-0)

This introductory course will discuss the rise of Islam in the Arabian peninsula in the seventh century of the Common Era and its subsequent establishment as a major world religion and civilization. Lectures and readings will deal with the life of the Prophet Muhammad, the Qur'an and its role in worship and society, early Islamic history, community formation, law and religious practices, theology, mysticism, and literature. Emphasis will be on the core beliefs and institutions of Islam and on its religious and political thought from the Middle Ages until our own time. The latter part of the course will deal with the spread of Islam to the West, resurgent trends within Islam, both in their reformist and extremist forms, and contemporary Muslim engagements with modernity.

60662. Canon and Literature of Islam
(3-3-0)

This course is an introduction to the religious literature of the Arab-Islamic world. Emphasis is on works from the classical and medieval periods of Islam, roughly from the seventh to the fourteenth century of the Common Era. We will read selections from the Qur'an (the sacred scripture of Islam), the Hadith literature (sayings attributed to the prophet Muhammad), the biography of the Prophet, commentaries on the Qur'an, historical and philosophical texts, and mystical poetry. All texts will be read in English translation. No prior knowledge of Islam and its civilization is assumed, although helpful.

60680. Medieval German Literature
(3-3-0)

Prerequisite: Four semesters or equivalent. GE 315 constitutes a survey of German literature from its beginnings during Germanic times until the sixteenth century. Ideas, issues and topics are discussed in such a way that their continuity can be seen throughout

the centuries. Lectures and discussions are in German, but individual students' language abilities are taken into consideration. Readings include modern German selections from major medieval authors and works such as *Hildebrandslied*, *Rolandslied*, *Nibelungenlied*, *Iwein*, *Parzival*, *Tristan*, courtly lyric poetry, the German mystics, secular and religious medieval drama, *Der Ackermann aus Böhmen*, and the beast epic *Reineke Fuchs*. Class discussions and brief presentations in German by students on the selections are intended as an opportunity for stimulating exchange and formal use of German.

60681. *Der Artusroman*/Arthurian Epic
(3-3-0)

Come and explore the enduring legend of King Arthur and his court as interpreted by German authors of the high Middle Ages (late twelfth and thirteenth centuries). We spend the majority of the semester on the three best-known and most complete Arthurian epics in the German tradition: *Erec* and *Iwein* by Hartmann von Aue, and *Wolfram von Eschenbach's Parzival*, as well as other later German adaptations they influenced. These tales are among the most imaginative and fascinating in the German canon, full of the adventures and exploits of knights and ladies. Our exploration of these texts focuses on their relationship to their French and English predecessors, on the many twists and turns in story line and character development that each individual author creates, and on the information they suggest about "real" life in the medieval world. We also take a look at some of the most interesting modern literary and film adaptations of the Arthurian legend.

60701. Survey of Medieval Architecture
(3-3-0)

This course will introduce students to the architecture of the Middle Ages (ca. 300-1400). This introductory course will begin with early Christian architecture and culminates in the great Gothic cathedrals of northern Europe. Students will not only be invited to consider the development of the architectural forms of the church building, but will also be able to consider the degree to which the changing nature of the church building reflects broader issues in the history of Christianity in the Middle Ages.

60720. The Formation of Christian Art
(3-3-0)

Art in Late Antiquity has traditionally been characterized as an art in decline, but this judgment is relative, relying on standards formulated for art of other periods. Challenging this assumption, we will examine the distinct and powerful transformations within the visual culture of the period between the third and sixth centuries A.D. This period witnesses the mutation of the institutions of the Roman Empire into those of the Christian Byzantine Empire. Parallel to these social changes we can identify the emergence of a Christian art that defines our basic assumptions about the role of art in a Christian society. The fundamental change in religious identity that was the basis for this development had a direct impact upon the visual material that survives from this period. This course examines the underlying conditions that made images so central to cultural identity at this period.

60721. Early Medieval Art: The Illuminated Book
(3-3-0)

This course will investigate the art produced in Western Europe between the seventh and eleventh centuries. Often characterized as a Dark Age, this period in fact demonstrates a fertile, fluid, and inventive response to the legacy of Late Antique Christianity. The course will focus on the production and reception of illuminated manuscripts, using facsimiles of these works as a basis for teaching. Students will become familiar with art-historical methods for the examination of such works and will be invited to contemplate the interplay of word and image that these books propose. Categories of material discussed include: Insular art, the Carolingian scriptoria, Ottonian imperial image making, Anglo-Saxon art, Spanish Apocalypses, and Italian Exultets.

60722. Romanesque Art
(3-3-0)

In this course we will examine the place of art in an expanding culture. The eleventh and twelfth centuries witnessed the economic and military expansion of the societies of Western Europe. This growth produced a complex and rich art that can be broadly labeled as Romanesque. We will investigate this phenomenon (or rather these phenomena) through three actual and metaphorical journeys: the pilgrimage to Santiago de Compostela, a journey to the ruins of ancient Rome, and a visit to the Palestine of the Crusades. These journeys, in many ways typical of this period, will provide the means of examining how the art of this period responds to the various new demands of an increasing knowledge provoked by travel.

60723. Gothic Art
(3-3-0)

This course studies Gothic monuments—who commissioned and made them and how they functioned for different audiences. Among others we consider the following questions: what motives fueled large architectural enterprises? What was their cultural, political, and social significance to women and men, to the laity and clergy, and to viewers from different social classes? How did imagery convey complex theological messages to this varied audience? How did architectural or public images differ from the portable private works of art that became increasingly popular in the late Gothic period?

60724. Byzantine Art
(3-3-0)

Byzantine art has often been opposed to the traditions of Western naturalism, and as such has been an undervalued or little known adjunct to the story of medieval art. In order to develop a more sophisticated understanding of this material we will examine the art produced in Byzantium in the period from the ninth to the twelfth century, a period that marks the high point of Byzantine artistic production and influence. Stress will be placed upon the function of this art within the broader setting of this society. Art theory, the notions of empire and holiness, the burdens of the past and the realities of contemporary praxis will be brought to bear upon our various analyses of material from all media. How we, as art historians can write the history of this rich culture will be a central issue of this course.

MEDIEVAL STUDIES

60725. Fifteenth-Century Italian Renaissance Art (3-3-0)
Open to all students. This course investigates the century most fully identified with the Early Renaissance in Italy. Individual works by artists such as Brunelleschi, Donatello, Ghiberti, Botticelli, and Alberti are set into their social, political, and religious context. Special attention is paid to topics such as the origins of art theory, art and audience, portraiture and the definition of self, Medician patronage, and art for the Renaissance courts of northern Italy and Naples.

60726. Northern Renaissance Painting (3-3-0)
Open to all students. This course traces the development of painting in Northern Europe (France, Germany, and Flanders) from approximately 1300 to 1500. Special attention is given to the art of Jan Van Eyck, Roger van der Weyden, Hieronymus Bosch, and Albrecht Dürer. Through the consideration of the history of manuscript and oil painting and the graphic media, students will be introduced to the special wedding of nature, art, and spirituality that defines the achievement of the Northern Renaissance.

63750. Medieval Art Seminar (3-3-0)
Permission required. The subject of this seminar will vary from year to year.

63751. Renaissance Art Seminar (3-3-0)
Permission required. Seminar on specific subjects in Renaissance art.

60757. Seminar: Venetian and Northern Italian Renaissance Art (3-3-0)
This course focuses on significant artistic developments of the sixteenth century in Venice with brief excursions to Lombardy and Piedmont. Giorgione, Titian, and Palladio, the formulators of the High Renaissance style in Venice, and subsequent artists such as Tintoretto and Veronese are examined. An investigation of the art produced in important provincial and urban centers such as Brescia, Cremona, Milan, Parma, Varallo, and Vercelli also provide insight into the traditions of the local schools and their patronage.

63770. Proseminar in Medieval Music (3-3-0)
An introduction to the theoretical and practical facets of the discipline of music during the Middle Ages. Readings in Calcidius, Macrobius, Boethius, Isidore, *Musica enchiridiadis*, Guido d'Arezzo, and John of Garland; an examination of the basic genres of chant and their place in the mass and the office hours; as well as tropes, hymns, sequences, and organum. Students are expected to have a working knowledge of Latin.

67801. Research in Biocultural Anthropology (6-6-0)
The Jerusalem field school will engage students in an experiential learning environment that immerses them in anthropological method and theory. Using

the large Byzantine St. Stephen's skeletal collection as the cornerstone, historical and archaeological information will be synthesized in a biocultural reconstruction of ancient monastic life. Students will conduct original research, share in a field trip program visiting numerous Byzantine sites and area research institutions, and will participate in a lecture program delivered by top scholars in the fields of biological anthropology, classics, and Near Eastern studies.

77001. Field Examination Preparation (0-0-0)
Offers students a possibility, normally in their second or third year, to work closely with a professor in preparing for one of their field examinations.

77002. Dissertation Proposal Preparation (0-0-0)
Offers students the opportunity to work with their adviser in preparing their dissertation proposal.

88001. Resident Dissertation Research (0-0-0)
Independent research and writing on an approved subject under the direction of a faculty member.

88002. Nonresident Dissertation Research (1-1-0)
Required of nonresident graduate students who are completing their theses in absentia and who wish to retain their degree status.

Fellows of the Medieval Institute

Asma Afzaruddin, *Associate Professor of Classics and Fellow in the Joan B. Kroc Institute for International Peace Studies*. A.B., Oberlin College, 1982; M.A., Johns Hopkins Univ., 1985; Ph.D., *ibid.*, 1993. (1996)

Charles E. Barber, *the Michael P. Grace Professor of Arts and Letters and Associate Professor of Art, Art History, and Design*. B.A., Courtauld Inst. of Art, 1986; Ph.D., *ibid.*, 1989. (1996)

Alexander Blachly, *Professor of Music*. B.A., Haverford College, 1967; M.A., Columbia Univ., 1972; Ph.D., *ibid.*, 1995. (1993)

W. Martin Bloomer, *Associate Professor of Classics*. B.A., Yale Univ., 1982; M.A. *ibid.*, 1983; M.Phil., *ibid.*, 1984; Ph.D., *ibid.*, 1987. (1998)

D'Arcy Jonathan Dacre Boulton, *Professional Specialist in the Medieval Institute and Concurrent Associate Professor of History*. B.A., Univ. of Toronto, 1969; M.A., Univ. of Pennsylvania, 1970; Ph.D., *ibid.*, 1978; D.Phil., Oxford Univ., 1976. (1990)

Maureen B. McCann Boulton, *Professor of French Language and Literature*. B.A., College of New Rochelle, 1970; M.A., Univ. of Pennsylvania, 1972; Ph.D., *ibid.*, 1976; M.Litt., Oxford Univ., 1980. (1985)

Calvin M. Bower, *Professor of Music*. B.Mus., Univ. of Southwestern Louisiana, 1960; M.M., George Peabody College, Vanderbilt Univ., 1963; Ph.D., *ibid.*, 1967. (1981)

Keith R. Bradley, *Chair and the Eli J. Shaheen Professor of Classics and Concurrent Professor of History*. B.A., Sheffield Univ., 1967; M.A., *ibid.*, 1968; B.Litt., Oxford Univ., 1970; Litt.D., Sheffield Univ., 1997. (2001)

Theodore J. Cacey Jr., *Director of Graduate Studies in Romance Languages and Literatures, Professor of Italian Language and Literature, and the Albert J. Ravarino Director of the Devers Program in Dante Studies*. B.A., Northwestern Univ., 1974; M.A., Univ. of California, Los Angeles, 1982; Ph.D., *ibid.*, 1986. (1990)

John C. Cavadini, *Chair and Associate Professor of Theology, and Executive Director of the Institute for Church Life*. B.A., Wesleyan Univ., 1975; M.A., Marquette Univ., 1979; M.A., Yale Univ., 1980; M.Phil., *ibid.*, 1983; Ph.D., *ibid.*, 1988. (1990)

Paul M. Cobb, *Associate Professor of History*. B.A., Univ. of Massachusetts, 1989; M.A., Univ. of Chicago, 1991; Ph.D., *ibid.*, 1997. (1999)

Robert R. Coleman, *Associate Professor of Art, Art History, and Design, and Research Specialist in the Medieval Institute*. B.A., State Univ. College of New York, New Paltz, 1970; M.A., Univ. of Chicago, 1973; Ph.D., *ibid.*, 1988. (1982, 1990)

Olivia R. Constable, *Director of Graduate Studies and Professor of History*. B.A., Yale Univ., 1983; Ph.D., Princeton Univ., 1989. (1995)

Rev. Brian Daley, S.J., *Director of Graduate Studies in Early Christian Studies and the Catherine F. Huisking Professor of Theology*. B.A., Fordham Univ., 1961; B.A., Oxford Univ., 1964; M.A., *ibid.*, 1967; Ph.D., Loyola Seminary, 1966; Lic. Theo., Hochschule Sankt Georgen, 1972; D. Phil., Oxford Univ., 1979. (1996)

Rev. Michael S. Driscoll, *Associate Professor of Theology*. B.A., Carroll College, 1969; S.T.B., Gregorian Univ., 1977; S.T.L., San Anselmo, 1980; S.T.D., Inst. Catholique de Paris, 1986; Ph.D., Sorbonne, Paris, 1986. (1994)

Stephen D. Dumont, *Associate Professor of Philosophy*. B.A., Wabash College, 1969; M.A., Univ. of Toronto, 1976; M.S.L., Pontifical Inst. of Medieval Studies, 1979; Ph.D., Univ. of Toronto, 1982. (2001)

Kent Emery Jr., *Professor in the Program of Liberal Studies*. B.A., Univ. of Virginia, 1966; M.A., Univ. of Toronto, 1968; Ph.D., *ibid.*, 1976. (1985)

Stephen Ellis Gersh, *Professor*. B.A., Cambridge Univ., 1969; M.A., *ibid.*, 1973. (1977)

Brad S. Gregory, *Associate Professor of History*. Ph.D., Princeton, 1996. (2003)

Li Guo, *Associate Professor of Classics*. B.A., Shanghai International Studies Univ., 1979; M.A., Alexandria Univ., 1984; Ph.D., Yale Univ., 1994 (1999)

David Jenkins, *Librarian*. B.A., Univ. of Minnesota, 1983; M.T.S., Harvard, 1990; M.S., Simmons College, 1997. (1999)

MIEVEAL STUDIES

- Christopher A. Jones, *Professor of English*. B.A., Univ. of the South, 1988; M.A., Univ. of North Carolina, Chapel Hill, 1990; Ph.D., Univ. of Toronto, 1995. (2004)
- Louis E. Jordan, *Librarian*. B.A., Univ. of Massachusetts, 1973; M.A., Univ. of Chicago, 1974; Ph.D., Univ. of Notre Dame, 1980; M.L.S., Indiana Univ., 1981. (1981)
- Encarnación Juárez, *Associate Professor of Spanish Language and Literature*. Lic., Univ. of Barcelona, 1977; M.A., Univ. of California, Berkeley, 1981; Ph.D., *ibid.*, 1987. (1995)
- Kathryn Kerby-Fulton, *Professor of English*. B.A., York Univ., Canada; B.Ed., *ibid.*; D.Phil., Univ. of York, England. (2005)
- Blake Leyerle, *Associate Professor of Theology and Concurrent Associate Professor of Classics*. B.A., Yale Univ., 1982; M.A., Duke Univ., 1988; Ph.D., *ibid.*, 1991. (1990)
- Sabine G. MacCormack, *Rev. Theodore M. Hesburgh, C.S.C. Professor of Arts and Letters, jointly appointed in History and Classics*. B.A., Oxford Univ., 1964; D.Phil., *ibid.*, 1974. (2003)
- Julia Marvin, *Associate Professor in the Program of Liberal Studies*. B.A., Princeton Univ., 1988; M.A., *ibid.*, 1992; Ph.D., *ibid.*, 1997. (1997)
- Margaret H. Meserve, *Assistant Professor of History*. A.B., Harvard Univ., 1992; M.A., Warburg Inst., Univ. of London, 1993; Ph.D., *ibid.*, 2001. (2003)
- Christian R. Moevs, *Associate Professor of Italian Language and Literature*. B.A., Harvard Univ., 1980; M.A., Columbia Univ., 1989; Ph.D., *ibid.*, 1994. (1994)
- Thomas F. X. Noble, *the Robert M. Conway Director of the Medieval Institute and Professor of History*. B.A., Ohio Univ., 1969; M.A., Michigan State Univ., 1971; Ph.D., *ibid.*, 1974. (2001)
- Maura Bridget Nolan, *Associate Professor of English*. A.B., Dartmouth College, 1988; A.M., Duke Univ., 1992; Ph.D., *ibid.*, 1998. (1996)
- Katherine O'Brien O'Keefe, *the Notre Dame Professor of English*. A.B., Fordham College, 1970; Ph.D., Univ. of Pennsylvania, 1975. (1992)
- Thomas Prügl, *Associate Professor of Theology*. B.A., Univ. of Munich, 1984; Lic. Theo., *ibid.*, 1988; Th.D., *ibid.*, 1994. (2001)
- Gabriel Said Reynolds, *Assistant Professor of Islamic Studies and Theology*. B.A., Columbia Univ., 1994; M.A., Yale Univ., 2001; M.Phil., *ibid.*, 2001; Ph.D., *ibid.*, 2003. (2003)
- Charles M. Rosenberg, *Professor of Art, Art History, and Design*. B.A., Swarthmore College, 1967; M.A., Univ. of Michigan, 1969; Ph.D., *ibid.*, 1974. (1980)
- Dayle Seidenspinner-Nuñez, *Chair of Romance Languages and Literatures and Professor of Spanish Language and Literature*. B.A., Univ. of California, Berkeley, 1968; M.A., *ibid.*, 1971; Ph.D., Stanford Univ., 1977. (1977)
- Daniel J. Sheerin, *Professor of Classics and Concurrent Professor of Theology*. B.A., St. Louis Univ., 1965; Ph.D., Univ. of North Carolina at Chapel Hill, 1969. (1985)
- Susan Guise Sheridan, *the F. J. and H. M. O'Neill II Associate Professor of Anthropology*. B.A., Univ. of Maryland, 1984; M.A., *ibid.*, 1986; Ph.D., Univ. of Colorado, 1992. (1992)
- Rabbi Michael A. Signer, *the Abrams Professor of Jewish Thought and Culture (Theology) and Fellow in the Nanovic Institute for European Studies*. B.A., Univ. of California, Los Angeles, 1966; M.A., Hebrew Union College-JIR, 1970; Ph.D., Univ. of Toronto, 1978. (1992)
- Marina B. Smyth, *Librarian*. B.S., National Univ. of Ireland, 1963; M.M.S., Univ. of Notre Dame, 1977; Ph.D., *ibid.* and Univ. College Dublin, 1984; M.L.S., Indiana Univ., 1992. (1990, 1993)
- John Van Engen, *the Andrew V. Tackes Professor of History*. A.B., Calvin College, 1969; Ph.D., Univ. of California, Los Angeles, 1976. (1977)
- Joseph Wawrykow, *Director of Graduate Studies and Associate Professor of Theology*. B.A., Univ. of Manitoba, 1978; M.A., *ibid.*, 1980; M.A., Yale Univ., 1981; M.Phil., *ibid.*, 1984; Ph.D., *ibid.*, 1987. (1986)
- Robin Darling Young, *Associate Professor of Theology*. B.A., Mary Washington College, 1972; M.A., Univ. of Chicago, 1975; Ph.D., *ibid.*, 1982. (2004)

Associated Faculty

Joseph P. Amar, *Associate Professor of Classics and Concurrent Associate Professor of Theology*. B.A., Catholic Univ. of America, 1970; S.T.B., *ibid.*, 1973; S.T.L., *ibid.*, 1974; M.A., *ibid.*, 1983; Ph.D., *ibid.*, 1988. (1988)

Terri Bays, *Associate Director, London Program and Concurrent Assistant Professor of English*. B.A., Northwestern Univ., 1989; Ph.D., Univ. of California, Los Angeles, 2000. (2002)

Joseph Bobick, *Professor of Philosophy*. B.A., St. Bernard's College, 1947; M.A., Notre Dame, 1951; Ph.D., *ibid.*, 1953. (1955)

Rev. David B. Burrell, C.S.C., *the Rev. Theodore M. Hesburgh, C.S.C., Professor of Arts and Letters, Professor of Theology and Philosophy, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. A.B., Univ. of Notre Dame, 1954; S.T.L., Gregorian Univ., 1960; Ph.D., Yale Univ., 1965. (1964)

Lawrence Cunningham, *John A. O'Brien Professor of Theology*. B.A., Saint Bernard's College Seminary, 1957; S.T.L., Gregorian Univ. (Rome), 1961; M.A., Florida State Univ., 1963; Ph.D., *ibid.*, 1969.

JoAnn DellaNeve, *Associate Professor of French and Comparative Literature*. A.B., Bryn Mawr College, 1976; M.A., Univ. of Pennsylvania, 1978; M.A., Princeton Univ., 1980; Ph.D., *ibid.*, 1982. (1982)

Alfred Freddoso, *John and Jean Oesterle Professor of Thomistic Studies*. B.A., St. John Vianney Seminary, 1968; Ph.D., Notre Dame, 1976. (1979)

Dolores Warwick Frese, *Professor of English*. B.A., College of Notre Dame of Maryland, 1958; M.A., Univ. of Iowa, 1961; Ph.D., *ibid.*, 1972. (1973)

Robert Goulding, *Assistant Professor in the Program of Liberal Studies and Program in the History and Philosophy of Science*. B.Sc., Univ. of Canterbury (NZ), 1989; B.A., *ibid.*, 1990; M.A., Warburg Institute, Univ. of London, 1992; Ph.D., *ibid.*, 1999. (2003)

Peter Holland, *McMeel Family Professor in Shakespeare Studies*. B.A., Cambridge Univ., 1972; Ph.D., *ibid.*, 1977. (2002)

Rev. John I. Jenkins, C.S.C., *President of the University and Associate Professor of Philosophy*. B.A., Univ. of Notre Dame, 1976; M.A., *ibid.*, 1978; M.Div., Jesuit School of Theology at Berkeley, 1988; S.T.L., *ibid.*, 1988; D.Phil., Oxford Univ., 1989. (1988)

Mary M. Keys, *Assistant Professor of Political Science*. B.A., Boston College, 1988; M.A., Univ. of Toronto, 1989; Ph.D., *ibid.*, 1998. (1994; 1996)

Brian Krostenko, *Associate Professor of Classics*. B.A., Princeton Univ., 1986; M.A., Harvard, 1989; Ph.D., *ibid.*, 1993. (1995, 2001)

Ralph M. McInerny, *the Michael P. Grace Professor of Medieval Studies*. B.A., St. Paul Seminary, 1951; M.A., Univ. of Minnesota, 1952; Ph.L., Univ. Laval, 1953; Ph.D., *ibid.*, 1954. (1955)

David O'Connor, *Associate Professor of Philosophy and Concurrent Associate Professor of Classics*. B.A., Notre Dame, 1980; Ph.D., Stanford, 1985. (1985)

Mark C. Pilkinton, *Professor of Film, Television, and Theatre*. B.S., Memphis State Univ., 1969; M.A., Univ. of Virginia, 1971; Ph.D., Univ. of Bristol, England, 1975. (1984)

Jean Porter, *John A. O'Brien Professor of Theology*. B.A., Univ. of Texas at Austin, 1976; M.Div., Weston School of Theology, 1980; Ph.D., Yale, 1984.

Gretchen J. Reydam-Schils, *Associate Professor in the Program of Liberal Studies and Fellow in the Nanovic Institute for European Studies*. B.A., Catholic Univ. of Leuven, 1987; M.A., Univ. of Cincinnati, 1989; Ph.D., Univ. of California, Berkeley, 1994. (1994)

Robert E. Rodes, *the Paul J. Schierl/ Fort Howard Corporation Professor of Legal Ethics and Professor of Law*. A.B., Brown Univ. 1947; LL.B., Harvard Univ., 1952 (1956)

John Roos, *Director of Undergraduate Studies and Professor of Political Science*. B.A., Notre Dame, 1965; M.A., Univ. of Chicago, 1969; Ph.D., *ibid.*, 1971. (1969)

Albert K. Wimmer, *Director of Graduate Studies and Associate Professor of German Language and Literature and Fellow in the Nanovic Institute for European Studies*. M.A., Univ. of Notre Dame, 1964; M.A., *ibid.*, 1967; Ph.D., Indiana Univ., 1975. (1964)

PHILOSOPHY

Philosophy

Chair:

Paul Weithman

Director of Graduate Studies:

Patricia Blanchette

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The Program of Studies

The graduate program in philosophy at Notre Dame provides intensive professional training in philosophy. It is a doctoral program, although students may choose to terminate at the master's level. In recent years, an average of six Ph.D.s in philosophy has been awarded each year and fellowship aid has been forthcoming from a variety of sources. At present there are 65 doctoral students in residence and 42 graduate faculty.

The large size of its faculty enables the Philosophy Department to offer specialized training from a strong group of scholars in virtually every area of philosophy, including both contemporary and historical approaches. In addition, the department offers special concentrations in medieval philosophy and in continental philosophy, a joint Ph.D. (with the mathematics department) in logic and philosophy of mathematics, and graduate work (including the possibility of a special concurrent MA) in the areas represented by the University's graduate program in history and philosophy of science.

Requirements for the Ph.D. in Philosophy

Entering students are expected to have the equivalent of an undergraduate major in philosophy. If their major has been in another field they may still be admitted, but in such cases deficiencies may have to be made up on a noncredit basis at Notre Dame. Each applicant for graduate admission to the department is required to furnish, in addition to the materials requested by the Graduate School, a sample of the applicant's written work in philosophy (approximately 10 to 15 pages in length).

For the doctorate a student must complete a 47 semester-credit-hour residency requirement. Students who enter the doctoral program with an M.A. are normally excused from six to 12 credit hours of graduate course work. Any philosophy graduate student is permitted to take up to six credit hours of approved undergraduate course work in philosophy and up to six credit hours of course work in related fields to satisfy the 47 credit hours. Those who choose to concentrate in such specialized fields as logic and philosophy of science may be required to take courses in other departments in support of their specialization. Students are expected to maintain a minimum B average in all of their course work.

Course Requirements

Doctoral students are required to complete fourteen regular 3-unit seminars, including seminars satisfying breadth requirements in each of the following areas:

1. History of philosophy:
 - (a) Ancient philosophy
 - (b) Medieval philosophy
 - (c) Modern philosophy
2. Metaphysics
3. Epistemology
4. Ethics
5. Philosophy of science
6. Symbolic logic

Designated "core" seminars in metaphysics, epistemology, ethics, philosophy of science, and symbolic logic satisfy the requirements in those areas. The requirements in history of philosophy may be satisfied by taking any of a number of approved graduate courses offered in each historical area. No course may be used to satisfy more than one general area requirement.

Beginning students are encouraged to complete the requirements as early as is feasible, generally within the first two or two-and-a-half years. In addition to the courses listed above, graduate students are required to take a proseminar in philosophy (PHIL 83101) during their first semester, the colloquium seminar (PHIL 83102 and 83103) during their first year, a practicum for teaching assistants (PHIL 85104) before TAing for the first time, a practical seminar on teaching (PHIL 85105) during their fourth year, and the Dissertation/Placement seminar near the end of their studies.

Non-Course Requirements

1. History Exam: At the end of the summer following the first year of coursework, students are required to take a six-hour written exam in the history of philosophy. The exam is given in two parts, with three hours covering ancient and medieval philosophy, and three hours covering modern philosophy. This requirement, together with the Oral Comprehensive Exam (#4 below) constitute the candidacy examination for the Ph.D.

2. Language Requirement: Acquiring the doctoral degree involves passing Graduate Reading Exams in two foreign languages. At least one of these examinations must be completed before the oral comprehensive examination is taken. Though German, French, Greek, and Latin are the standard choices, with the concurrence of the director of graduate studies, some other language may be substituted where the candidate's dissertation is likely to require the use of the alternate language.

3. Second-Year Paper: At the end of the summer following the second year of coursework, students are required to submit a research paper exhibiting their capacity for independent research. For details on the requirements for this paper, see the departmental guidelines.

4. Oral Comprehensive Exam: Typically taken during the third year of residency, the Oral Comprehensive Exam constitutes the second part (see "History Exam," above) of the Ph.D. candidacy exam. It consists of a one-and-one-half-hour oral examination by a board of five faculty examiners. Four votes of "pass" are needed to pass the exam. (In exceptional circumstances, the Director of Graduate Studies may give permission for an examining board of four faculty members, in which case three votes of "pass" are required in order to pass the exam.) To maintain financial eligibility, this requirement (together with the Dissertation Proposal; see below) must be satisfied by the end of the eighth semester of enrollment. The purpose of the oral comprehensive examination is to confirm a candidate's readiness to begin significant research in his or her chosen area of concentration. Areas of concentration available in the department for the oral examination and for subsequent dissertation research include:

ancient philosophy
 medieval philosophy
 history of modern philosophy
 contemporary European philosophy
 epistemology
 ethics
 logic
 metaphysics
 philosophy of language
 philosophy of mathematics
 philosophy of mind
 philosophy of religion
 philosophy of science
 political philosophy

5. Dissertation Proposal: After passing the oral exam, students submit a dissertation proposal, written in consultation with the student's dissertation director. The proposal consists of a ca. 12-page narrative description of the issue to be addressed, its significance in current scholarship, and the main conclusions to be defended; a 3-5 page chapter outline; and a 1-page bibliography. The proposal is evaluated by the Dissertation Proposal Committee, appointed by the Director of Graduate Studies and consisting of the dissertation director together with four other members of the graduate faculty. No more than one member of this committee may come from outside the Philosophy Department. The dissertation proposal counts as "approved" when all five members of the committee have approved it. To maintain financial eligibility, the proposal must be approved by the end of the eighth semester of enrollment. Once the dissertation proposal is approved, a meeting is scheduled for the student and the committee in order for the committee to provide guidance concerning the research and writing of the dissertation.

6. Dissertation and Defense: Having completed the doctoral candidacy requirements and formulated an acceptable doctoral thesis proposal, the candidate is expected to complete a doctoral dissertation during the fourth or fifth year of residence. When the dissertation is completed and approved by the dissertation director, three copies are submitted to the Director of Graduate Studies. These are distributed

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to three readers, chosen by the Director of Graduate Studies in consultation with the student and dissertation director. The readers will ordinarily be chosen from the members of the Dissertation Proposal Committee. No more than one reader may be from outside the Philosophy Department. After the three readers have approved the dissertation, the Philosophy Department and the Graduate School will arrange for a Dissertation Defense. The director and readers may require revisions of the dissertation as a result of weaknesses revealed in the oral defense. At the end of the defense, the director and readers decide whether the student has passed or failed the defense. Three votes out of four are required to pass the defense.

Evaluation

The faculty as a whole periodically evaluates the progress of all students. Evaluations focus on students' performance in courses, in non-course requirements, and in their roles as teaching assistants and teachers. If the faculty judge at any stage that a student's progress is unsatisfactory, the student may be required to terminate his or her graduate studies. A student may receive a nonresearch M.A. degree in philosophy after finishing 30 credit hours of graduate course work and passing a special M.A. oral candidacy examination. (Continuing students may receive a nonresearch M.A. upon successful completion of the written Ph.D. candidacy examinations (history exam) and 30 credit hours of graduate course work.)

Further details regarding requirements, and regarding the department's many special programs and activities, can be found on the Department's website.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

These courses are representative of offerings in the program over a two-year period.

83101. Proseminar
(1-1-0)

Blanchette

Required of all first-year students. An introduction to the methods of graduate research in philosophy.

83102. Colloquium Seminar
(1-1-0)

A one-hour seminar each semester tied to the talks given in the department's ongoing colloquium series. Required of all first-year students.

83103. Colloquium Seminar
(1-1-0)

A one-hour seminar each semester tied to the talks given in the department's ongoing colloquium series. Required of all first-year students.

85104. Teaching Methods: TA Practicum
(1-1-0)

A one-credit course required of all philosophy graduate students before they begin to assist in teaching.

85105. Teaching Practicum
(1-1-0)

A course required of all graduate students before teaching their own courses for the first time. The goal will be for each prospective teacher to produce viable syllabi and rationales for the courses they will be teaching.

83199. Kant, Kuhn & Friedman
(1-1-0)

This one-credit course is devoted to a close, critical reading of Michael Friedman's *Dynamics of Reason* and related works by Friedman and a few other authors on the role of the a priori in space-time theory.

83201. Plato
(3-3-0)

A detailed and systematic reading, in translation, of the fragments of the pre-Socratics and of the following Platonic dialogues: *Euthyphro*, *Apology*, *Crito*, *Meno*, *Protagoras*, *Phaedo*, *Republic*, *Phaedrus*, *Symposium*, and *Theaetetus*.

83202. Aristotle
(3-3-0)

An investigation of the central concepts of Aristotle's philosophy with emphasis on his metaphysics. Aristotelian doctrines will be examined against the background of Platonic and pre-Socratic thought.

83203. Aristotle's Philosophical Anthropology
(3-3-0)

An examination of Aristotle's views on problems in what we call the philosophy of mind and the theory of action. Texts to be read include Books I and II of the *Physics*, the *De Anima*, and large chunks of the *Nicomachean Ethics*, along with snippets from the *Parva Naturalia*.

83204. Debate Between Plato and Aristotle
(3-3-0)

A study of the history of the debate between the two main ancient traditions of philosophy with special reference to the theory that Platonism and Aristotelianism can, in some profound manner, be reconciled.

83205. Socrates and Athens
(3-3-0)

A study of the moral upheaval in Athens during the Peloponnesian War, using Thucydides, Aristophanes, Euripides, and Sophocles as primary sources. Then an examination of Socrates as responding to that crisis, using Alcibiades I, Gorgias, and other dialogues.

83206. Moral Perfection and the Exemplary Sage
(3-3-0)

A consideration of themes from ancient pagan, Christian, and Jewish reflection on virtue and the sage. In addition to the ancient texts themselves, we will be considering contemporary work by philosophers such as Annas, Cavell, Foucault and Hedot.

83207. Plato
(3-3-0)

In his last and longest dialogue, Plato explored the nature and limitations of the rule of law. What are its sources? Intellectual and emotional? Must the laws have or at least be believed to have a divine foundation? How can people be persuaded freely to obey? What set of laws and institutions would be best and why? Plato's *Laws* contains the first explication and analysis of the "mixed regime" that is transformed by later, modern theorists into the "separation of powers" and "checks and balances" of the American constitution. Plato himself seems to think that a regime that attempts to form the character of its citizens would be preferable. We will investigate why.

83208. Hellenistic Ethics & the Subj
(3-3-0)

An examination of the very distinctive manner in which Hellenistic Philosophy (Cynics, Epicureans, Stoics, New Academy) defines the subject of knowledge, of action, and of interaction with others in the environment. The first part will study the salient features of Hellenistic Ethics. The second part will focus on Stoicism and its powerful model of the integrated life and virtue as intrinsically relational. The third part will be open to a selection of related themes that serve best participants' interests.

83233. History of Medieval Philosophy
(3-3-0)

A semester long course focusing on the history of Medieval Philosophy. It provides a more in depth consideration of this period than is allowed in PHIL 301 History of Ancient and Medieval Philosophy and may be considered a follow-up to that course.

83234. Early Medieval Philosophy
(3-3-0)

A survey of medieval philosophical literature from ca. 400 to ca. 1200 based on original texts. We shall review the most well-known authors and works in the first instance: Augustine (*Soliloquies*, *De Libero Arbitrio*, *Confessions*), Boethius (*Opuscula Sacra*, *De Consolatione Philosophiae*, logical works), Eriugena (*Periphyseon*), Anselm of Canterbury (*Monologion*, *Proslogion*), the "School of Chartres" (*Commentaries on Boethius*). However, considerable emphasis will be placed on major traditions ignored by earlier histories of medieval philosophy: glossing of Plato Latinus, Aristoteles Latinus, Macrobius, and Martianus Capella.

83235. Introduction to Plotinus
(3-3-0)

The course will be divided into two parts: (1) A general survey of Plotinus' philosophy based on writings of his early and middle periods; (2) A close study of Plotinus' longest treatise (divided into four parts by Porphyry): *Enneads* III.8, V.8, V.5, II.9. In both parts of the course, our aim will be not only to

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understand Plotinian thought as a system of emanative monism but also to evaluate the expository and argumentative techniques by which this thought is organized into verbal discourse.

83236. The Medieval Theory of the Will
(3-3-0)

This course will trace the origin and evolution of the concept of the will from Anselm of Canterbury to Duns Scotus, focusing in particular on the emergence of voluntarism at the end of the 13th century, according to which the will became a completely self-determining, rational power.

83238. St. Anselm's Philo/Theology
(3-3-0)

An examination of the major philosophical and theological writings of St. Anselm. His *Monologion*, *Proslogion*, and *Cur Deus Homo* will be of central concern, but several lesser-known texts will also be read. Topics discussed in these writings include arguments for the existence of God, the divine nature, the Trinity, the Incarnation, freedom (and its compatibility with divine foreknowledge), and truth.

83239. Augustine and Anselm
(3-3-0)

An introduction to the thought (philosophical and theological) of Augustine and Anselm of Canterbury. Since Augustine is one of the few intellectual fore-runners mentioned by name in Anselm's main works, we shall assume that a reading of the Latin Church Father forms an indispensable foundation for any serious study of the XIC to XIIC archbishop's writings. Although we shall study either at length or in briefer selections the following works in roughly chronological sequence: (Augustine) *On Free Choice of the Will*, *On the True Religion*, *Confessions*, *On the Trinity*, *On the City of God*, (Anselm) *Monologion*, *Proslogion*, *On Truth*, *On Freedom of the Will*, and *On the Fall of the Devil*, certain thematically-connected ideas will be placed in relief in order to reveal the profound coherence and continuity of the Augustinian and Anselmian speculative systems. These ideas will include Being, Truth, Mind, and Will together with associated ontological, epistemological, and ethical questions.

83240. Aquinas Moral Thought
(3-3-0)

A systematic discussion of the main features of the moral teaching of Thomas Aquinas. The *Summa theologiae*, *prima secundae* and Thomas's commentary on the *Nicomachean Ethics* will be the principal sources.

83241. Augustine & Aquinas on Mind
(3-3-0)

Aquinas' early discussion of mind displays a significant Augustinian structure that disappears by the time of his last works, a shift that can be described as a more robust Aristotelianism. This course examines the philosophical significance of that shift in Aquinas' thought, and will relate it to questions about the nature of contemporary philosophy of the mind.

83266. Hume
(3-3-0)

A careful reading of the *Treatise of Human Nature*.

83267. Hume's Practical Philosophy
(3-3-0)

Hume is not only one of the most revolutionary theoretical philosophers; in his essays he deals with many moral, economical and political questions and defends a peculiar form of liberalism. In the course, we will read the "*Treatise of Human Nature*" the "*Inquiry concerning the Principles of Morals*" and his various essays on political issues. A particular accent of the course is to probe into the connections between Hume's epistemology and anthropology and his concrete political views.

83268. Hume: Ethics & Phil of Mind
(3-3-0)

An exploration of how modern philosophers in the British empiricist tradition developed new theories of moral psychology and human action. Chief among them was the Scottish philosopher David Hume.

83269. Human Nature vs Kant Idealism
(3-3-0)

This seminar compares and contrasts the philosophical aims of Hume's naturalism and Kant's transcendental idealism, with attention to the 18th-Century background of their views.

83270. Social Contract
(3-3-0)

The seminar reads one or more works by a major social contract theorist. (In recent years the seminar has treated one of the following: Hobbes, Locke, Rousseau, and Rawls). The aim is to achieve a critical understanding of the theorist's teaching on the relationships of individual, social, and political life. Participants are expected to take turns presenting short, tightly argued introductions to key passages with a view to focusing discussion on the principle interpretive and theoretical questions posed by the particular text under discussion.

83271. Kant
(3-3-0)

The purpose of the seminar is to become familiar with Kant's practical philosophy and particularly with its implications for political philosophy and the philosophy of history. We will start with Kant's *Groundwork* and the *Critique of Practical Reason*, which lay the foundation of his enterprise, continue with Kant's materially most important works *Metaphysics of ethics* and *Anthropology* and then deal with the smaller works on the philosophy of history and the relation between theory and practice.

83273. Kant's Third Critique
(3-3-0)

An in-depth discussion of Kant's *Critique of Judgment*, focusing on Kant's aesthetic theory, his views on teleology, and scientific methodology. The reception of Kant's views in post-Kantian philosophy and history of science is also discussed.

83274. Kant's Philosophy of Religion
(3-3-0)

The aim of this course is to cover in some depth and detail major themes in Kant's philosophy of religion. They include: the concept of God, divine attributes, proofs for the existence of God, the moral argument for freedom, the postulates of immortality and God's

existence, original sin and radical evil, atonement and divine grace, saving faith and the remarkable antinomy, and ecclesiology.

83501. Metaphysics
(3-3-0)

A survey of some of the main topics of metaphysics. Topics to be covered include the metaphysics of modality, mind-body problem, antirealism, and the nature of natural laws. This is the core course for metaphysics. (Each academic year)

83601. Twentieth-Century Ethics
(3-3-0)

A survey of a number of central positions and issues in contemporary ethical theory. The course will begin with an examination of the main metaethical positions developed from 1903 to 1970-intuitionism, emotivism, prescriptivism, and the various forms of ethical naturalism. This will provide a background for a discussion of issues arising from the more recent revival of classical normative theory. This is the core course for ethics. (Each academic year)

83701. Epistemology
(3-3-0)

The aim of this course is to survey and evaluate the major approaches to understanding epistemic value, viz., internalist theories such as coherentism and foundationalism, and externalist theories such as reliabilism. This is the core course for epistemology.

83801. Philosophy of Science
(3-3-0)

Howard

An analysis of the distinctive character of science as a complex mode of inquiry. Competing views on the nature of scientific explanation and the ontological import of scientific theory will be discussed in the context of classical and contemporary literature.

83901. Intermediate Logic
(3-3-0)

An introduction to the basic principles of formal logic. The course includes a study of inference, formal systems for propositional and predicate logic, and some of the properties of these systems. The course will concentrate on proving some of the major results of modern logic, e.g., the completeness of first-order logic, the undecidability of first-order logic, the Lowenheim-Skolem theorems, and Goedel's incompleteness theorems.

93301. Hegel
(3-3-0)

A close study of the *Phenomenology of Spirit*, with special emphasis on Hegel's epistemology and social theory.

93302. German Idealist Themes
(3-3-0)

A seminar on themes from German Idealism, focusing both on classical texts by Fichte, Schelling and Hegel, and on contemporary texts by Brandom, McDowell, etc.

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93303. Contemporary Continental Philosophy
(3-3-0)

An examination of structuralist and post-structuralist developments in contemporary French philosophy.

93304. Theories of Modernity
(3-3-0)

Beginning with a survey of some social science literature on modernity and modernization, the seminar turns to Jurgen Habermas's defense of modernity (as an "unfinished project") and to Charles Taylor's qualified defense. Discussion then shifts to critics of modernity, from Strauss, Voegelin, and MacIntyre to Adorno and Derrida. Some attention will also be given to non-Western critics of "Western" modernity.

93305. Heidegger
(3-3-0)

A close reading of Heidegger's seminal work *Being and Time*.

93306. Husserl & Heidegger 1934-38
(3-3-0)

This seminar will focus on the task of evaluating the development of the thought of Husserl and Heidegger in the middle 1930s in light of their respective alterations of their prior accounts and the mutual theoretical conflicts that result.

93307. Heidegger and Praxis
(3-3-0)

In recent years there has been much debate concerning Heidegger's politics. Although important, the controversy has often had the effect of impeding access to Heidegger's philosophy and its implications. One of the larger issues often obscured is this: What is the relation between philosophy and politics, between theory and praxis? How can philosophy and praxis enter into a relationship which is mutually enriching while preserving their respective integrity? The seminar explores Heidegger's philosophy with an accent on his contributions to "practical philosophy" (including ethics and politics). Following a close reading of some of Heidegger's key texts - from (parts of) *Being and Time* to the *Letter of Humanism* and *On the Way to Language* - the seminar turns to some assessments of the "practical" implications of his thought in our time of globalization, technological dominance, and civilizational conflict.

93308. Heidegger, Merleau-Ponty and Philosophical Anthropology
(3-3-0)

This course will begin by introducing the basic perspective of German philosophical anthropology followed by a brief consideration of how recent empirical work may challenge or support it. The remainder of the course will be spent examining those aspects of Heidegger and Merleau-Ponty's work that most directly addresses the central questions of Philosophical anthropology.

93309. Philosophy of Experience: Husserl, Sartre, and Merleau-Ponty
(3-3-0)

An examination of the place of experience in Husserl's phenomenology, looking particularly at some key sections of *Ideas I* and of *The Crisis*, and of Husserl's reception among the French, focusing on

central writings of Sartre (*Transcendence of the Ego* and selected portions of *Being and Nothingness*) and Merleau-Ponty (selections from *Phenomenology of Perception*). Some attention will also be paid to later critiques of phenomenology and its conception of experience (reading some bits of Heidegger, Derrida, and Foucault).

93310. Frege
(3-3-0)

This seminar focuses on a close reading of Gottlob Frege's central works in the philosophy of logic, philosophy of language and philosophy of mathematics. No mathematical background required; logic at the level of a first undergraduate course will be presupposed.

93312. Twentieth-Century Thomism
(3-3-0)

At century's end, received opinion was that Thomism as Existential is opposed to "Aristotelian Essentialism." The major moments of these developments will be discussed as well as difficulties that so-called Existential Thomism must face. The relevance of recent work in Aristotle for rethinking Thomas's philosophy will be considered.

93313. Pragmatism
(3-3-0)

After some introductory reading from contemporary pragmatism (Rorty, West, Putnam, Brandom, etc.) the course turns to representative basic texts of classical pragmatism (Peirce, James, and Dewey) to determine the roots of pragmatism so as to understand this perspective and assess the claims of contemporary positions to this designation.

93314. Foucault
(3-3-0)

A survey and assessment of Foucault's philosophical project, through a reading and discussion of some of his major works: *The History of Madness*, *The Order of Things*, *Discipline and Punish*, and *The History of Sexuality*.

93315. Searle
(3-3-0)

An examination of the work of John Searle. Topics to be addressed include the philosophy of action, philosophy of mind, "social reality," the nature of reference, speech acts, and others.

93316. The Philosophy of Donald Davidson
(3-3-0)

A seminar focusing on Donald Davidson's work in four broad areas: mind, cause, knowledge, and the subjective. To be read are Davidson's central papers on topics such as: mental anomalism and mental causation, interpretation theory and the rationality assumptions (the principle of charity), the possibility of incommensurable conceptual schemes, the coherence theory of knowledge, self-knowledge and first-person authority.

93317. Postmodern Analytic Philosophy
(3-3-0)

A study of several philosophers (Richard Rorty, Charles Taylor, Bernard Williams, Martha Nussbaum) who combine an analytic commitment to

clarity and argument with an interest in the history and critique of modern thought.

93318. Gadamer & Charles Taylor
(3-3-0)

An examination of the work of two leading thinkers in the field of interpretive theory: Hans-Georg Gadamer and Charles Taylor. While Gadamer is recognized as the preeminent philosopher of "hermeneutics", Taylor has underlined the role of understanding/interpretation both in the history of political thought and in the practice of the social and human sciences. The seminar will focus on selected writings of the two thinkers including Gadamer's *Truth and Method* and Taylor's *Philosophical Papers*.

93319. Philosophical Arguments
(3-3-0)

This course will reflect on the nature of arguments for philosophical claims in contemporary analytic philosophy. We will proceed by close readings of key articles in current debates on metaphysical, epistemological, and ethical topics.

93401. Topics in Philosophy of Religion
(3-3-0)

A seminar focusing on various topics in philosophy of religion. Recent topics have included ethics, religious epistemology, and religion and politics.

93402. Philosophy and Christian Theism
(3-3-0)

How, if at all, does Christian belief bear on the traditional concerns of philosophers? Is there such a thing as Christian philosophy? After considering the bearing of some common views of faith and reason on these questions, we turn to more specific questions in epistemology, ethics, and philosophical anthropology.

93403. Classical Philosophy of Religion
(3-3-0)

A critical examination of some classical philosophical theories of religion. The central focus of the course will be issues concerning justification and explanation in religion.

93404. The Problem of Evil
(3-3-0)

This seminar is both an examination of the argument from evil and an introduction to current philosophical thinking about the argument. Also discussed is the larger topic of "the problem of evil," how that problem should be formulated and what the relation is between this problem and the question: How should theists respond to the argument from evil?

93406. Divine Providence
(3-3-0)

An examination of the view of providence offered by the proponents of middle knowledge, and the objections raised against this Molinist view by both Thomists and contemporary analytic philosophers.

93407. Divine Action in the World
(3-3-0)

A look at a number of topics having to do with divine action in the world. Among those topics will be

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the following: the nature of causation, occasionalism vs. secondary causes, miracles, the nature of natural laws (if there are any), whether all laws supervene on quantum mechanics, the connection of conceptions of determinism with conceptions of law, etc.

93410. Phil/Theo:Metaphysics of Creation
(3-3-0)

How does free creation challenge a reigning worldview? What key philosophical issues are at stake, and why? We shall trace the debate that ensued among Jewish, Christian, and Muslim thinkers, beginning with al-Farabi and Ibn Sina, and then filtered through Moses Maimonides to Aquinas. By exploring their attempts to secure the primacy of actuality over possibility, in their efforts to formulate the creator as a cause-of-being-a notion novel to the Greeks and apparently less than intelligible to moderns—we hope to unveil the specific challenges which classical and contemporary attempts to formulate the creator/creature relation pose to conventional philosophical discourse, suggesting a relation between faith and reason more internal than often suspected.

93502. Creation and Freedom
(3-3-0)

Modern western notions of freedom equate freedom with choice and exalt “doing what I wanna do”-something already exposed by Socrates as effective bondage to our endless needs. When freedom turns out to be bondage, and demands exploitation of other humans and of the earth to satisfy its demands, something seems wrong! We shall examine classical and modern sources to highlight the contrast, locating the signal difference in the presence (or absence) of a creator.

93503. Freedom and Responsibility
(3-3-0)

An examination of recent work on freedom, determinism, and moral responsibility, beginning with Peter van Inwagen's *An Essay on Free Will*.

93504. Being
(3-3-0)

A seminar on ontology or the philosophy of being, examining such questions as the nature and meaning of existence and being, the interpretation of the so-called existential quantifier, non-being, the ontology of fiction, the distinction between the abstract and the concrete, nominalism and realism, the metaphysics of possibility and necessity, the nature of composite and enduring objects, the concept of *ousia* or substance, and the question why there should be anything at all.

93505. Time and Persistence
(3-3-0)

An exploration of central issues in the philosophy of time, with special emphasis on the presentism/four-dimensionalism debate and the tensor/detensor debate.

93506. Realism and Anti-Realism
(3-3-0)

An examination of the debate at the intersection of metaphysics and the philosophy of language between realists and anti-realists by focusing on the work of

four important Anglo-American philosophers, Dummett, Quine, Putnam, and McDowell.

93507. Topics in Philosophy of Mind
(3-3-0)

An examination of both standard and very recent treatments of mental representation and consciousness and an exploration of the various connections that may or may not exist between the two.

93508. Subjectivity & the Self
(3-3-0)

A seminar focusing on some central issues concerning self, subjectivity, and agency. Topics include: the subjective/objective contrast, types of subjectivity, self-reference and self-awareness, agency and subjectivity, the objective and subjective perspective in action explanation, and the implications of subjectivity for the mind-body problem.

93509. Physicalism and the Mind
(3-3-0)

An examination of the nature, motivation, and present status of the contemporary physicalist program, with special attention to the question whether and to what extent, physicalism is successful in accommodating mentality (consciousness, intentionality, subjectivity, and normativity).

93510. Agency, Action and Action Explanation
(3-3-0)

A discussion of questions such as: What is it to be an agent? What is an action? Are actions explained or understood causally or nomologically, or in some other distinctive ways? What roles do “reasons” play in explaining actions?

93602. Contemporary Ethics
(3-3-0)

An examination of key issues in contemporary ethics. Readings will vary from year to year but will be drawn from the most influential contemporary work in moral philosophy.

93603. Virtue & Practical Reasoning
(3-3-0)

An examination of virtue and ethics and one of the major objections to it, i.e. that it cannot guide action.

93604. Locke's Moral Philosophy
(3-3-0)

A careful, evaluative reading of Locke's “Letter Concerning Toleration,” his “Second Treatise on Civil Government,” and his “Questions Concerning the Law of Nature,” as well as a more cursory look at his “Some Thoughts Concerning Education.”

93605. Ethical Intuitionism and Particularism
(3-3-0)

A consideration of epistemological issues in ethics through a reading of newly published books by Robert Audi on ethical intuitionism and Jonathan Dancy on particularism.

93606. Ethics and Risk
(3-3-0)

An investigation of classical ethical papers, all in contemporary, analytic, normative ethics, that attempt

to develop the ethical theory necessary to deal with legitimate imposition of risk of harm.

93607. Advanced Biomedical Ethics
(3-3-0)

An advanced readings course on current topics in Biomedical Ethics. Topics vary according to interests of students.

93608. Love, Justice & Flourishing
(3-3-0)

A course investigating the relationship between the concepts of Love, Justice & human flourishing.

93609. Development of Moral Doctrine
(1-1-0)

An examination of how Catholic moral doctrine has developed in specific areas, viz. marriage and divorce; religious liberty; slavery; and usury. Attention will also be given to more general theory on the development of doctrine in the Catholic Church.

93610. Justice
(3-3-0)

An attempt to bring together the philosophical and theological literature on justice. A focus of the course will be on the concepts of human justice and God.

93611. Political Liberalism and Religion
(3-3-0)

A consideration, from the point of view of philosophy and legal theory, of whether religious arguments ought to be excluded from political debate on certain issues.

93612. Nature and Modern Democracy
(3-3-0)

From 1951 to 1953, the University of Chicago Press published three sets of the Walgreen Lectures dealing with the intellectual basis of various twentieth-century challenges to democracy. These three books - Yves Simon's *Philosophy of Democratic Government*, Leo Strauss's *Natural Right and History* and Eric Voegelin's *The New Science of Politics* -- have functioned to outline three highly influential and overlapping approaches to defining the crisis of modern democracy and to restoring viable democratic foundations. This seminar-style course focuses on the reading and discussion of these books.

93613. Political Philosophy
(3-3-0)

An exploration of various ethical questions raised by terrorism through an evaluation of competing conceptions of justice. Some questions to be considered include: How should we understand the terrorism that the United States opposes? Is it something only our enemies have engaged in or have we ourselves and our allies also engaged in terrorist acts? Is terrorism always wrong, or are there morally justified acts of terrorism?

93614. Theories of Law
(3-3-0)

What is law? What constitutes a just law? Is there any universally valid, moral foundation for law: human rights, natural law, a categorical imperative, etc.? Or is law purely positive, a product of the will of those possessing political power, its justice merely

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a matter of following the established procedures?

These questions constitute the core of this seminar. We will focus on the contemporary debates on these issues among legal theorists, in particular H.L.A. Hart (*The Concept of Law*) and John Finnis (*Natural Law and Natural Rights*), preparing to understand them better through careful study of Thomas Aquinas's writings on law and justice.

93615. Aesthetics
(3-3-0)

A consideration of some of the fundamental questions in aesthetics and philosophy of art, e.g., the nature of aesthetic representation, expression in art, the concept of beauty, what distinguishes art from 'mere things', the structure and function of imagination.

93616. Philosophy and Literature Seminar
(4 -0- 4)

This intensive four-credit seminar is the introduction to the concentration in philosophy and literature and will pursue interdisciplinary approaches to literary, theoretical and philosophical texts.

93802. Scientific Realism
(3-3-0)

A study of the criticisms, defenses, and explications of scientific realism in the writings of van Fraassen, Putnam, Fine, Hacking, Laudan, Psillos, Kukla, and Ganson.

93811. History of the Philosophy of Science
(3-3-0)

Focus on Aristotle, Bacon, Descartes, Galileo, Newton, Vico, Whewell, and Poincaré. The connections between theory of science and epistemology will be emphasized, as will the influence of metaphysics upon the origins of science.

93812. History of the Philosophy of Science 1750 to 1900
(3-3-0)

The second half of the history of "classical" philosophy of science. Themes: the epistemic status of scientific knowledge-claims; the presuppositions, techniques, and modes of inference appropriate to natural science; the ontological status of scientific constructs. We shall begin with Reid and Kant, go on to Comte, Whewell and Mill, and end with Mach and Poincaré.

93813. Leibniz, Newton, and Kant's First Critique
(3-3-0)

A close examination of central aspects of Kant's *Critique of Pure Reason*, considered as an attempt to resolve tensions between the model of intelligibility exemplified by Newton's physics and the model of intelligibility articulated in Leibniz's *Metaphysics*.

93821. Science and Social Values
(3-3-0)

A consideration of such questions as: Should science be value free, or should it be shaped by the needs and ideals of the society that supports it? If the former, how can scientists shaped by society contribute to it, and what claim to the resources of the society can scientists legitimately make? If the latter, how can scientists still claim to be objective?

93861. Philosophy of Biology
(3-3-0)

Central issues in the philosophy of science from the perspective of the life sciences with particular emphasis upon topics in evolution theory and sociobiology and upon the topic of intertheoretical integration in the life sciences (from organic chemistry to cognitive neuroscience). Topics to be covered include: teleology, reductionism and supervenience, the biological basis of cognition, explanation, scientific realism, theory change, and the critical appraisal of alternate research strategies.

93871. Philosophy of Space and Time: Kant, Einstein
(3-3-0)

An introduction to contemporary metaphysics and its relation to the philosophy of science. Three topics to be covered in depth are: special relativity, the debate over relative and absolute space, and Kant's views on space.

93872. Interpretative Problems in Quantum Mechanics
(3-3-0)

Intended for graduate students in physics and in the history and/or philosophy of science who wish to examine in some reasonable detail the roots, both historical and philosophical, of quantum mechanics and the profound conceptual problems to which that theory has given rise.

93881. Theology and the Natural Sciences
(3-3-0)

A study of issues raised for Christian theology by the rapid progress of the natural sciences over the last few centuries.

93882. Religion and Science: Conflict or Concord
(3-3-0)

A look at one of the most interesting and important topics of the last 500 years, the relation of the newly emerging modern science to religious belief-in particular Christianity.

93903. Topics in Philosophical Logic
(3-3-0)

This course will cover topics in the metatheory of modal logic starting with some basic correspondence theory and moving on to a discussion of completeness and the finite modal property.

93904, 93905, 93909. Workshop in Philosophy of Math
(3-3-0)

An ongoing research seminar in philosophical logic and philosophy of mathematics.

93906. Philosophy of Structuralist Mathematics
(3-3-0)

Mathematics today, from geometry to number theory, works with structures defined entirely by their relations to one another, with no specific content. It is a philosophic challenge to see how this can be done rigorously and what it says about ontology. Philosophers of mathematics have proposed various ideas about it, while hardly looking at the tools mathematicians actually use. We will study those

tools and how they bring foundations of mathematics closer to practice from Dedekind to today. We will see several philosophies of mathematics grown from them, and several different categorical formal foundations for mathematics including topos theory, and compare with the structuralist ideas of Michael Resnik and Stewart Shapiro.

93907, 93908. Philosophy of Mathematics
(3-3-0)

A seminar focusing on central topics in the philosophy of mathematics.

93910. Truth and Paradox
(3-3-0)

A study of several approaches to truth and the paradoxes. The course begins with Tarski's classic papers on truth, then moves on to a careful study of Kripke's "fixed point" approach, and some of its descendants, particularly Gupta and Belnap's "revision" theory of truth, Barwise and Etchemendy's approach based on the theory of non-well-founded sets, and perhaps McGee's "vagueness" approach.

93911. Proposition/Fact/Truth/Reality
(3-3-0)

An examination of some of the following issues concerning propositions: What arguments can be given for thinking that there are propositions? Are propositions to be taken seriously, or are they merely convenient fictions? Are they purely theoretical entities, or are they observable in some way? What are propositions made of? Are they necessary beings, or are they contingent beings? Are they abstract, mind-and-language-independent beings distinguished from other such beings by having truth-conditions and having them essentially? Are truth/falsehood fundamentally and characteristically properties of propositions? How do propositions relate to fact?

96697. Directed Readings
(0-0-0)

Readings and discussion of chosen philosophical texts under the personal supervision of a member of the graduate faculty.

98699. Research and Dissertation
(0-0-0)

Required of students in residence engaged in full-time dissertation research.

98700. Nonresident Dissertation Research
(1-1-0)

For doctoral candidates not in residence while working on the dissertation. Required to maintain degree candidacy.

Upper-level Undergraduate Courses

In addition to the courses listed above, certain courses offered in the department's undergraduate major program are open to graduate students for credit or audit. Such 40000- and 50000-level courses may be recommended to students whose undergraduate backgrounds are lacking in certain respects.

PHILOSOPHY

Faculty

- Karl Ameriks, *the McMahon-Hank Professor and Fellow in the Nanovic Institute for European Studies (on leave 2004-2005)*. B.A., Yale Univ., 1969; Ph.D., *ibid.*, 1973. (1973)
- Robert Audi, *Professor of Philosophy and David E. Gallo Chair in Ethics*. B.A., Colgate Univ., 1963; M.A., Univ. of Michigan, 1965; Ph.D., *ibid.*, 1967. (2003)
- Timothy Bays, *Assistant Professor*. B.A., Northwestern Univ., 1988; Ph.D., Univ. of California, Los Angeles, 1995; Ph.D., *ibid.*, 1999. (1999)
- Patricia A. Blanchette, *Director of Graduate Studies and Associate Professor*. B.A., Univ. of California, San Diego, 1983; Ph.D., Stanford Univ., 1990. (1993)
- Joseph Bobik, *Professor*. B.A., St. Bernard's College and Seminary, 1947; M.A., Univ. of Notre Dame, 1951; Ph.D., *ibid.*, 1953. (1955)
- Katherine Brading, *Assistant Professor*. B.Sc., King's College London, Univ. of London, 1992; B.Phil., Univ. of Oxford, 1996; D.Phil., *ibid.*, 2001. (2004)
- Sheilah Brennan, *Associate Professor Emerita*. B.A., Laval Univ., 1950; M.A., *ibid.*, 1951; L.Ph., *ibid.*, 1954. (1971)
- Rev. David B. Burrell, C.S.C., *the Rev. Theodore M. Hesburgh, C.S.C., Professor of Arts and Letters, Professor of Theology and Philosophy, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. A.B., Univ. of Notre Dame, 1954; S.T.L., Gregorian Univ., 1960; Ph.D., Yale Univ., 1965. (1964)
- Fred R. Dallmayr, *the Packey J. Dee Professor of Political Science, Professor of Philosophy, and Fellow in the Kellogg Institute for International Studies, the Kroc Institute for International Peace Studies, and the Nanovic Institute for European Studies*. LL.B., Univ. of Munich, 1955; M.A. Southern Illinois Univ., 1956; Ph.D., Duke Univ. 1960. (1978)
- Marian A. David, *Professor*. Magister Philosophiae, Karl-Franzens Univ., 1985; M.A., Univ. of Arizona, 1989; Ph.D., *ibid.*, 1990. (1989)
- Cornelius F. Delaney, *Professor*. B.A., St. John's Seminary, 1961; M.A., Boston College, 1962; Ph.D., St. Louis Univ., 1967. (1967)
- Michael R. De Paul, *Professor*. B.A., Univ. of Notre Dame, 1976; M.A., Ohio State Univ., 1979; Ph.D., Brown Univ., 1983. (1982, 1990)
- Michael Detlefsen, *Professor*. A.B., Wheaton College, 1971; Ph.D., Johns Hopkins Univ., 1975. (1983)
- Stephen D. Dumont, *Associate Professor*. B.A., Washash College, 1974; M.A., Univ. of Toronto, 1976; M.S.L., Pontifical Inst. of Mediaeval Studies, Univ. of Toronto, 1979; Ph.D., Univ. of Toronto, 1982. (2001).
- Thomas P. Flint, *Director of the Center for Philosophy of Religion and Professor*. B.A., St. Ambrose College, 1975; Ph.D., Univ. of Notre Dame, 1980. (1982)
- Alfred J. Freddoso, *the John and Jean Oesterle Professor of Thomistic Studies*. B.A., St. John Vianney Seminary, 1968; Ph.D., Univ. of Notre Dame, 1976. (1976, 1979)
- Gary M. Gutting, *Professor and Fellow in the Nanovic Institute for European Studies*. A.B., St. Louis Univ., 1964; Ph.D., *ibid.*, 1968. (1969)
- Don A. Howard, *Director of Graduate Studies in History and Philosophy of Science and Professor of Philosophy*. B.Sc., Michigan State Univ., 1971; A.M., Boston Univ., 1973; Ph.D., *ibid.*, 1979. (1997)
- Anja Jauernig, *Assistant Professor*. B.A., Rheinische Friedrich-Wilhelms-Univ., 1994; B.S., *ibid.*, 1995; M.A., *ibid.*, 1997; M.A., Princeton Univ., 1999; Ph.D., *ibid.*, 2004. (2002)
- Rev. John I. Jenkins, C.S.C., *Vice President and Associate Provost of the University and Associate Professor*. B.A., Univ. of Notre Dame, 1976; M.A., *ibid.*, 1978; M.Div., Jesuit School of Theology at Berkeley, 1988; S.T.L., *ibid.*, 1988; D.Phil., Oxford Univ., 1989. (1988)
- Lynn Joy, *Professor (on leave 2004-2005)*. A.B., Radcliffe College, 1971; A.M., Harvard Univ., 1981; Ph.D., *ibid.*, 1982. (1988, 2000)
- Janet Kourany, *Associate Professor*. B.S., Columbia Univ., 1965; Ph.D., *ibid.*, 1977. (2000)
- Michael J. Loux, *the George N. Shuster Professor of Philosophy*. B.A., College of St. Thomas, 1964; M.A., Univ. of Chicago, 1965; Ph.D., *ibid.*, 1968. (1968)
- Alasdair MacIntyre, *Senior Research Professor*. B.A., Queen Mary College, 1949; M.A., Manchester Univ., 1951. (1988, 2000)
- A. Edward Manier, *Professor*. B.S., Univ. of Notre Dame, 1953; A.M., St. Louis Univ., 1956; Ph.D., *ibid.*, 1961. (1959)
- Ralph M. McInerney, *the Michael P. Grace Professor of Medieval Studies*. B.A., St. Paul Seminary, 1951; M.A., Univ. of Minnesota, 1952; Ph.L., Univ. Laval, 1953; Ph.D., *ibid.*, 1954. (1955)
- Vaughn R. McKim, *Associate Professor*. B.A., Oberlin College, 1962; M.A., Yale Univ., 1964; Ph.D., *ibid.*, 1966. (1966)
- Rev. Ernan McMullin, *the John Cardinal O'Hara Professor Emeritus of Philosophy*. B.Sc., National Univ. of Ireland, 1945; B.D., Maynooth College, 1948; Ph.D., Univ. of Louvain, 1954. (1954)
- Lenny Moss, *Assistant Professor*. B.A., San Francisco State Univ., 1981; Ph.D., Univ. of California, Berkeley, 1989; Ph.D., Northwestern Univ., 1998. (1999)
- David K. O'Connor, *Associate Professor of Philosophy and Concurrent Associate Professor of Classics (on leave 2004-2005)*. B.A., Univ. of Notre Dame, 1980; Ph.D., Stanford Univ., 1985. (1985)
- Alvin Plantinga, *the John A. O'Brien Professor of Philosophy*. B.A., Calvin College, 1954; M.A., Univ. of Michigan, 1955; Ph.D., Yale Univ., 1958. (1974, 1981)
- William M. Ramsey, *Associate Professor*. B.S., Univ. of Oregon, 1982; Ph.D., Univ. of California, San Diego, 1989. (1989)
- Michael C. Rea, *Associate Professor*. B.A., Univ. of California at Los Angeles, 1991; M.A., Univ. of Notre Dame, 1994; Ph.D., *ibid.*, 1996. (2001).
- Rev. Herman Reith, C.S.C., *Associate Professor Emeritus*. Ph.B., Gregorian Univ., 1938; St.B., *ibid.*, 1940; M.A., Univ. of Notre Dame, 1944; Ph.D., Laval Univ., 1945. (1987, 1989)
- John H. Robinson, *Director of the Thomas J. White Center for Law and Government, Associate Fellow in the Law School and Concurrent Assistant Professor of Law and Philosophy*. B.A., Boston College, 1967; M.A., Univ. of Notre Dame, 1972; Ph.D., *ibid.*, 1975; J.D., Univ. of California, Berkeley, 1979. (1981)
- Fred Rush, *Assistant Professor*. B.A., Washington and Lee Univ., 1978; Ph.D., Columbia Univ., 1996. (2001)
- Kenneth M. Sayre, *Professor*. A.B., Grinnell College, 1952; M.A., Harvard Univ., 1954; Ph.D., *ibid.*, 1958. (1958)
- Kristin Shrader-Frechette, *the F. J. and H. M. O'Neill Professor of Philosophy, Concurrent Professor of Biological Sciences, and Fellow in the Joan B. Kroc Institute for International Peace Studies (on leave spring 05)*. B.A., Edgecliff College, Xavier Univ., 1967; Ph.D., Univ. of Notre Dame, 1971. (1998)
- William D. Solomon, *Associate Professor and the W. P. and H. B. White Director of the Center for Ethics and Culture*. B.A., Baylor Univ., 1964; Ph.D., Univ. of Texas at Austin, 1972. (1968, 1977)
- James P. Sterba, *Professor and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., La Salle College, 1966; M.A., Univ. of Pittsburgh, 1972; Ph.D., *ibid.*, 1973. (1973)
- Leopold Stubenberg, *Associate Professor*. B.A., Karl-Franzens Univ., 1984; M.A., Univ. of Arizona, 1988; Ph.D., *ibid.*, 1992. (1990)
- Peter van Inwagen, *the John Cardinal O'Hara Professor of Philosophy*. B.S., Rensselaer Polytechnic Inst., 1965; Ph.D., Univ. of Rochester, 1969. (1995)
- Ted A. Warfield, *Associate Professor*. B.A., Univ. of Arkansas, 1991; Ph.D., Rutgers Univ., 1995. (1995)
- Stephen H. Watson, *Professor*. B.A., Carroll College, 1972; M.A., Duquesne Univ., 1975; Ph.D., *ibid.*, 1979. (1983)
- Paul J. Weithman, *Chair and Professor*. B.A., Univ. of Notre Dame, 1981; M.A., Harvard Univ., 1986; Ph.D., *ibid.*, 1988. (1991)

Romance Languages and Literatures

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The Program of Studies

The Department of Romance Languages and Literatures offers an M.A. degree in French and Francophone Studies, Italian Studies, and Iberian and Latin American Studies. The primary aim of the master's program is to provide students with a comprehensive background in the literary and cultural achievements of French-, Italian-, and Spanish-speaking countries, both separately and in relation to each other. Additionally, the master's program may, with the permission of the department, include advanced courses in related areas of other disciplines, such as art, English, government, history, international studies, music, philosophy, psychology, and theology. Indeed, in the Italian Studies program, such allied courses are considered an integral component of the student's preparation. This interdisciplinary and comparative approach to the Romance literatures is a hallmark of the master's program. The various courses of study provided will, in most instances, lead to a career in teaching and scholarship, but they may also serve as fundamental training for those candidates who plan to enter professions where a knowledge of Romance languages plays an auxiliary role.

Students interested in pursuing the Ph.D. in Literature degree with French and Francophone, Iberian and Latin American, or Italian studies as a primary field should consult the Ph.D. program in literature listing in this Bulletin for further information.

Admissions

Graduate study in French and Francophone Studies, Italian Studies, or Iberian and Latin American Studies assumes a prior undergraduate major or its equivalent in the respective field. All applicants are required to take the Graduate Record Exam; in addition, if English is neither the applicant's native language nor language of instruction, the applicant must also submit TOEFL scores. In addition to the materials required by the Graduate School, the applicant should submit a writing sample and an audiocassette tape to demonstrate the applicant's ability in the target language; if the applicant is a non-native speaker of English, an audiocassette tape in English should be forwarded as well.

General Requirements

The master's programs encourage the student to work closely with his/her adviser to design a course of study to suit individual needs, interests, and

future goals. All candidates for an advanced degree are expected to take a minimum of 30 credit hours of courses in their field of specialization, including "Introduction to Literary Criticism" and a graduate course in comparative Romance literature.

During the second semester of the first year of graduate study, the student must pass an oral qualifying examination. The master's candidate will choose from a selection of texts and must demonstrate competency in analyzing a literary text in the target language before the graduate faculty. At this time, faculty members will discuss and evaluate the student's performance in the master's program.

Before taking the comprehensive written examination at the end of the second year, the student must demonstrate competency in a second foreign language by passing a reading exam or through successful completion of appropriate course work.

Students preparing for a career in teaching have the opportunity to teach several language courses before completion of the master's degree. A preliminary workshop, "Methods of Foreign Language Teaching" and "Practicum in Teaching" are required of all graduate teaching assistants.

Program in French and Francophone Studies

Course requirements. All candidates for a master's degree in French and Francophone Studies are required to take a minimum of 30 credit hours or 10 courses, in addition to the required courses in pedagogy for teaching assistants (if applicable). "Introduction to Literary Criticism," required of all students, is taken during the first semester of residence. In addition, the minimum of 10 courses includes at least six courses in French and Francophone literature and one course in comparative Romance literature. Two courses may be in a second national literature or in an allied field; students taking both courses in the same national literature or in comparative literature will be designated as having fulfilled a minor in that field. Occasionally, at the invitation of the program faculty, these two courses may instead be fulfilled by writing a master's thesis under the direction of a faculty member in the department. Two of the 10 courses may be at the 40000 level.

Comprehensive Master's Examination. For the final written examination, the student chooses five of seven fields (medieval, Renaissance, 17th century, 18th century, 19th century, 20th century, Francophone) in which to be examined. At least two of these five fields must be prior to the 18th century (i.e., medieval, Renaissance, or 17th century). Each area will be tested for a total of one hour.

Combined B.A./M.A. Program in French and Francophone Studies. The Department of Romance Languages and Literatures offers its majors in French the opportunity to participate in its graduate program through a combination B.A./M.A. degree in French. This program requires students to complete a first major in French (i.e., at least 30 hours of course work) during the normal four-year

undergraduate period, followed by a total of 30 credit hours of graduate courses taken during the fourth and fifth years in residence. Six credit hours will be counted toward both the undergraduate and the graduate degrees. During their senior year, participants in this program complete two graduate courses, take the qualifying exam given to all first-year graduate students, and apply to the Graduate School for admission during the spring semester. B.A./M.A. students are eligible for a teaching fellowship during their fifth year that includes a tuition waiver and a generous teaching stipend. Well-qualified students who are interested in this program should contact the director of graduate studies or the graduate coordinator in French at the beginning of their junior year.

Program in Italian Studies

Course requirements. All candidates for a master's degree in Italian Studies are required to take a minimum of 30 credit hours or 10 courses. "Introduction to Literary Criticism," required of all students, is taken during the second semester of residence. The minimum of 10 courses includes four to six courses in Italian literature (two of these courses may be taken at the 40000 level) and one course in Comparative Romance Literature. The remaining credit hours may be fulfilled through Italian studies courses in Italian literature, history, art history, philosophy, music, architecture, and comparative literature.

Comprehensive Master's Examination. The written master's examination is four hours in length and covers the following areas: Medieval, Renaissance, 17th and 18th centuries, 19th century, and 20th century. The exam tests the candidate's knowledge of two areas of concentration and competency in the remaining fields.

Combined B.A./M.A. Program in Italian Studies.

The Department of Romance Languages and Literatures offers its majors in Italian Studies the opportunity to participate in its graduate program through a combination B.A./M.A. degree in Italian Studies. This program requires students to complete a first major in Italian (i.e., at least 30 hours of course work) during the normal four-year undergraduate period, followed by a total of 30 credit hours of graduate courses taken during the fourth and fifth years in residence. Six credit hours will be counted toward both the undergraduate and the graduate degrees. During their senior year, participants in this program complete two graduate courses, take the qualifying exam given to all first-year graduate students, and apply to the Graduate School for admission during the spring semester. B.A./M.A. students are eligible for a teaching fellowship during their fifth year that includes a tuition waiver and a generous teaching stipend. Well-qualified students who are interested in this program should contact the director of graduate studies or the graduate coordinator in Italian Studies at the beginning of their junior year.

Program in Iberian and Latin American Studies

Course requirements. All candidates for a master's degree in Iberian and Latin American Studies are

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required to take a minimum of 30 credit hours or 10 courses. "Introduction to Literary Criticism," required of all students, is taken during the second semester in residence. The minimum of 10 courses includes at least six courses in Iberian and Latin American literature and one course in Comparative Romance Literature; when appropriate, a course in art, history, philosophy, or another allied field may substitute for the Comparative Romance Literature course with permission. Two of the 10 courses may be at the 40000 level.

Comprehensive Master's Examination. For the final written examination, the student chooses six of eight fields in which to be examined. The fields include: medieval, Golden Age, 18th- and 19th-century peninsular, 20th-century peninsular; colonial Spanish American, Independence through Realism/Naturalism, "modernism" through the Avant Garde, and contemporary Spanish American. For the two fields not examined, the student must demonstrate competency through successful completion of appropriate course work.

Combined B.A./M.A. Program in Iberian and Latin American Studies. The Department of Romance Languages and Literatures offers its majors in Spanish the opportunity to participate in its graduate program through a combination B.A./M.A. degree in Spanish. This program requires students to complete a first major in Spanish (i.e., at least 30 hours of course work) during the normal four-year undergraduate period, followed by a total of 30 credit hours of graduate courses taken during the fourth and fifth years in residence. Six credit hours can be counted toward both undergraduate and graduate degrees. During their senior year, participants in this program complete two graduate courses, take the qualifying exam given to all first-year graduate students, and apply to the Graduate School for admission during the spring semester. B.A./M.A. students are eligible for a teaching fellowship during their fifth year that includes a tuition waiver and a generous teaching stipend. Well-qualified students who are interested in this program should contact the director of graduate studies and/or the graduate coordinator in Spanish at the beginning of their junior year.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week
- Course description

While an individual course may not be offered each year, courses that cover the area of specialization are normally offered within the two years that it takes to complete the degree requirements.

Romance Literatures (LLRO)

60085. Development of Multimedia Materials for Language Teaching

(3-3-0)

This course investigates the parameters involved with multimedia materials development, explores second language acquisition (SLA) research and its impact on language teaching, and analyzes and critiques textbooks and other teaching materials. Participants are asked to write a prospectus, including rationale, audience, methodology, and sample materials.

61075. Practicum in Teaching

(1.5-1.5-0)

This weekly practicum is designed for graduate students who serve as Teaching Assistants in the Department of Romance Languages. The course focuses on the development of organizational and presentation skills needed to excel as a foreign language teacher. Students carry out micro-teaching projects and collaborate to develop a portfolio of their own activities based upon the principles learned in the course.

63050. Introduction to Literary Criticism

(3-3-0)

This course provides extensive coverage of the different issues and approaches in the field of literary criticism and literary theory while also affording the opportunity for in-depth examination of some of the questions raised by these approaches. It begins with a consideration of Saussure's *Course in General Linguistics*, and observes how concepts gleaned from this course have influenced critical theories such as semiology, structuralism, psychoanalysis, and deconstruction. Other topics include modern aesthetics as well as the political, social, and cultural problems raised in post-colonial and gender-based critical approaches.

63075. Foreign Language Acquisition and Instruction

(3-3-0)

An introduction to theories of foreign language acquisition and methods of foreign language instruction related to them, including the direct, cognitive, communicative, and input (natural) approaches. Required of teaching assistants in the department.

63105. Paleography

(3-3-0)

An introduction to Latin paleography from the beginnings of Latin writings to about 1500. Seminars will cover the developments of handwriting over the course of this period and practical exercises in reading various hands. Special emphasis will be given to the technique of describing medieval manuscripts, to the nature of paleographical research, and to the implications of paleography for other forms of research. Students are expected to have a working knowledge of Latin.

63245. Petrarch: The Soul's Fragments

(3-3-0)

Before taking up the *Canzoniere* we'll consider the life of Petrarch, his intellectual activity and his other works, including selections from his epistolary collections (*Letters on Familiar Matters* and *Letters of Old Age*) and other Latin works, especially the *Secretum* (Petrarch's Secret). Our reading of the

Canzoniere will utilize Santagata's recent edition and commentary and will engage critically a variety of hermeneutical and philological approaches to the book. The seminar will be conducted in English but reading knowledge of Italian is essential.

63540. History of Italian Cinema I

61540. Italian Cinema Lab

(3-3-3)

This course will trace the history of Italian cinema and the development of film culture from the arrival of Edison and the Lumières to the fall of the Fascist regime. For the early period, topics will include: the cinema of attractions and the transition to narrative cinema; film genres and film style: comedies, historical spectacles, melodrama; the discourse of the author; divismo; distribution and exhibition practices; cultural reception: literary intellectuals and the origins of cinema literature: early film criticism, film theory, and "film fiction." For film in Italy between the wars, topics include: the transition to sound and the *questione della lingua*; the rebirth of the film industry and discourses of national identity; film comedy, melodrama, and spectacle; Hollywood in Fascist Italy; film magazines and movie-fan culture; the origins of film historiography; the Fascist regime, the Church, and cinema in the 1930s; colonialism in film; theatricality and calligraphism; *Ossessione* and the discourse of proto-neorealism. Requirements will include: extensive readings in film history and criticism; critical analysis of films; mandatory film screenings; participation in class discussion; a number of class presentations; a research paper.

63762. Immigrant Voices in Contemporary Brazilian Literature

(3-3-0)

The literary representation of European (Italian, German, and Spanish) and non-European (Japanese and Lebanese) immigrants in contemporary Brazilian prose fiction. Topics to be addressed include: the role of minorities in Brazil; ethnic and cultural diversity; national and communal identity; traveling and exile; home, belonging, and dislocation; and the relationship between memory and writing. Authors studied include Moacyr Scliar, Samuel Rawet, Nélida Piñon, and Milton Hatoum. Texts and discussions in English.

63928. Literature of Madness and Altered State

(3-3-0)

This course will examine the literary representation of the alteration of consciousness through madness, alcohol, drugs, or other means such as metamorphosis or the proximity of death. The investigation of complex and original configurations of subjectivity and intersubjectivity, and the analysis of unusual experiences of time and space, will afford an explicit formulation of the manners in which the culture of the West has posed the question: "Who am I?" The role of literature and art in this interrogation will also be considered. Texts by Euripides, de Quincey, Balzac, Baudelaire, Nerval, Maupassant, Dostoevsky, Kafka, Mann, Cortázar, Fitzgerald, Beckett, Blanchot, and Artaud and perhaps a film by Polanski. Secondary readings in Freud, Deleuze, Lacan and Foucault.

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63941. Transatlantic Literature and the History of Travel
(3-3-0)

This course approaches early modern Europe and its interactions with the Americas through the lens of a theoretical and practical preoccupation with the history and literature of travel. We'll begin with a preliminary theoretical part focused by two primary texts (Gilgamesh and Italo Calvino's *Invisible Cities*) together with selected theoretical writings (E. Leed, C. Kaplan, D. McCannel, T. Todorov). A "cartography and literature" section dedicated to cartographical and literary sources documenting the transition from medieval to modern ("Atlantic") travel will follow: medieval mappamundi, "Dante's Ulysses," Boccaccio's "De canaria," Petrarch "viator," portolan charts, Ptolemy's *Geografia*. The balance of the course will be dedicated to the study of a series of early modern Transatlantic "auctores," including Columbus, Vespucci, Vaz de Caminha, Antonio Pigafetta, Luís de Camões, Jean de Léry, Philip Sidney, the Inca Garcilaso de la Vega. Discussion of primary texts will be complemented by an anthology of critical readings to include selections from Tom Conley (*The Self-Made Map*), Stephen Greenblatt (*Marvelous Possessions*), David Harvey (*Spaces of Hope*) Frank Lestringant (*Mapping the Renaissance World*), Tvetzan Todorov (*The Conquest of the New World*), Michel de Certeau (*The Writing of History*), and Roland Greene (*Unrequited Conquests*) among others. Participants in the seminar are invited to develop a research paper based on sources in their primary "national" literary field but with a significant "transatlantic" comparative and/or theoretical component.

63948. Film and Literary Interactions
(3-3-0)

The historical interactions of film and literature in a broadly comparative and theoretical framework.

63965. Fantastic: Theory and Practice
(3-3-0)

A theoretical and practical approach to the theme of the fantastic in literary texts produced in Spanish-speaking America.

63990. Luso-Brazilian Literature and Society
(3-3-0)

This course will focus on questions of national identity in the Luso-Brazilian world. We will examine how social and cultural issues are perceived, conceptualized, represented, and understood in and by literature. The course will pay particular attention to how literature depicts important human problems such as gender and race relations, the crafting of national identity and national heroes, class conflict, family structure, and some ideological values such as success, love, happiness, fairness, misfortune, destiny, honesty, equality, and faith. Authors to be studied will include Manuel Antônio de Almeida, Machado de Assis, Jorge Amado and Guimarães Rosa, on the Brazilian side, and Miguel Torga, João de Melo, José Saramago and Lídia Jorge, on the Portuguese side. Conducted in English with readings in Portuguese or English (discussion group available in Portuguese). Requirements will include active class participation, two oral presentations, and two papers.

63995. Dictatorship in Luso-Brazilian Fiction and Film
(3-3-0)

This course explores the role of the dictator as painted in popular fiction and film production.

66000. Directed Readings
(3-3-0)

Specialized reading related to the student's area of study.

68599. Thesis Direction
(0-0-0)

For students doing thesis work for a research master's degree.

68600. Nonresident Thesis Research
(1-1-0)

For master's degree students working in absentia.

French Studies (ROFR)

63050. French Graduate Reading
(0-3-0)

A course designed to prepare students for the Graduate Reading Examination. No prerequisites. Open to undergraduate students by permission of the chair.

63075. Teaching Methods II
(1.5-1.5-0)

This course is only open to Graduate Teaching Assistants in French in the Department of Romance Languages and Literatures. It will continue to prepare Teaching Assistants to teach elementary French courses. It will cover basic teaching techniques/methods used in the French curriculum, course management, as well as test design and evaluation techniques.

63100. Introduction to Old French
(3-3-0)

This course is designed to be an introduction to the language and dialects of medieval France, including Anglo-Norman. Readings will include texts written between the twelfth and the fourteenth centuries, such as the *Lais* of Marie de France, *trouvère* poetry, the prose *Lancelot*, Machaut, and Froissart.

63115. Lyric and Narrative in Medieval French Literature
(3-3-0)

A study of narrative transformations of the themes of the courtly lyric in the 13th and 14th centuries.

63118. Visions and Miracles: Religious Literature of Medieval France
(3-3-0)

One of the themes of the course will be the overlap between sacred and secular, and the appropriation of secular genres by religious writers.

63220. Lyric Poetry of the Renaissance
(3-3-0)

An in-depth study of the oeuvre of one or two poets (e.g., Du Bellay), including non-amatory poetry.

63222. Love Poetry of the Renaissance
(3-3-0)

An in-depth reading of the love lyrics of Ronsard or Maurice Scève, particularly as they relate to the Italian Petrarchist tradition.

63316. Pascal
(3-3-0)

An in-depth investigation of the scientific, polemical, and apologetic works of Blaise Pascal.

63324. Poets on Poets in Poetry
(3-3-0)

In examining the poet as thematic subject of the poem, we will have occasions to read from the works of DuBellay, Ronsard, Hugo, Baudelaire, Verlaine, Valéry et. al., as well as offerings from lesser known contemporary writers. The course will, therefore, serve as both a wide-ranging survey of French poetry and as a forum for close reading.

63415. French Enlightenment and the Terror
(3-3-0)

This course focuses on great 18th century writers' influence on the French Revolution.

63601. Literature of the Fin-de-Siècle and the Belle Époque
(3-3-0)

Prose and poetry by Huysmans, Rachilde, Noailles, Mallarmé, Barrès, Gide, Proust, Valéry, and Colette, within the context of aesthetics at the turn of the 20th century. Excerpts from the writings of Schopenhauer, Nietzsche, and Bergson. Discussions of music (Wagner, Debussy) and dance (Duncan, Diaghilev).

63617. Baudelaire
(3-3-0)

The purpose of this course will be to undertake a sustained and in-depth study of Baudelaire's poetic and critical works. Our goal will be to arrive at an understanding of Baudelaire's aesthetics that is both detailed and broad. Special attention will be given to his situation with respect to French Romanticism. Several representative secondary works will be considered as well.

63731. Proust: A World Lost and Regained
(3-3-0)

Considered by many to be the greatest French novelist of the twentieth century, Marcel Proust remains vastly influential to this day. Not only did he recover a world through his creative exploration of memory, but he also established a new type of novel in which poetic prose alternates with the criticism of art, history, society, politics, and psychology. The semester will be dedicated to reading four volumes from Proust's monumental work, *A la recherche du temps perdu*, along with some of the most important critical texts written on Proust and *la Recherche*. Classes conducted in French.

63870. Shifting Tableaux of "Caribbeanness": Postcolonial Discourses in French Caribbean Literature.
(3-3-0)

This seminar will explore the particular contributions of the French Caribbean to 20th-century postcolonial theory and criticism. Topics include the

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early modern imagining of “the uncivilized island savage,” postcolonial rearticulations of “Caribbeanness,” and how race, gender, class, and sexuality complicate the term “postcolonialism” in the context of the Caribbean.

63952. Intertexts: France and North Africa (3-3-0)

This course will explore textual relations between French and North-African literary works as one possible opening onto inter-cultural dialogue. We will first look at French writers and artists who visited or resided in Morocco and Algeria from the early nineteenth through the late twentieth centuries and who were seemingly guided by an aspiration to understand the cultures they encountered. We will examine aesthetic representations as well as the travel diaries and correspondence of painters such as Eugène Delacroix, Théodore Chassériau, Eugène Fromentin, and Henri Matisse; the travel narratives of Fromentin (*Une année dans le Sahel*), Pierre Loti (*Au Maroc*), and Isabelle Eberhardt (excerpts from *Écrits sur le sable*); short stories by Eberhardt, and novels by Albert Camus (*L'Exil et le royaume*), J.M.G. Le Clézio (*Désert*), Michel Tournier (*La Goutte d'or*), and Didier Van Cauwelaert (*Un aller simple*). In the latter part of the semester we will explore North-African texts that respond in some way to the works previously examined. Writers will include the Algerians Assia Djebar (*Femmes d'Alger dans leur appartement*, *L'Amour la fantasia*) and Malika Mokkeddem (*Le Siècle des sauterelles*), as well as the Moroccans Driss Chraïbi (*Le Passé simple*) and Tahar Benjelloun (*Cette aveuglante absence de lumière*). Studies by Edward Saïd (*Orientalism*) and Fatimah Mernissi (*Beyond the Veil: Male-Female Dynamics in a Modern Muslim Society*), among others, will enable us to approach Islamic culture as well as the issues of French colonialism and the condition of women in North Africa. Discussions conducted in French.

63953. Discourse & Women in Francophone Literature (3-3-0)

A characteristic trait of feminine Francophone literature in sub-Saharan Africa is the breaking of silence by women in order to affirm their self-reliance. This course contrasts the narrative differences between male and female African writers in Francophone sub-Saharan Literature and deals with women's social roles in the material transformation of post-colonial Africa.

66000. Directed Readings (0-0-0)

Specialized reading related to the student's area of study.

76000. Directed Readings (0-0-0)

Specialized reading related to the student's area of study.

78599. Thesis Direction (0-0-0)

For students doing thesis work for a research master's degree.

78600. Nonresident Thesis Research (1-0-0)

For master's degree students working in absentia.

Italian Studies (ROIT)

61075. Practicum in Teaching Italian (3-3-0)

This is the second part of the Italian teaching practicum required for first-year graduate students. Students will continue to practice and discuss in-class methods in conjunction with theories of second language acquisition. Emphasis will be given to teaching with multi-media technology materials and students will begin portfolio creation.

63050. Italian Graduate Reading (0-3-0)

This one semester, intensive study of Italian grammar and syntax is intended for graduate students working in the humanities or sciences, who are interested in acquiring reading proficiency in Italian.

63090. The Italian “Questione della Lingua” and the Renaissance History of the Book (3-3-0)

An advanced introduction to the history of the Italian language from *Le origini* to the High Renaissance with special emphasis on Dante, Petrarch, and Boccaccio during the medieval period and Bembo, Castiglione, and Machiavelli for the Renaissance.

63117. Boccaccio (3-3-0)

A textual analysis of the *Decameron*, with emphasis on structure and themes. Different critical approaches will be used in the analysis of individual tales, their relationships to the frames and their reflection on Boccaccio's society.

63120. Topics in Medieval and Renaissance Literature (3-3-0)

A study of the genres, movements, and major writers of the medieval and Renaissance periods. The course varies from year to year, but past topics have included Boccaccio, lyric poetry, Dante's *Paradiso*, Petrarch, Machiavelli, and Ariosto.

63211. Calvino & Levi (3-3-0)

A study of all the major novels and selected short stories of Primo Levi and Italo Calvino, the two greatest narrators of the second half of the twentieth century in Italy.

63640. Teatro del novecento (3-3-0)

An exploration of the rich tradition of theatre, drama and spectacle in modern Italian culture. Topics include: the verismo theatrical tradition of Giovanni Verga, Nino Martoglio, and Salvatore Di Giacomo; the Mediterranean tragedies of Gabriele d'Annunzio and the aesthetic and political implications of his poetics of spectacle; Futurist theatre and the European avant-garde; Pirandello's theatrical art and European modernism(s). The

variety theatre, the dialect theatre and the relationship between theatre and cinema will also be examined. Class requirements include thorough preparation of dramatic texts and critical materials, attendance at a number of film screenings outside of class, a number of brief papers and oral presentations, a midterm and a final exam.

63720. Modern Italian Poetry (3-3-0)

Addressed to graduate and advanced undergraduates, this course focuses on Italian poetry in the twentieth century. Italian poets include D'Annunzio, Pascoli, Gozzano, Marinetti, Ungaretti, Saba, Montale, Pasolini, Sanguineti, Zanzotto, Rosselli, Giudici, and Luzi. The role of translation in the evolution, transmission and diffusion of modern Italian poetry will also be considered. Requirements include a 20/30 minute seminar presentation, class participation including brief reports on critical readings and a final research paper.

63824. Modern Italian Novel (3-3-0)

The development of the Italian novel from the beginning of the nineteenth century until the 1930s. Writers studied include Foscolo, Manzoni, Verga, Collodi, Palazzeschi, Pirandello, Aleramo, Svevo, and Moravia.

63905. La letteratura di viaggio: storia e critica (3-3-0)

The problematic place of travel within the context of Italian literary history and the relationship of travel to the category of the literary itself is studied in primary source texts of the medieval, Renaissance, and modern periods.

63908. Twentieth-Century Italian Women Writers (3-3-0)

This course examines the development of female discourse in novels of this century, starting with a text by Nobel Prize winner Grazia Deledda and ending with best-selling contemporary author Susanna Tamaro. We will trace and identify the subtleties and variations among women's voices that are slowly establishing more prominent positions within the Italian literary canon. Class discussions, presentation, and writing assignments will examine themes such as childhood, adolescence, and motherhood; feminist movements in Italy and gender roles within certain historical contexts; and the varied nature of relationships between women and men, or women and other women.

66000. Directed Readings (0-0-0)

Specialized reading related to the student's area of study.

78599. Thesis Direction (0-0-0)

For students doing thesis work for a research master's degree.

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Portuguese Studies (ROPO)

67000. Brazilian Immigrant Fiction
(3-3-0)

An advanced level study and analysis of Brazilian letters, especially the literary production known as “unhomely” fiction or Brazilian immigrant fiction.

Spanish Studies (ROSP)

63050. Spanish Graduate Reading
(5 -0- 0)

This course is designed to prepare students for the Graduate Reading Examination. No prerequisites.

63150. The Wane in Spain
(3-3-0)

Despite the reputed cultural belatedness of the Iberian peninsula during the high Middle Ages, by the fourteenth century the Spanish kingdoms had caught up with their European neighbors and entered a period of general decline. The late Spanish Middle Ages is uniquely defined by the ascendancy of the Trastámaras, a bastard line that seizes the throne in 1369 when Enrique de Trastámara murders his half brother, King Pedro I of Castile. The Trastámara dynasty engineers the emergence of Spain as Europe’s first modern nation-state and world empire and the construction of an orthodox, patriarchal “Spanish” and Catholic identity purified of its ethnic, religious, and political others through propaganda, conquest, conversion, colonization, expulsion, and inquisition. The foundational union of Isabel (Castile) and Fernando (Aragon) marked the culmination of the Trastámaran enterprise of political legitimation, centralization, and expansion; the Catholic Monarchs brought to closure seven hundred years of Reconquest, launched Europe’s invasion of a new world, laid the foundations for Spain’s Golden Age, and crafted the moral, political, and social recuperation of Hispania. The seminar will examine the cultural production of this complex and fascinating age — the literary, historical, religious, and political texts generated during the Trastámaran reign — in the context of nation building, the formation of a persecuting society, and the ultimately exclusionary ideology of Isabelline Spain. Texts will include a course packet of selected primary and critical texts plus: Juan Ruiz, *Libro de buen amor*; Don Juan Manuel, *Libro del conde Lucanor*; Alfonso Martínez de Toledo, *El arcipreste de Talavera*; sentimental romances (*Grisel y Mirabella*, *Servio libre de amor*, *Cárcel de amor*), and *Celestina*.

63230. Cervantes and His Time
(3-3-0)

A close reading of Cervantes’ *Don Quijote* in relation to the prose tradition of the Renaissance: novella, the pastoral romance, the romance of chivalry, the humanist dialogue, and the picaresque novel. We will also pay attention to the historical, social, and cultural context of the work.

63235. Autobiographical Narratives of the Golden Age
(3-3-0)

A study of fictional and historical autobiography in the Golden Age with attention to the development of the genre and the social and political problems

represented in such texts as *Lazarillo de Tormes*, *Guzmán de Alfarache*, *El Buscón*, *Estebanillo González* as well as the spiritual autobiography of *Santa Teresa de Jesús*, the life of the soldier *Alonso de Contreras*, and the adventures of *Catalina de Erauso*, *La monja Alférez*.

63240. Golden-Age Theatre
(3-3-0)

In this course we will read representative plays by Cervantes, Lope de Vega, Tirso de Molina, Ruiz de Alarcón and Calderón de la Barca in their historical and cultural context. The works will be studied in the light of the theatrical theory of the period as well as contemporary criticism.

63370. Nineteenth-Century Spanish Novel
(3-3-0)

Two forms of literary representation in the novel from the 1840s to the 1880s: the romantic-melodramatic and the realist-naturalist form.

63422. Generation of ‘27
(3-3-0)

The Generation of 1927, known as the second Golden Age of Spanish poetry, is the name given to a group of poets who wrote during the third and fourth decades of this century. This generation is primarily represented by poets like Alberti, García Lorca, Salinas, Guillén, Cernuda and Alexandre. Their poetry is as varied thematically and stylistically as it is innovative. One of the purposes of the course is to develop and enhance the understanding of the works they wrote and thereby develop and enhance the understanding of the hermeneutic process of reading poetry. With these aims in mind, the course will focus on the metaphorical experiments these poets introduce, their stylistic development, thematic preoccupations, their relation to the different avant-garde literary movements of the time and their personal aesthetic credos. These aspects will be studied against the intellectual and social background of their time and country.

63430. Twentieth-Century Spanish Prose
(3-3-0)

A study of the development of the novel as an artistic genre in 20th-century Spain, from the Spanish-American War of 1898 to modern Spain examined within the context of the social, political, aesthetic, and intellectual crisis of the times in which they were written.

63611. de las Casas: Context/Resonance
(3-3-0)

The Spanish conquest of Central and South America generated a crisis of conscience in Spanish universities and in Spain at large. People wanted to know: was the conquest justified, and if not, seeing that it could not be undone, what were the invaders to do? In this prolonged and often bitter debate, Bartolomé de las Casas (1484-1566), Dominican friar and bishop of Chiapa in Mexico, formulated what still are among the most moving and intellectually incisive arguments for the equality of all human beings. He also wrote one of the earliest comparative histories of civilization (the *Apologética Historia*). The task of the course is to understand the thought of Las Casas and his followers in its sixteenth century context,

and then to enquire into the connections between the ideas of Las Casas and contemporary theologians of liberation, in particular Gustavo Gutierrez.

63658. Modernization and “Modernismo” in Spanish America: A Critical View
(3-3-0)

An in-depth study of processes of modernization in Latin America and the literary production, written between 1880 and 1910, as responses as well as aesthetic and ideological propositions to the socio-political transformations of the region. Special attention will be paid to the lyric production, but other aesthetic systems, such as narrative fiction (short stories and novels), and essay will be studied.

63722. Spanish-American Poetry: The Avant Garde
(3-3-0)

An in-depth exploration of Spanish-American avant-garde poetry and its legacies. Emphasis will be on close readings of the texts along with recent developments in critical theory. The poets to be considered are: Vicente Huidobro, Jorge Luis Borges, Oliverio Girondo, César Vallejo, Pablo Neruda, Octavio Paz, Nicanor Parra, and José Emilio Pacheco.

63918. Nature and Latin American Identity
(3-3-0)

In this graduate seminar we will trace the images and metaphors with which Spanish American writers and interested foreign travelers have described Latin American Nature. The goals of this class are primarily two: 1) to explore images of Latin American nature; 2) to understand how these images impinge on other issues, such as national identity. We will read a diverse collection of texts (by authors such as Sarmiento, Gallegos, Revera, Neruda, but also Humboldt and Darwin) from the 19th and 20th centuries, with a few incursions into key colonial texts (the *Popol vuh*, Columbus, Carvajal), as well as selected theoretical readings.

63960. Contemporary Spanish-American Poetry
(3-3-0)

An overview of the major trends in Spanish-American poetry since the “vanguardia,” with an emphasis on poetics and the social inscription of the works. Authors studied include José Lezama Lima, Octavio Paz, Ernesto Cardenal, Alejandra Pizarnik, Nancy Morejón, Raúl Zurita, and others.

63970. Modern Spanish-American Novel
(3-3-0)

Studies, through representative works, the modern aesthetic, cultural, and historical tendencies that characterize the 20th-century Spanish-American novel.

63975. Spanish-American Short Story
(3-3-0)

An overview of the principal tendencies of short narrative in 20th-century Spanish America, as well as major trends in narratological theory. Among the authors discussed are Horacio Quiroga, Jorge Luis Borges, Julio Cortázar, Rosario Ferré, Antonio Skármeta, and Luisa Valenzuela.

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66000. Directed Readings
(0-0-0)

Specialized reading related to the student's area of study.

76000. Directed Readings
(3-3-0)

Specialized reading related to the student's area of study.

78599. Thesis Direction
(0-0-0)

For students doing thesis work for a research master's degree.

78600. Nonresident Thesis Research
(1-0-0)

For master's degree students working in absentia.

Faculty

Samuel Amago, *Assistant Professor of Spanish Language and Literature*. B.A., Univ. of California, San Diego, 1996; M.A., Univ. of Virginia, 1999; Ph.D., *ibid.*, 2003. (2003)

José Anadón, *Professor of Spanish Language and Literature*. B.A., Albion College, 1968; M.A., Univ. of Michigan, 1970; Ph.D., *ibid.*, 1974. (1975)

Thomas Anderson, *Assistant Professor of Spanish Language and Literature and Fellow in the Helen Kellogg Institute for International Studies*. B.A., Bowdoin College, 1992; M.A., Univ. of Pennsylvania, 1994; Ph.D., *ibid.*, 1998. (1998)

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Theodore J. Cachey Jr., *Chair, Professor of Italian Language and Literature, and the Albert J. Ravarino Director of the Devers Program in Dante Studies*. B.A., Northwestern Univ., 1974; M.A., Univ. of California, Los Angeles, 1982; Ph.D., *ibid.*, 1986. (1990)

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María Rosa Olivera-Williams, *Associate Professor of Spanish Language and Literature, and Fellow in the Helen Kellogg Institute for International Studies*. B.A.S., Univ. of Toledo, 1976; M.A., Ohio State Univ., 1978; Ph.D., *ibid.*, 1983. (1982)

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John P. Welle, *Professor of Italian Language and Literature, Concurrent Professor of Film, Television, and Theatre, and Fellow in the Nanovic Institute for European Studies*. B.A., St. John's Univ., 1974; M.A.T., St. Thomas College, 1975; M.A., Indiana Univ., 1980; Ph.D., *ibid.*, 1983. (1983)

Theology

Chair:

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Director of Graduate Studies:

J. Matthew Ashley

Director of M.T.S. Program:

Randall C. Zachman

Director of M.Div. Program:

Rev. Michael E. Connors, C.S.C.

Director of M.S.M. Program:

Rev. Michael Driscoll, S.T.D.

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Master of Arts Program

The master of arts in theology is a terminal degree for individuals who desire advanced theological training. Graduates of this program should be able to serve as theological resources in variety of settings. Recipients of this degree will have received instruction in the classical areas of theological inquiry while acquiring expertise in one.

The program serves the following constituencies:

- those seeking to teach theology at the high school level;

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- those seeking to serve the church or diocese in an enhanced capacity;
- those pursuing theological training to augment their work in other professional contexts (i.e., hospitals, social work, etc.);
- those desiring personal enrichment.

Students seeking to go on for doctoral work in theology, or desiring more extensive preparation for teaching, should consider applying to the M.T.S. program.

Applicants must have GRE scores of 1500 or better, 1000 and 4/6 in the new test, and at least two three-credit courses for credit in theology or religious studies on their official transcripts.

Program Description

The M.A. in theology is a 42 credit-hour degree. M.A. students may take courses during the summer and/or academic year for credit towards their degree.

There are six areas of concentration for the M.A. in theology: biblical studies, history of Christianity, liturgical studies, moral theology, spirituality, and systematic theology.

Apart from liturgical studies, an area of concentration is normally constituted by:

- six courses in the area of concentration;
- one course each in five other areas;
- three free electives.

Liturgical Studies

Basic requirements (21 credits) include: Liturgical history, liturgical theology, ritual studies, Eucharist, Christian initiation, liturgical prayer, and liturgical year. Students in liturgical studies will also pursue one course each in five other areas (15 credits), and two free electives (6 credits).

Those needing a more general and flexible program of studies may pursue a general M.A. program, in which the course of study is planned in consultation with the director. The sole requirement is the inclusion of at least one course in each area of study. This may be of particular interest to those teaching theology in high school who wish to use the M.A. to enhance their effectiveness in teaching in a number of different areas.

Comprehensive Exams

In the last semester of course work, students should prepare five questions that they would like to explore in the comprehensive exams. These questions will guide both the student and the adviser in the construction of exam bibliographies. The student should then meet with the area adviser to refine these questions and construct her/his bibliography. A bibliography should be made up of 20 books, with 12 books from the bibliography in the area of concentration and two books from each of the other four areas. The bibliography should also contain five recent journal articles, so that students become acquainted with the journals in their fields of study. The bibliographies must be approved both by the area adviser and the M.A. director no later than one month before the

student hopes to take exams. M.A. exams are given in November, April, and July. Students must be enrolled and registered for a thesis research class during the semester they plan to take their exams.

The exam board, to be chosen by the M.A. director in consultation with the area adviser, will be made up of two faculty from the area of concentration, and one faculty from another area. Students pursuing the general M.A. degree may have an exam board chosen from three different areas. The student may confidentially choose the inclusion of one member of the board (subject to availability), and the exclusion of one faculty member. Each member of the exam board will submit three questions, framed in light of the five questions proposed by the student, to the area adviser, who will then formulate five questions, and submit them to the summer M.A. director for final approval.

The comprehensive exams themselves are made up of written and oral exams. The student will be asked to answer three of the five questions during the four-hour written exams, given on the Monday of exam week. These written answers will then be distributed to the board members, and will form the basis of the 40-minute oral exam on Wednesday or Thursday of the same week. During the oral exams, questions not answered by the student on the written exam may be addressed, as may books on the bibliography and courses taken by the student. Evaluation of the student's performance will be made on the basis of both the written and oral exams.

Applications

Applications to the summer M.A. program are due May 1 and must include an application form, a statement of intent, transcripts of degrees and course work, three letters of recommendation, and GRE scores. All application materials should be directed to the Graduate School.

The Master of Theological Studies Program

The master of theological studies (M.T.S.) is specifically designed to train graduate students for future doctoral work in the various disciplines within the study of theology. The M.T.S. is a 48-credit-hour degree designed to give students exposure to the full range of theological studies while also allowing them to develop competence in an area of concentration. Along with two years of full-time course work, the M.T.S. also includes participation in the master's colloquium, competency in one modern language, and a comprehensive oral exam to be given at the end of the second year of course work. Biblical studies and history of Christianity also have ancient language requirements.

In order to introduce every M.T.S. student to the full range of theological education, every student in the program must take at least six credit hours in biblical studies, six in the history of Christianity, three in liturgical studies, three in moral theology, and three in systematic theology. There are five areas of concentration. Students must take at least 15 credit hours in the area of their concentration. Students

may choose from a broad range of courses offered at the 500 level. They may also take Ph.D. seminars, provided they first secure the permission of the course instructor and the M.T.S. director.

Areas of Concentration

Biblical Studies: The concentration in biblical studies involves 15 credit hours in biblical studies, six in history of Christianity, three in liturgical studies, three in moral theology, and three in systematic theology. In place of electives, biblical studies students will take nine credit hours in one ancient language (Greek, Hebrew, or Latin) and nine credit hours in another ancient language.

History of Christianity: The concentration in history of Christianity involves 15 credit hours in history of Christianity (with the possibility of three to be taken outside the department), six in biblical studies, six in systematic theology, three in liturgical studies, and three in moral theology. Six credit hours will normally be devoted to the study of ancient languages. Nine credit hours will be electives, distributed according to the interests of the students, and may include courses outside the Department of Theology (e.g., philosophy, Medieval Institute, history, art history, etc.), with the prior approval of history of Christianity faculty and the M.A./M.T.S. director.

Liturgical Studies: The concentration in liturgical studies will involve 15 credit hours in liturgical studies, six in biblical studies, six in history of Christianity, six in systematic theology, three in moral theology, and 12 in electives.

Moral Theology: The concentration in moral theology will involve 15 credit hours in moral theology, nine in a second area, six in a third area, six in a fourth area, three in a fifth area, and nine credits of electives. In the fourth semester of course work, students in the area will be required to take a research seminar and prepare to present a research paper in a public format, similar to a scholarly conference, in preparation for future work in the academy.

Systematic Theology: The concentration in systematic theology will consist of 15 credit hours in systematic theology, six in biblical studies, six in history of Christianity, six in liturgical studies, six in moral theology, and nine in electives, including three credit hours in Judaism.

Master's Colloquium

The master's colloquium is designed both to familiarize M.T.S. students with the methods and content of the five areas of theological study and to develop integrative skills regarding the five areas of theological investigation. A faculty member and a student lead each colloquium from one of the five areas, presenting a topic of interest to the colloquium and leading the ensuing seminar discussion. Attendance is mandatory for all M.T.S. students.

Research Language Requirement

All M.T.S. students must pass a Graduate Reading Exam in either German or French, usually by the end of their third semester, in order to graduate. Stu-

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dents who already know one of these languages upon admission to the program should take the GRE in that language in their first semester, and acquire a second language during their time in the program, in order to pass an exam in that language as well. The University offers intensive language courses in German and French, free of tuition, every summer, with exams at the end of the course. Students who wish to acquire a language other than French or German during their time in the program may petition the M.T.S. director for a substitution, based entirely on their future research interests. This language may not be one they already know upon admission to the program, as the point of this requirement is to continue to acquire language skills while in the M.T.S. program.

Comprehensive Exams

The comprehensive exams are administered toward the end of the final semester of course work. M.T.S. students are asked to submit two research papers written in their second year of courses that indicate the nature and direction of their studies. A board of three faculty, appointed by the M.T.S. director on the basis of course work taken by the student, administers a 60-minute oral exam, which explores the student's competency in the area of concentration and the student's ability to think creatively and synthetically.

Prerequisites

- a bachelor's degree
- a background in the humanities (preferably including theology or related disciplines) and/or the social sciences
- Graduate Record Examination scores with an aggregate score of at least 1800, or 1200 and 4.5/6 for the new exams

Tuition Scholarships

Students admitted to the M.T.S. program receive full-tuition scholarships for the duration of their program.

Applications

Applications to the M.T.S. program are due February 1 and must include an application form, a statement of intent, transcripts of degrees and course work, three letters of recommendation, and GRE scores. All application materials should be directed to the Graduate School.

To receive more information about the M.A. or the M.T.S. programs, please contact:

Director of the M.A. / M.T.S. Program
130 Malloy Hall
Department of Theology
University of Notre Dame
Notre Dame, IN 46556-4619

Telephone: (574) 631-5254
E-mail: theo.1@nd.edu
Web: <http://www.nd.edu/~theo>

The Master of Divinity Program

The master of divinity (M.Div.) is a professional theological degree designed to prepare students for learned and effective ministry in the Roman Catholic Church. The studies of Scripture, the history of Christian tradition, systematic theology, liturgy, and Christian ethics are joined to field experience, training in pastoral skills, and formation to form a comprehensive ministerial curriculum.

The Program of Studies

The program of studies leading to the master of divinity (M.Div.) degree encompasses 83 semester credits and normally extends over six semesters. Credit requirements are allocated as follows:

Biblical studies	12 credits
Historical studies	6 credits
Systematic theology	15 credits
Christian ethics	6 credits
Canon law	3 credits
Liturgical studies	6 credits
Field education	10 credits
Pastoral studies	14 credits
Elective	9 credits
Synthesis seminar	2 credits

Field Education

Field education serves as an integral complement to the theological and pastoral education of ministry students, as well as to their spiritual formation and vocational preparation. In concert with these other dimensions of the M.Div. program, field education provides those preparing for ministry varied opportunities for acquiring ministerial skills, for integrating their ministerial experiences through theological reflection, and ultimately for developing their ministerial identities. To make these opportunities possible, field education consists of the following:

- weekly service at a ministerial site during each of the three academic years in the M.Div. program;
- regular individual supervision with an experienced mentor at the ministry site;
- weekly seminars utilizing case study method and conversations about contemporary theological and ministerial issues.

John S. Marten Program in Homiletics and Liturgics

Inaugurated in 1985 through an endowment by the John S. Marten family, this program annually offers courses in both homiletics and liturgical celebration for students whose ministry will involve the preaching of God's word and leadership in worship. Through the Marten program, M.Div. students benefit from symposia and workshops on preaching in contemporary society, and the program occasionally hosts a visiting professor to offer additional courses in those areas. The vision and generosity of the Marten family ensure the continuance of deep spiritual renewal of local faith communities—a major thrust of Vatican II—and adds a significant dimension to theological education at Notre Dame.

Lay Ministry and Seminary Formation

The Lay Ministry Formation Program (LMFP) is integrally related to the comprehensive curriculum of students preparing for lay ecclesial ministry. Weekly formation events include participation in various forms of communal prayer, including Eucharist, and in facilitated conversation designed to foster ministerial identity, to enhance human and spiritual development, and to promote personal qualities for ministry. Students also engage in regular spiritual direction and group retreats. Both lay and seminarian formation experiences (sometimes through joint events) support students and foster authentic Christian community.

Moreau Seminary, located on the Notre Dame campus, provides for the spiritual formation of Holy Cross seminarians pursuing the master of divinity degree. The Congregation of Holy Cross also offers a one-year candidate program at Moreau Seminary for college graduates who qualify and who have a strong interest in investigating a vocation to the priesthood or brotherhood in Holy Cross. For information to assist in discernment of a vocation to the Congregation of Holy Cross, please contact the Director of Vocations at (574) 631-6385 or vocation.1@nd.edu.

Prerequisites

1. The completion of a bachelor's degree.
2. Evidence of a capacity for graduate level scholarship; such evidence is gleaned from applicant scores on the general test of the Graduate Record Exam, from transcripts of study for the bachelor's degree and any graduate degrees, and from letters of recommendation from three instructors or professors.
3. At least 18 semester credits in philosophy or related disciplines, and 12 semester credits in theology or religious studies.
4. Evidence of psychological and spiritual maturity sufficient to engage in this ministry preparation program; to this end, at least one additional letter of recommendation supporting the applicant's capacity for ministerial leadership is required.
5. At least one year of full-time service work, preferably in ministry in the Catholic Church, or the equivalent.

The Application and Admission Process

Prospective students must first file a pre-application form directly with the M.Div. program. This form is found on the M.Div. website.

Applications must be submitted to the Graduate School by February 1. Applicants are admitted to the program to begin studies in the fall semester only.

Applicants submit an autobiographical statement written according to a form specified by the M.Div. Director. In addition, prospective students must provide a letter of intent specific to the M.Div. program, setting forth their goals for Christian ministry and detailing how the M.Div. program will assist them in meeting those goals.

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Finally, a personal interview is normally required and is held at the University with the admissions committee of the M.Div. program.

For more information, visit the M.Div. website at:

Web: <http://mdiv.nd.edu>

Or contact:

University of Notre Dame
Director, Master of Divinity Program
Department of Theology
131 Malloy Hall
Notre Dame, IN 46556-4619

Telephone: (574) 631-4256
E-mail: mdiv.1@nd.edu

THE MASTER OF SACRED MUSIC PROGRAM

The Master of Sacred Music (M.S.M.) is a ministerial leadership program that prepares students for pastoral liturgical music ministry. The program in sacred music is part of a larger initiative for liturgy and sacred arts. The graduate program is administered in the Department of Theology and overseen by an interdepartmental committee (Music/Theology) and accreditation is granted through the Association of Theological Schools (A.T.S.). Following the principles of the document *Music in Catholic Worship* (Bishops' Committee on the Liturgy: NCCB, 1983, revised edition), the program is multi-disciplinary, embracing in particular three dimensions: musical, liturgical, and pastoral. The program strives to integrate these three dimensions, grounding the student professionally in liturgical music as a ministry.

The M.S.M. is a 48-credit-hour degree, designed to equip students with the following competencies:

1. Professional level of musical competence in a specific area of applied sacred music (i.e. organ or choral - vocal).
2. A capacity for constructive theological reflection; a working knowledge of the worship life of the Catholic Church in its various traditions, both East and West; familiarity with the liturgical documents of the Roman Catholic Church, especially since Vatican II; and an acquaintance with the worship life of Protestant communions. While the setting is identifiably Catholic, liturgy is best learned using an ecumenical approach.
3. Pastoral formation in order to be able to discern whether music in the liturgical celebration will enable the congregation to express its "faith, in this place, in this age, in this culture" (*Music in Catholic Worship* 39).
4. Integration of pastoral, musical and liturgical dimensions.

Master's Colloquium

The master's colloquium is designed both to familiarize M.S.M. students with the methods and content of the disciplines of music and theology and to engage

students with faculty members in discussions about sacred music. Each year several colloquia will address issues common to both liturgy and the sacred arts. These colloquia will ground the interdisciplinary ethos of the programs, and draw the faculty and students into on-going dialogue. Attendance is mandatory for all M.S.M. students.

Practicum

M.S.M. students will benefit from supervised pastoral placement for four semesters in the following places: Basilica of the Sacred Heart, local churches, or residence halls.

The Doctoral Program

Doctoral studies at Notre Dame provide the opportunity for advanced study in theology through specialization in one of five areas.

Christianity and Judaism in antiquity covers four disciplines: the Hebrew Scriptures; Judaism, especially second temple and early rabbinic Judaism; the New Testament and Graeco-Roman world; and other Christian sources to the early medieval period. These are frequently studied in isolation from one another; in CJA they are studied together for their mutually illuminating interrelationships. At the same time, the integrity of each discipline is respected. Judaism is explored in its own right as well as in its relationship to Christianity. Christianity is explored by itself as well as in its dependence upon Judaism and its conscious emerging distinction from Judaism. Both are explored within the larger contexts of the ancient near East and the Greco-Roman world, which are also studied in their own right.

History of Christianity explores the study of the history of Christianity in all its rich complexity. The program focuses on three major periods: ancient, medieval, and Reformation-modern. The University has particularly strong library holdings and faculty resources in the ancient and medieval periods.

Liturgical studies advances the study and understanding of the worship life of the Christian church in its various traditions. The program is inspired by the conviction that liturgy, in its several and diverse manifestations, is the key to the church's identity, ethos, and orientation toward God and the world. It integrates three subdisciplines: liturgical history, liturgical theology, and ritual studies.

Moral theology/Christian ethics studies a number of subdisciplines including foundational, medical, and social ethics. The program encourages interaction with philosophical ethics. While the program concentrates on the Roman Catholic tradition, it engages and is open to a variety of traditions.

Systematic theology engages in the disciplined and critical inquiry into the major tenets of Christian faith, especially as understood within Catholicism. The program addresses a wide range of concerns including the historical development of theology, constructive issues, and comparative theology.

Course of Studies

1. Residency

The period of "residency" normally consists of two years of course work for those who have a master's degree in theology. In the rare case of a student admitted without master's-level work, the period of residency is three years.

Major Fields. Within the program areas, students concentrate their course work in a major field. These major fields are defined as follows:

- Christianity and Judaism in antiquity
 - Hebrew Bible and Judaica
 - New Testament and early church
- History of Christianity
 - Early church
 - Medieval studies
 - Reformation and modern studies
- Liturgical studies
- Moral theology/Christian ethics
- Systematic theology

Course Requirements. Students are expected to take 14 courses during residency: eight of these must be in the major field of study; three must be outside the major fields; and three are electives.

Language Requirements. Students are required to pass examinations in three languages, Greek or Latin, French, and German. Students in systematic theology may substitute Spanish for French or German. The level of competence required is the ability to read standard theological sources pertinent to the area of study with the aid of a dictionary. Students in the history of Christianity program must know the ancient language at an advanced level. Students in liturgical studies are required to know four languages, all at the basic level. Students in Christianity and Judaism in antiquity are required to pass examinations in five languages: one ancient at an advanced level, one ancient at an intermediate level, one ancient at a beginning level, and two modern languages. The language requirement should be fulfilled as soon as possible and must be fulfilled by the end of the second summer of residence.

Advising. When a student enters the program, the faculty member who serves as the coordinator for the area of studies will function as a preliminary adviser. During the second semester in residency, each student, after appropriate consultation, selects an adviser in his or her area of research interest.

Evaluations. At the end of each semester the entire graduate faculty of the department will evaluate the progress of students. These evaluations are designed to facilitate the progress of students through the program and to identify both strengths and weaknesses. Area coordinators write letters to the students reporting the conclusions of the evaluation. These provide more specific commendations and recommendations than course grades. If there is serious doubt about the student's ability to complete the Ph.D. degree, he or she may be asked to leave the program.

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2. Independent Study

After the period of course work, students spend a period of time, normally nine months, of independent study organized around a series of topics. These topics are meant to expand the students' intellectual breadth and skills and involve matters of inquiry that extend beyond their course work. After consultation with the adviser, the student will propose a series of 10 topics, seven in the major field of study and three outside the major field. At least one of the topics in the major field will deal with the subject on which the student intends to write a dissertation. The program of independent study is approved by a committee and forms the basis for candidacy examinations.

3. Candidacy Examinations

Offered only twice a year, in October and March, the examinations are usually taken in the second semester after the two-year residency. The exams consist of three days of written examinations and a 90-minute oral examination. Successful completion of the written examinations is required for admission to the oral examination.

4. Dissertation Proposal

The dissertation proposal is to be submitted by the beginning of the semester following oral candidacy examinations.

5. Dissertation

The completed dissertation must be submitted within eight years from matriculation into the program. After approval by a committee composed of the dissertation adviser and three other readers, the dissertation is defended orally.

Prerequisites

- a bachelor's degree;
- a master's degree or the equivalent with a concentration in the proposed field of study;
- cumulative GREs in the pre-October 2002 format of at least 1800; for the later format, students must have a cumulative score of 1200 on the first two sections and at least 4.5 on the analytical writing section;
- facility in some of the languages required for study in the program: Greek, Latin, Hebrew, French, and German.

The graduate programs are open to all qualified students regardless of religious affiliation.

Scholarships

The doctoral program requires a full-time commitment. For this and other reasons, each doctoral student receives full funding. The funding may come from the University or an outside source. Funding is full tuition plus a stipend for five years or until the student leaves campus, whichever comes first. The University provides three funding programs: department fellowships, minority fellowships, and presidential fellowships. In addition, students receive some benefits for travel to professional conferences and summer dissertation support, and, in their fourth and fifth years are eligible for summer dissertation fellowships.

Applications

Applications to the Ph.D. program are due January 2, and must include an application form, a statement of intent, transcripts of degrees and course-work, three letters of recommendation, and GRE scores. A writing sample of fifteen to twenty pages is highly recommended but not required. All materials should be directed to the Graduate School. Applicants are accepted for matriculation in the fall semester only.

To receive more information about the doctoral program, please contact:

Director of the Ph.D. Program
Department of Theology
University of Notre Dame
121 Malloy Hall
Notre Dame, IN 46556-4619

Telephone: (574) 631-5732
E-mail: theodgs@nd.edu
Web: <http://www.nd.edu/~theo>

Course Descriptions

Each course listing includes:

- Course number
- Title
- (credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

The courses are offered regularly by the department in the course of any two-year period. They are divided into three categories: (1) master's; (2) courses specifically for M.Div. students; and (3) or doctoral courses. For a complete listing of 40000-level courses open to graduate students, please refer to the theology section in the *Bulletin of Information*, Undergraduate Programs.

60002. Elementary Biblical Hebrew I
(3-3-0)

Prerequisite: Six hours of theology. This is a two-semester introductory course in biblical Hebrew; under normal circumstances, the student must complete the first to enroll in the second. The fall semester will be devoted to learning the grammar of biblical Hebrew.

60003. Elementary Biblical Hebrew II
(3-3-0)

Prerequisite: Six hours of theology. This is the second part of a two-semester introductory course in biblical Hebrew normally offered in the Spring; under normal circumstances, the student must complete the first to enroll in the second. The fall semester will be devoted to learning the grammar of biblical Hebrew. The spring semester will be divided into two parts. For the first six weeks we will finish and review the grammar. In the remaining part of the course we will read and translate texts from the Hebrew Bible, Qumran, and Rabbinic literature. The course will focus on developing reading and comprehension skills in biblical Hebrew through the study of biblical texts. In addition, students will learn how to use reference grammars, concordances,

and apparatus to the *Biblia Hebraica*. The course encourages students to think about the grammatical forms and their implications for biblical interpretation.

60004. Medieval Latin Survey
(3-3-0)

This survey of Medieval Latin texts emphasizes literary texts, but some attention will be given to more technical writing as well.

60006. Intermediate Hebrew
(3-3-0)

The course builds on the lessons learned in Elementary Hebrew and offers the opportunity to increase one's knowledge of Hebrew by reading and analyzing passages from the Hebrew Bible. There will also be some reading selections from other texts such as the Dead Sea Scrolls.

60007. Aramaic
(3-3-0)

Prerequisite: One year of Hebrew or Syriac. In addition to covering the grammar and syntax, the principal goal will be to read the biblical texts in Aramaic (Ezra 4:8-6:18; 7:12-26; Daniel 2:4b-7:28). As time permits, we will also read selections from Old Aramaic monumental inscriptions, Imperial or Achaemenid Aramaic (e.g., Elephantine papyri), and Jewish literary Aramaic from the later period (e.g., Genesis Apocryphon).

60008. Greek: Euripides
(3-3-0)

This course will consist of in-depth readings of selections from a number of Euripidean plays, along with a detailed examination of the dramatic, literary, religious and philosophical backgrounds against which they were composed, performed and received. We will be primarily concerned with the language and formal characteristics of the works themselves, but will attend also to the ways in which those works helped define the revolutionary intellectual milieu of late fifth-century Athens, and the methods by which they have been analyzed and explained in 19th- and 20th-century scholarship.

60009. Coptic
(3-3-0)

This course introduces students to Coptic, the final descendant of ancient Egyptian. Coptic is important for an who are interested in the historical Jesus, Gnosticism, textual criticism of the New Testament, asceticism, or early Christian history. We will work our way through a grammar, and then read a selection of texts including excerpts from the Gospel of Thomas and some fragments only from the Martyrdom of Polycarp. The course is designed to enable students who have no previous training in Coptic to read simple to moderately difficult texts. Its serves to fulfill the third ancient language requirement for Ph.D. students in CJA.

60012. Advanced Greek
(3-3-0)

Close reading of a selection of Greek inscriptions and literary texts that deal with aspects of Greek religion from the fifth century BCE to the second century CE. While the focus will be on the reading

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and understanding of Greek texts, the first half of the course will include an introduction to Greek epigraphy (pagan and Christian) as well as to epigraphical tools and resources, while the second half will center on reading selections from a number of Hellenistic authors who provide important descriptions of Greek religious practices (Plutarch, Pausanias and the Greek magical papyri). During the semester, Smyth's *Greek Grammar* will be systematically read through and discussed when relevant. There will in addition be a lexicographical component of the course in which each student will prepare a study of a particular Greek lexeme.

60014. Liturgical Latin: A Workshop
(3-3-0)

The workshop is intended to serve both graduate students and active scholars who wish to develop a deeper knowledge of Latin liturgical texts. It is designed to provide an experience of the genres and idiom of liturgical Latin. Note that by "liturgical texts" we mean not only liturgical texts as ordinarily understood (prayers, readings, chant-texts, hymns, etc.), but rubrics and other liturgical directives and commentaries as well. We will focus on liturgical texts associated with feast of the Purification (Candlemas, Hypapante). Candlemas seems a good choice, for it furnishes the texts of Divine Office and Mass as well as those of the blessings of the candles and the Candlemass Procession. A reading knowledge of Latin is required for this course.

60101. Old Testament Wisdom
(3-3-0)

As time permits, the course will include a close reading of selected texts from the Writings, (Proverbs,, Job, Qoheleth, Canticle, a selection of Psalms), a study of relevant genres (proverb, parable, riddle, instruction), selected themes including the relation of wisdom to law and pre-existent wisdom, the contribution of these writings to theology, education in Israel, and early Judaism.

60102. New Testament Introduction
(3-3-0)

An intensive presentation of all the major areas of study pertinent for the understanding and study of the literature of the canonical New Testament in its historical, social and literary context, as well as an introduction to the various methodologies which have been applied to the study of the New Testament, including historical criticism, form criticism, redaction criticism, source criticism, textual criticism, canon criticism, narrative criticism and social science criticism. Modules on developments and trends in the history of New Testament research and on various developments in the discipline of New Testament theology from the Enlightenment to the 21st Century will also be included.

60103. Judaism
(3-3-0)

Religious practice helps us order and orient ourselves within the world and community. This course examines the various cycles of Jewish practice, including rites of passage, daily, weekly and yearly observances. Within the structure provided by personal ritual and holiday celebration, we find the essential theology

of Judaism: a life built around the study and practice of Torah.

60104. Pentateuch
(3-3-0)

Intended primarily for M.A., M.T.S., and M.Div. students, this course promotes close and critical reading of biblical texts and disciplined theological reflection on them. Participants will be expected to read the Pentateuch in its entirety and have a sound idea of its contents and structure. Much of the basic information needed will be acquired through reading; class meetings will concentrate on theological issues arising out of the biblical and secondary reading. Topics include the following: doctrine of creation; holiness and sin; biblical law and Christian ethics; covenant: grace and obligation; Exodus, Passover, liberation; wilderness themes: providence, guidance, institutions; community models.

60105. Introduction to Hebrew Bible
(3-3-0)

This course provides an overview and critical study of the Hebrew Scriptures in their literary, historical, and theological contexts. The focus will be principally on reading and gaining an informed understanding of the biblical text, but this will be done against the background of the history, literature, and religions of the magnificent civilizations in the ancient Near East. Further aspects include analysis and use of the tools of historical-critical scholarship; ancient mythology; the processes by which the Scriptures were composed; Old Testament theology; and contemporary theological issues. The course is designed to prepare students both for graduate biblical studies and for intelligent effectiveness in the contemporary church.

60106. Prophets
(3-3-0)

We expect to cover the historical development of prophecy in Israel and early Judaism inclusive of early Christianity. Our method of work combines survey by means of set readings and "close readings" of selected prophetic texts. Attention will be given to comparative material in ancient and other cultures and to the socio-cultural coordinates of prophetic phenomena, including ecstasy. Participants will be invited to reflect on the theological significance of prophetic mediation and the place of prophecy in Christian life today.

60107. Redemption and Suffering: An Ancient Judgment
(3-3-0)

What were the theologically significant effects of the destruction of the Temple in 586 BCE and in 70 CE? Traditionally scholarship has responded by claiming that the divine revelation eventually withdrew from the Jewish tradition and that prophecy ceased. More nuanced accounts speak of a transformation from prophecy into scribalism, in which divine revelation conveyed by the prophet is replaced by an inherited and inspired text, which is read by an authorized interpreter. While revelation and inspiration persisted, there was a gradual but significant transformation in the role of the divine and of the interpretation of destruction and exile. This course studies how suffering, destruction and exile come to be recast as part of the salvation history of Judaism. We will study texts from

ancient Judaism (Hebrew Bible, Dead Sea Scrolls, Pseudepigrapha, Apocrypha, Rabbinic Midrash).

60108. Wisdom
(3-3-0)

The first part of the course offers an introduction to biblical wisdom literature and a study of the books Proverbs, Job, Ecclesiastes, the Wisdom of Ben Sira, and Wisdom. After this comes an analysis of the Book of Psalms.

60109. The Psalter
(3-3-0)

The Book of Psalms will be studied from a theological perspective. The study will begin with an examination of the origins of Psalmody in ancient Israel. From there we will consider how the Psalter emerged as the prayer book of synagogue and church and how theological usage influenced its reception and interpretation. The bulk of the course will consist of a close reading of a selection of Psalms through the eyes of both modern and pre-modern interpreters.

60110. Dead Sea Scrolls and the Bible
(3-3-0)

The course provides an introduction to the more than 800 mostly fragmentary texts called the Dead Sea Scrolls, to the site where they were found, and to the community responsible for them. The texts and community will be studied in the context of developments within Judaism at the time. A special focus of the course will be on the contributions that the Dead Sea Scrolls have made to the study of the Old and New Testaments and of Early Judaism.

60111. Exegesis: Gospels
(3-3-0)

This course aims to assist students in learning to do a critical reading of a gospel, in this case, the Gospel of Matthew. The parameters of this course are: (1) critical investigation of the sources of the gospels, (2) acquaintance with the literary forms which make up the gospels, in particular the elements of the encomium, (3) the literary structure of the gospel in general and the arrangements of its parts, (4) the distinctive understandings of both God and Jesus in the gospel, and (5) knowledge of the historical and cultural background of Jesus and his interpreters. The focus will be on Matthew, but this means that Mark will also be studied, as well as the Q source and materials in Luke that impinge on Matthew (such as genealogy, birth narratives, resurrection appearances). As Virgil said about the devious Greek who tricked the Trojans to take the horse inside the city, "From one example, you know them all." Matthew, carefully studied, equips one to read the rest.

60113. Gospel of John
(3-3-0)

The course will seek to improve exegetical skills, to grasp the structure of the gospel of John, and to explore John's relationship to the letters and its function and history in the community and milieu in which it was written. The course will consider issues of genre, context, and theology, including the wisdom traditions from the gospel's Christology, its understanding of community that affirms the au-

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tonomy of the believer, the significance of prophecy in Christology and community life, the ways the women and men participated in the community, the community's combination of resentment toward and relatedness to "the Jews," and their rejection of the Roman imperial order.

60114. Pauline Writings
(3-3-0)

An exploration of the historical Paul and his reception in the early church. The course has four basic units. First, we will reconstruct Paul's life and explore the significance of specific events for his thought. Second, we will work through the uncontested letters highlighting crucial issues. Third, we will attempt to explore Paul's thought systematically. Finally, we will consider the reception of Paul by the early church in the first two centuries. We will use his ancient Receptionsgeschichte to raise the issue of his contemporary reception. The course also serves to introduce students to the critical study of ancient texts at a graduate level. This will entail the introduction and use of numerous contemporary methodologies.

60117. Old Testament Theology
(3-3-0)

This course will offer entry into the complexities of the Hebrew Bible with attention to the historical, literary, and theological issues that confront a critical reading of it. The course will explore the tension between historical claims made in and for the Bible on the one hand, and the interpretive, ideological voices on the other hand that move from the historical to the canonical. Students will be expected to deal with specific biblical texts as well as a broad range of critical data.

60118. Parables
(3-3-0)

There are thirty-five different parables attributed to Jesus in Q, Mark, Matthew, Luke, and the Gospel of Thomas. The course will introduce the study of parables and then work through individual parables. Our analysis of the parables will concentrate on the ways in which the parables change forms and meanings as they move through four different contexts: the historical Jesus, the oral telling of parables in the early church, the written parables in the gospels, and contemporary settings. We will do this by concentrating on the use of parables by the historical Jesus and by each of the first three evangelists. In the latter case we will attempt to understand both how the placement of parables in the gospels affects the meaning of the parables and, conversely, how the parables help to shape the message of the larger gospels.

60120. Women and the Origins of Christianity
(3-3-0)

The course is a survey of the New Testament and other literature from its context from a feminist perspective. It will delineate patterns of gender in the theology and structure of these works, attempt to retrieve the participation of women in the movements behind them, and consider the impact of the texts and their contexts in gender relations, sexual politics and arrangements of race and class in the 21st century.

60121. Early Christianity: An Introduction
(3-3-0)

This course provides an introduction to the history and thought of the first 500 years of the Christian church. The approach taken will be largely that of social history: we will try to discover not only the background and context of the major theological debates but also the shape and preoccupations of "ordinary" Christian life in late antiquity. Topics to be studied will therefore include canon formation, martyrdom, asceticism, Donatism, Arianism, and Pelagianism. The class will stress the close reading of primary texts.

60122. Memory and Prophecy
(3-3-0)

In the last decades, significant theological trends have emerged both from poor countries and from marginalized groups within wealthy countries. Why have they emerged from different Christian churches of our time? This course will explore this question taking the case of Latin American theology. In particular, it will consider the implications of the "preferential option for the poor" for the areas of theological reflection, pastoral work, and spirituality. Special attention will be paid to the biblical foundations of that option as summed up in two crucial concepts: memory and prophecy. The 16th Century Dominican, Bartolome De Las Casas, said, "Of the least and most of forgotten people, God has a very fresh and vivid memory." The Bible invites us to make God's memory our own, and one component of that memory is the remembrance of the "least ones." The announcement of the Gospel is linked to the advice received by Paul to "remember the poor" (Gal. 2:10). Theologically, poverty is the negation of creation. Poverty means death. Thus, the option for the poor also manifests in the prophetic opposition to that which means death for the poor. The course will examine what memory and prophecy signify for living a Christian life and doing theology in light of some of the major challenges to Christian faith today.

60125. The Apocalypse
(3-3-0)

The final book of the New Testament has generated a great deal of speculation from the second century to our own. The enigmatic symbols and repetition of major structural units within the book have engendered conflicting theories of interpretation. This course explores the Apocalypse of John as an early Christian apocalyptic work that drew heavily on Jewish predecessors for its symbols but infused them with a Christian message that spoke to its readers in the late first century and continues to carry theological meaning today.

60126. The Seven Mountains of Matthew with the Great Discourses
(3-3-0)

This course will consist of lectures and discussion on Matt 4:1-11; 5-7; 10; 13; 18; 23-25; 28:16-20. The accent will be on the Jewish and biblical background and contemporary applications.

60201. Introduction to Christian Latin Texts
(Medieval Latin I)
(3-3-0)

This class has two goals: to improve the student's all-around facility in dealing with Latin texts and to introduce the student to the varieties of Christian Latin texts. Medieval Latin II, a survey of medieval Latin texts, follows this course in the spring term.

60202. Prayer in Catholic Tradition
(3-3-0)

This course will investigate various modes of prayer in the Catholic tradition with attention paid to both private and communal prayer. We will investigate topics like: the sources of Catholic prayer (especially the psalter); the concept of lectio divina; some traditional schools of prayer; the character of contemplative prayer; the relationship of prayer and action. We will pay particular attention to two classic works: Teresa of Avila's *The Interior Castle* and Thomas Merton's *New Seeds of Contemplation* which will be required texts.

60203. The Call of the Desert
(3-3-0)

The desert is a central image in the Christian spiritual imagination. As a locus of encounter with the holy, the desert has figured importantly from the time of the Hebrew peoples' encounter with Yahweh at Sinai, to Jesus' sojourn in the Judean wilderness, to the upwelling of early Christian monastic life in Egypt, and beyond. As a metaphor evoking the human longing for God, the image of the desert recurs throughout the Christian mystical tradition, in art and in communities for whom the desert is the central image of the spiritual life. This course will examine the significance of the desert for Christian spirituality, employing an interdisciplinary approach to ask: what is at the root of the human longing to enter the desert? The course will focus on a critical exploration of Athanasius's *Life of Antony* and the early Christian monastic movement as a whole as a way of considering what it is that drew women and men into the desert in the fourth century. Students will also be invited to examine the significance of the desert as it is expressed in Christian mystical texts, in art, in literature and poetry, and natural history writing. The work of the course will be concentrated around the question of what it might mean to retrieve the image of the desert as a central part of contemporary Christian spiritual life.

60204. Historical Theology: Medieval
(3-3-0)

The Middle Ages brought about a broad spectrum of theological thought and literature. Both traditional and innovative medieval theologians eventually made theology a "science". Though exposing the faith to rational inquiry, medieval theology remained a thoroughly biblical endeavor. The Middle Ages also produced a great number of classics of Christian spirituality.

The course will focus on single theologians as well as on important controversies and theological ideas. Particular emphasis will be given to the leading figures of the 12th and the 13th century, such as Anselm of Canterbury, Peter Abelard, Bernhard of

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Clairvaux, Hugh of Saint Victor, Albert the Great, Bonaventure, Thomas Aquinas and Duns Scotus.

60205. Medieval Theology
(3-3-0)

A survey of Christian theology in Western Europe from the 12th century to the end of the Middle Ages. Although the Middle Ages witnessed considerable diversity in the doing of theology, in terms of both setting (e.g., monastery; university; nascent cities) and style (e.g., monastic; scholastic; vernacular and lay), medieval theologians of varying stripes were united by their common concern for wisdom. This course evaluates the medieval achievement in theology by reflecting on the pursuit of Christian wisdom in such leading authors as Anselm, Bernard of Clairvaux, Bonaventure, Aquinas, Mechthild of Magdeburg, and Marguerite Porette.

60206. Historical Theology: Reformation
(3-3-0)

An examination of the development of Christian thought from the Council of Constance in 1415 to the First Vatican Council in 1869-70, with special attention given to the impact of the Reformation and the Enlightenment on the formation of Christian theology.

60207. Reformation Theology: Calvin's New Testament
(3-3-0)

Course Description: John Calvin dedicated his life to restoring what he called "the genuine sense of Scripture" to the Latin catholic church, in direct indebtedness to the efforts of Lorenzo Valla, Desiderius Erasmus, and Faber Stapulensis before him, as well as contemporaries such as Luther, Oecolampadius, Melancthon, Bucer, and Bullinger. This course will examine the ways Calvin interpreted certain representative texts of the New Testament in order to see if we might discern the distinctive ways in which he sought to arrive at the genuine sense of Scripture, so that he might draw general and fruitful doctrine for the church. We will begin with his first commentary, on Romans, which serves as the pathway to the whole of Scripture. We will then turn to First Corinthians, in order to see how he deals with issues of ecclesiology and the sacraments. The Epistle to the Hebrews will be examined next, as it serves as the template by which Calvin interprets the whole of the Hebrew Bible, as well as the basis of his polemic against Roman views of the Mass and priesthood. We will end with the Gospel of John, which shows Calvin's engagement with the patristic tradition of Biblical commentaries, especially Irenaeus, Origen, and Augustine.

60208. St. Anselm's Philosophy and Theology
(3-3-0)

An examination of the major philosophical and theological writings of St. Anselm. His *Monologion*, *Proslogion*, and *Cur Deus Homo* will be of central concern, but several lesser-known texts will also be read. Topics discussed in these writings include arguments for the existence of God, the divine nature, the Trinity, the Incarnation, freedom (and its compatibility with divine foreknowledge), and truth.

60209. Monastic Way in the History of Christianity
(3-3-0)

Although often hidden from view, even hidden from view in the church, the monastic way is one of the oldest expressions of Christian devotion to God and neighbor, usually pursued alone communally. The purpose of this course is to explore how Christian men and women have lived this life, from earliest Christianity to the present. To that end, we will read the writings of monks of eastern and western Christianity, paying close attention to monastic voices from antiquity (such as Anthony, Evagrius, Basil and Benedict), medieval Christianity (e.g. Ailred of Rievaulx, Bernard of Clairvaux, Hildegard of Bingen as well as Gregory Palamas and Theodore the Studite) up to the present day (Seraphim of Sarov, Thomas Merton, Mother Maria Skobtsova). The primary format of the class will be discussion, aided by the composition of short essays throughout the course.

60210. Topics in Early Christianity
(3-3-0)

This course will be an examination of traditions of biblical interpretation in the early church. Since the greatest proportion of exegetical literature in the early church was homiletic, this course will also entail an examination of traditions of preaching. We will devote considerable attention to ancient allegorical schools of interpretation (Origen), to reactions against it ("Antiochene" exegesis), and to Western exegetes (Augustine, Gregory the Great). We will also look at the uses of the Bible in ascetical literature (desert fathers and mothers, etc.).

60211. Topics in Medieval Theology
(3-3-0)

Pastoral necessity as well as heresies and uncertainties about the nature of the sacraments made it unavoidable for the medieval church to reflect upon its most distinctive liturgical rites. Within the context of the formation and growth of scholasticism, the sacraments provided an excellent training ground to test the strength of western theological thought. Due to the influence of Peter Lombard's collection of patristic "Sententiae" the sacraments finally became a major field within the institutionalized theology at the universities. Our course will focus on those events and texts of the earlier Middle Ages which challenged theologians like Paschasius Radbertus, Berengar of Tour and Lanfranc of Bec to specify their views about the Eucharist. It will consider the formation of a systematic treatise on the sacraments in the French schools of the 12th century, and finally present the synthesis of high scholastic sacramental theology in Thomas Aquinas and Bonaventure. Besides the generic questions on the nature of the sacraments as such, special attention shall also be paid to baptism, the Eucharist, confirmation and penitence.

60213. Eucharist in the Middle Ages
(3-3-0)

The eucharist stands at the heart of western European Christianity in the high middle ages. The insistence of church officials on regular reception of the eucharist; the numerous scholastic treatments of the theoretical issues associated with the eucharist; the recourse by spiritual authors, especially women, to

the eucharist to express their most profound religious and devotional insights; the pointed reference to the Christ eucharistically-present to establish Christian identity and to distinguish the members of Christ from others, both within and outside of western Europe; the development of new rituals focused on aspects of the eucharist; the burgeoning of artistic representations of eucharistic themes-all testify to the centrality of the eucharist in medieval theological and religious consciousness. Through the close reading of representative texts by a wide variety of 13th-century authors, and, the study of the different kinds of 'eucharistic' art, this course examines the uses made of the eucharist by a broad spectrum of high medieval Christians. A special concern of the course is the relation between eucharistic doctrine and religious practice-to what extent have teachings about transubstantiation and real presence shaped religious expression? How has religious experience itself occasioned the refinement of these doctrines?

60214. Jews and Christians throughout History
(3-3-0)

In the closing days of the II Vatican Council *Nostra Aetate* (Declaration on non-Christian Religions) reversed a negative attitude of the Catholic Church toward Judaism and the Jewish people. This remarkable change promoted "dialogue" with Jews, and positive changes in the ways in which Judaism was presented in Liturgy and Catechesis. Reactions from the Jewish communities were diverse: from rejection to welcoming. This course will explore a number of issues which emerge from the history of Christian thought and theology: How did a negative image of Judaism develop within Christianity? In what ways did these unfavorable teachings contribute toward violence against the Jews? What is the relationship between Christian anti-Jewish teachings and Antisemitism? Is there any correspondence to Christian hostility within Judaism? In what ways have Jewish authors reacted to Christian tradition? We shall also want to construct a more positive theology for the future. How can Jews and Christians develop religious responses to modernity? In what senses can a study of Judaism by Christians, or Christianity by Jews, help either community to understand itself better? How can Christians and Jews develop a theology of "the other" which is not triumphalist, but empathic.

60215. St. Bonaventure: Theology and Spirituality in 13th-Century Scholasticism
(3-3-0)

Along with Thomas Aquinas and Albertus Magnus, St. Bonaventure is considered one of the leading and most influential theologians of the high Scholastic period. Although he had to abandon his promising career as a university teacher in order to lead the fledgling Franciscan Order as its Minister General, Bonaventure continued his theological work until the end of his life. Critical of the growing influence of Aristotelian thought within theology, he deliberately chose the tradition of St. Augustine, Ps.-Denis and Hugh of St. Victor as the basis for his theology. The recent emphasis on his spiritual writings notwithstanding, Bonaventure developed a highly speculative and consistent theology, which spans the whole horizon of Scholastic theology. Providing an

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introduction to Bonaventures life and writings, the course will focus on central aspects of his theology such as the Trinity, creation, christology, anthropology and theological epistemology.

60216. Boethius: An Introduction
(3-3-0)

The course will attempt a study of Boethius, one of the foundational figures of medieval culture, in an interdisciplinary and open-ended manner. Our approach will be interdisciplinary in that we shall simultaneously study philosophical-theological and literary subject matter and simultaneously apply philosophical-theological and literary methods. It will be open-ended in that students will be expected to react creatively to the topics under review in terms of their own independent studies and research (e.g., in connecting Latin and vernacular materials). During the course we shall read a broad selection of passages in Latin and in English translation drawn from Boethius' work in the fields of science (arithmetic), music, logic, and theology. Part of the course will be devoted to a close study of De Consolatione Philosophers Plato and Aristotle and the Greek scientists Nicomachus and Ptolemy, without forgetting the theology of Augustine. Turning from Boethius to Boethius in quotation marks and Boethius "under erasure," we shall study Boethius read intertextually by glossators, commentators, and other writers from the eighth to the 14th century.

60217. Theology of the Early Church
(3-3-0)

This course examines the major developments in early Christian thought in the context of the church's life, from the first through the mid-fifth centuries. Primary sources will be read in order to understand two major areas. The theology of early Christianity, derived largely from its reflection on scripture, will be considered in the following areas: the theology of the Trinity, the person and work of Christ, and the doctrine of creation/ eschatology. In addition, students will consider the practices of early Christianity, including catechesis and sacraments, the role of the threefold church office, works of charity, devotion both communal and private, and asceticism, especially as expressed in the monastic life.

60218. Christian Spirituality
(3-3-0)

This course intends to introduce the student to (1) the methodologies for studying Christian spirituality; (2) some theological reflections on the Christian way of life "in the Spirit"; and (3) a consideration of the structure of some "schools" of spirituality within the Christian tradition.

60219. Latin American and U.S. Latino Theology
(3-3-0)

Theologies rooted in the poverty, struggles, and faith of the Hispanic peoples in Americas have undergone dramatic shifts and developments since the Second Vatican council. Focusing on two of their most important architects, Gustavo Gutierrez and Virgilio Elizondo, this course will examine Latin American liberation theologies and U.S. Latino theologies in comparative perspective, with a view not only to understanding how their different contexts shaped their theologies, but also in order to uncover their

features that transcend those contexts. The course will consist of lectures from the co-instructors, readings of major works by Gutierrez and Elizondo, and in-class discussion, both among the course participants and occasionally with Gutierrez and Elizondo themselves. The primary course requirement will be a research project developed by each student in consultation with the co-instructors which either compares Latin American liberation theology with U.S. Latino theology on a significant theological theme, or considers an important theme in the current or future development of these theologies.

60220. Missionary Encounters
(3-3-0)

This course will study the missionary activity of the church. After a brief look at mission and evangelization in the New Testament and the early church, we will then explore several important moments of missionary contact in the Americas, Africa, and Asia in the modern (post-Columbian) period. The course will conclude with a look at contemporary missionary practice and theory.

60221. Catechesis: History & Theory
(3-3-0)

Catechesis aims to 'put people not only in touch, but also in communion and intimacy, with Jesus Christ' (*General Directory for Catechesis* 80, quoting *Catechesi Tradendae* 5). What is catechesis and how has it pursued this aim throughout the history of the church? How should it pursue this aim in contemporary parish life? This course will enable students to explore catechesis at selected periods in the history of the church, to gain awareness of developments in practice and in theoretical approaches, and to acquire and demonstrate a working familiarity with contemporary catechetical literature. Readings will include a variety of sources from antiquity to the present. Special emphasis will be placed on some classical mystagogical sources and on contemporary church documentation. Students will be encouraged to apply these sources to issues in parish catechetical leadership today. (Permission Required)

60222. Christian Doctrine/Catechists
(3-3-0)

This course is intended to serve as a resource for catechists and religious educators. It provides a basic theological introduction to the material represented in Pillars I and II of the *Catechism of the Catholic Church*: the Creed and the Sacraments. The course is specifically designed to cover this material in a way that will provide facility in teaching it in a variety of contexts. Readings will come not only from the *Catechism*, but from various primary sources, both traditional and contemporary illustrative of the theology that forms its background. The course will be especially useful for anyone wishing to acquire an understanding of the basic doctrines of the Catholic faith and of the theological integration of these doctrines.

60224. The Vulgate and Related Texts
(3-3-0)

Readings in the Latin of the Vulgate, texts by Jerome associated with his translation and readings from Augustine (*de Doctrina Christiana*) concerning how Scriptures should be read. Latin readings will be at

an intermediate level, and some review of grammar will be offered.

60230. Eucharist and Spirituality
(3-3-0)

Occurring during "The Year of the Eucharist," this course will take a cue from *Lumen gentium's* assertion that Eucharist is "the source and summit of the Christian life," in order to explore the Eucharistic action as the source and summit of the church's spiritual life. This course also follows the lead of Yves Congar who saw *The Life of the Church as One Long Epiclesis*, by examining the implications of epiclesis as the key to understanding spirituality shaped by the activity of the Holy Spirit in the Eucharist. We shall ask: what is the theological spirituality of the Eucharist that arises through, with and in Christ and in the unity of the Holy Spirit and which honors the Father for ever and ever?

60231. Classic Christian Mystics to the Reformation
(3-3-0)

What is mysticism? What role does it play in Christianity broadly conceived? In order to understand the nature of mysticism, it is important to study the major mystics who helped shape the Christian mystical tradition, both in the East and in the West. The purpose of the course is to gain an initial acquaintance with ten classic Christian mystics of the period c. 200 to c. 1500 as an introduction to the historical development and major themes of Christian mysticism. The emphasis will be on reading primary sources in translation in order to understand the nature of mystical texts, their special modes of communicating God's presence, and the relation of mysticism to other aspects of Christian belief and practice. Mystics to be considered include: Origen, Gregory of Nyssa, Augustine, Dionysius (Pseudo-Dionysius), Bernard of Clairvaux, Bonaventure, Meister Eckhart, Catherine of Siena, Julian of Norwich, Nicholas of Cusa

60232. Reformation History
(3-3-0)

An examination of the theology of such major Protestant figures as Luther, Zwingli, Calvin, Melancthon, Menno Simons and Thomas Cranmer in the context of competing Catholic visions of reform. Requirements: 8-10 page paper submitted with final exam.

60401. Sacramental Theology
(3-3-0)

This course presents an integrated overall view of the history, theology and pastoral praxis of sacrament in a modern, multicultural world.

60402. Liturgical History
(3-3-0)

Survey of liturgical history and sources with regard to both Eastern and Western rites. Fundamental liturgical sources including basic homiletic and catechetical documents of the patristic period. Basic introduction to the methodology of liturgical study. Requirements will include short papers and exams.

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60403. Christian Initiation
(3-3-0)

This course will trace the development and interpretations of the Rites of Christian Initiation in East and West from the New Testament period to the modern period of ecumenical convergence. In light of this historical investigation some modern forms of these rites (e.g., RCIA, LBW, BCP, etc.) will be considered critically. Requirements include two take-home exams, short papers on assigned questions, and an oral presentation on a selected modern rite.

60404. Eucharist
(3-3-0)

The church makes the Eucharist and the Eucharist makes the church. A biblical, historical, systematic, and liturgical treatment of the Eucharist, emphasizing pastoral considerations.

60405. Liturgical Prayer
(3-3-0)

A study of the theology and practice of liturgical prayer in the Christian tradition past and present.

60406. Liturgical Theology
(3-3-0)

The theology of Christian festive celebrations, the historical development of the festive cycles and their meaning for Christian worship today.

60407. Liturgical Theology -Word and Sacrament
(3-3-0)

"Liturgical theology" is often treated as an exploration of "liturgy as a source of theology," or "liturgy as *theologia prima*," approaches that have definite merit. This course, however, will focus on word and sacrament as sacred realities, taking up questions concerning theologies of the word and of the sacraments, and will examine sacramenta in genere, as well as theological approaches to the word of God. The starting point will be an examination of the "medieval sacramental synthesis," but will move from there to contemporary approaches to word and sacraments.

60408. Ritual Studies
(3-3-0)

The pastoral liturgist is one who fosters critical praxis in the liturgical life of a local church. This course is designed to introduce students to ritual studies through a treatment of ritual, symbol, language, myth and story, time and space, music, and art. Students will discuss and employ a method for analysis of worship events.

60409. Liturgical Catechesis
(3-3-0)

Drawing on select primary sources for Roman Catholic liturgy and catechetics, this course will explore the principles, content, and methods of liturgical catechesis and catechesis on the liturgy by means of comparative analyses of texts. Emphasis will be on practical applications.

60410. Music for the Rites
(3-3-0)

20th-Century papal, conciliar, curial, maisterial, and scholarly directives for and reflections on worship music are studied. We examine music in contem-

porary Roman Rite worship: Eucharist, Christian initiation, reconciliation, anointing, matrimony, ordination, funerals, and Liturgy of the Hours. Readings, lecture discussion, literature review, worship music analysis and critique, and class presentation comprise the course.

60411. Liturgical Law
(3-3-0)

This course introduces and outlines the canon law of the Latin Catholic Church regarding the regulation of the liturgy. The liturgical laws in the 1983 Code of Canon Law, select norms in liturgical books, the *1993 Directory for the Application of the Principles and Norms on Ecumenism*, and other significant documents will be examined. The course will also deal with the principles of interpretation of canon law to enable the liturgist to evaluate and understand the many types of ecclesiastical documents, especially those of a juridic nature.

60412. History of Liturgical Music
(3-3-0)

The social, cultural and religious contexts for music-making among biblical peoples and the primitive Christian communities. Detailed analysis of psalm and canticle texts in the Old Testament and acclamations, infancy canticles, God-hymns, Christ-hymns and psalmody in the New Testament. Gregorian chant as foundational for Roman Rite worship music. Historical development of other forms of church music. Contemporary issues of music, culture and spirituality.

60413. The Theology of Liturgical Ministries
(3-3-0)

This course seeks to acquaint students with the history and theology of liturgical ministries within the church, with special focus on ministries of music (cantor, psalmist, leader of song, pastoral musician). Particular attention will be paid to the emergence of lay ministries following the II Vatican Council. Readings will include: Joseph Gelineau, *Liturgical Assembly, Liturgical Song (Studies in Church Music and Liturgy)*; Portland: Oregon Catholic Pres, 2002); *Roles in the Liturgical Assembly*, trans. Matthew J. O'Connell (Collegeville, MN: The Liturgical Press, 1981); Edward P. Hahnenberg, *Ministry: A Relational Approach* (New York: Crossroad, 2003).

60414. Liturgical Year for the Pastoral Musician
(3-3-0)

This course is an overview of Sunday and the major seasons of the year for liturgical musicians. It considers key principles of the liturgical year and applies a basic historical and theological understanding of each season to liturgical planning and the selection and evaluation of liturgical music repertoire.

60415. Liturgical History
(3-3-0)

This course will show where we are by pausing to remember where we have been. Liturgical form, theology, and practice has unfolded in living interaction with the various settings in which liturgy has been celebrated. We will survey those settings (predominantly in the west), identify significant liturgical books and formal developments, and consider the impact this has had in sacramental theology.

60416. Liturgical Theory
(3-3-0)

A study of the classic maxim "lex orandi, lex credendi" in terms of its origins, meaning and contemporary relevance. Particular attention to the theological meaning of the constitutive elements of liturgy including Word, symbol, euchology and the arts. Specific applications will concern liturgical translation, recent magisterial documents and the implications which liturgical theology has for spirituality.

60427. Christian Initiation
(3-3-0)

This course will trace the historical development of the liturgies and theological interpretations of Christian Initiation in East and West from the New Testament period to the modern period of ecumenical convergence. In light of this historical investigation some modern forms of these rites (e.g., RCIA, LBW, BCP, etc.) will be considered theologically and ecumenically with an eye toward pastoral appropriations and implications.

64601. Foundations of Moral Theology
(3-3-0)

As John Mahoney noted in his *The Making of Moral Theology*, the term 'moral theology' (*theologia moralis*) refers to a distinctive science thematically separate from all of the other branches of theology but of relatively recent vintage. It has only been in use since the Thomist renaissance at the end of the 16th Century, in the wake of the Council of Trent. Even so, the systematic consideration of Christian morality or ethics is both much older than this and has a wider scope than this recent Roman Catholic inflection. It is the purpose of this course to investigate the development of Roman Catholic moral theology against its wider historical horizon. This course is an introduction to the study of the basic elements of Roman Catholic moral experience and understanding as well as the criteria of Christian moral judgment and action, including the data of moral knowledge, theories of the ultimate end of human nature, ontic and epistemic aspects of sin, moral agency, the conscience, theories and methods for moral decision making and the three dominant forms that moral theological thinking has taken in the history of the Roman Catholic Church (aretalogical, deontological and consequentialist). This study will be accomplished, historically, through a series of readings from major Roman Catholic moral theologians/ethicists (and their influences) including: pre-Christian philosophical sources, ancient medieval, modern and contemporary approaches to Christian moral theology/ethics and their philosophical influences. The culmination of this study will be a close reading of John Paul II's *Veritatis Splendor* with the previous readings as its backdrop.

60602. Fundamentals of Moral Theology
(3-3-0)

This course offers an overview of the fundamental principles of Catholic moral theology. Drawing on biblical and patristic sources, and with Thomas Aquinas as our guide, we shall cover the following themes: happiness, human acts, the emotions, virtues and vices, law and grace. We shall present these themes from within a perspective that views the moral life as a vocation to live in Christ and be guided by the Holy Spirit.

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60603. Social Ethics
(3-3-0)

Analysis of basic issues and alternatives in Christian social ethics. The nature of the church as moral decision maker, relation between church and society, and the place of social science for social ethics.

60604. Christian Ethics and Contemporary Culture
(3-3-0)

This course examines major themes in recent Christian ethics in light of the broad moral context of modern western societies. The course focuses on themes such as moral order, virtue and the problem of Christian community in a post-Christian era. Authors include Oliver O'Donovan, Jean Porter, Lisa Cahill, John Howard Yoder, John Courtney Murray, John-Paul II, Richard Rorty and Charles Taylor. No prior work in Christian ethics is assumed.

60605. Faith, Morality & Law
(3-3-0)

This course will look at the relationship between faith, morality and law in the Christian tradition. Section One will look at the relationship between the moral law and the Christian life, looking at relevant scriptural passages, as well as classic Protestant and Catholic views on the subject. Section Two will consider the proper relationship of civil law and morality in civil society. Students will be introduced to the prevailing secular views on the topic, as well as the Catholic view expressed in *Evangelium Vitae*. In Section Three, we will look at the responsibilities of Christians in the face of unjust laws or legal systems. We will consider whether there and when there is an obligation to civil disobedience, looking at St. Thomas More, the Berrigans, and Martin Luther King Jr.

60606. Christian Social Ethics
(3-3-0)

This course provides a basic introduction to Christian social ethics for the master-level student. Participants will pursue three goals: to identify and investigate central and foundational issues in the field (e.g., the relation of person to society, the meaning of justice, its relation to love and power); to examine sources and methods employed when Christians attempt to speak normatively about societal matters; to probe select loci of debate in recent North American Christian social ethics (e.g., questions concerning economic justice; class, race-ethnicity and gender; sexuality and family). Readings will be drawn from the rich ecumenical literature of contemporary Christian social ethics, with an accent on Catholic social thought.

60607. Virtue and Sin in the Christian Tradition
(3-3-0)

There has been considerable interest recently in recovering traditions of reflection on the virtues as a resource for Christian ethics. In this course, we will explore this tradition through an examination of three of its key figures, namely Augustine, Aquinas, and Jonathan Edwards. Through a close reading of primary texts (in English) and contemporary writings on these texts, we will reflect on what these authors understood by virtue, how their theories of virtue both interpret a past tradition and influence their successors, and how those theories might be rel-

evant to Christian ethics today. Course requirements will include several short papers and a longer paper on a topic to be determined in consultation with the instructor.

60608. Virtue and Hypocrisy
(3-3-0)

If, as Aristotle taught, we become virtuous by doing virtuous deeds, then there is a time during the process of developing the virtues when our virtuous deeds might be viewed as deceptive, as presenting a certain claim about our "inner" character that is not (yet) true. Beginning with late humanism and extending into the modern period, we see a growing sense that honesty or sincere self-presentation is the key element of moral goodness, and an accompanying suspicion of virtuous actions as external show. This preoccupation with the role of "acting" in moral development is reflected not only in works of theology and philosophy but also in aesthetics, theory of drama, plays, and novels. This course will explore this set of concerns, relating them to the apparent decline of an ethics of virtue during the early modern period and to tensions between and Augustinian focus on purity of heart and an Aristotelian focus on cultivating of virtuous habits. Our starting point will be contemporary discussions of habituation and of the relationship between Christian ethics and virtue ethics (MacIntyre, Hauerwas, Meilaender, Porter). We will briefly consider the Aristotelian understanding of habituation into the virtues and Aquinas' account of the relationship between the natural and supernatural virtues before turning to the early modern period. Thinkers studied in the course include: Erasmus, Luther, Bunyan, Pascal, Shakespeare, Diderot, Lessing, Rousseau, Kant.

60609. Christian Ethics and Pastoral Practice
(3-3-0)

Following a general review of themes in Christian ethics, including conscience, sin, Scripture and the moral life, natural law, and the authority of church teaching, we will consider ethical issues that have pastoral dimensions. We will focus on effective pastoral translation of church teaching and moral theology in the areas of bioethics, sexuality, and social justice. We will also study the professional ethics of pastoral leadership.

60610. Christian Attitudes Toward War, Peace, and Revolution
(3-3-0)

This course is a survey of Christian understandings of war, peace, and revolution from the time of Christ and the early church to the present. Emphasis will be placed on the way in which theological convictions in the areas of Christology, pneumatology, eschatology, ecclesiology, and so on, have shaped Christian teaching on the nature of peace and the permissibility of using violence. Cases will be used to examine certain aspects of just war theory, with the purpose of addressing the question: is just war theory applicable to warfare in the era of the modern nation state? Other issues will be taken up as well, including the military chaplaincy, ROTC in Catholic colleges and universities, the role of Christian churches in mobilizing for war, and the use of violence in revolution. Texts will include: Reinhold Niebuhr, *Moral Man and Immoral Society*; John Howard Yoder, *Christian*

Attitudes Toward War, Peace, and Revolution: A Companion to Bainton; U.S. Catholic Bishops, *The Challenge of Peace*; and others. Undergraduates should receive permission to take this course.

60611. War, Peace and Conscience
(1-1-0)

A critical survey of the theology of war, peace, and conscience in the Catholic tradition. Focus will be placed on pacifism in the early church, the emergence of the just war theory, and the struggle to adhere to these moral positions in the context of the modern state and modern warfare.

60612. Human Rights and Christian Ethic
(3-3-0)

After many years of neglect, the natural law tradition is once again being considered as a source for Christian ethics, by Protestant as well as Catholic thinkers. This renewed interest is motivated by a number of considerations: the desire to find a secure basis for morality, in light of post-modern critiques; the challenges of bioethics and environmental ethics; a concern to safeguard universal human rights; and a desire to offer a Christian perspective on recent work on ethics and evolution. In this course, we will explore these diverse perspectives on the natural law through a critical/constructive reading of key texts from each approach. Our focus throughout will be on contemporary authors who either write from a perspective of Christian ethics or who have been influential in this field, including Germain Grisez, John Finnis, Leon Kass, Martha Nussbaum, Stephen Pope and Christine Trania.

60613. Development of Moral Doctrine
(1-1-0)

An examination of how Catholic moral doctrine has developed in specific areas, viz. marriage and divorce; religious liberty; slavery; and usury. Attention will also be given to more general theory on the development of doctrine in the Catholic Church.

60616. Biomedical Ethics
(3-3-0)

Our century has been called "The Biotech Century," and for good reason; almost every week we read about a new biomedical breakthrough that seems sure to change our lives. This course probes behind the headlines and sound bites to develop skills to think about these fast-breaking developments as well as more routine but no less important issues. We will explore issues related to the status of human life with respect to its beginning and end, the meaning of human life with respect to suffering and care, and the perfection of human life with respect to efforts to enhance human characteristics. Drawing on the Catholic and other Christian traditions as well as secular philosophical approaches, we will show how Christian ethics can both engage and critique our attitudes and practices of biomedical care and research.

60617. Love and Sex in the Christian Tradition
(3-3-0)

Christian reflections on sexuality comprise one of the richest, yet most controversial aspects of the Christian moral tradition. In this course, we will examine Christian sexual ethics from a variety of perspectives through a study of historical and contemporary

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writings. Topics to be considered include Christian perspectives on marriage and family, the ethics of sex within and outside of marriage, contraception, divorce and remarriage, and homosexuality. We will be especially concerned with recent debates on these topics within the Catholic community, but we will also be considering voices from Protestant and other traditions. We will give special attention to the practical implications of Christian sexual ethics in pastoral and educational contexts.

60801. Fundamentals of Systematic Theology
(3-3-0)

This course is a graduate-level introduction to the nature, tasks, and methods of systematic theology. It will proceed through a focus on 20th-century theological contributions to the doctrine of revelation, with special attention being given to the sources and methods used by major theologians. In addition to refining our understanding of the Christian doctrine of revelation, this study should result in a clearer grasp of such basic theological topics as: the relation of faith and reason, the use of Scripture and tradition as theological sources, the significance of contemporary experiences, and the theological importance of praxis.

60802. Hermeneutics: Ancient and Modern
(3-3-0)

An examination of Karl Rahner's theology of revelation with an emphasis on its anthropological foundations and practical consequences.

60803. Hermeneutics: Ancient and Modern
(3-3-0)

This course will be a study of general hermeneutics (with special reference also to philosophical-theological and literary hermeneutics) through the staging of an encounter between classic texts dealing with this subject from the late ancient period and from the 20th century, respectively. From the earlier time-period the texts will include Origen: *On First Principles*, Augustine: *On Christian Teaching*, *On the Literal Interpretation of Genesis*, Proclus: selections from exegetical works dealing with Homer and Plato; from the later time period Heidegger: *Being and Time*, *What is Called Thinking*, selections from exegetical works dealing with Heidegger, Gadamer: *Truth and Method*, and Derrida: *Of Grammatology*. In addition to studying the texts carefully--the first requirement of an exegete--we shall constantly ask questions such as the following: What is the relation between hermeneutics and "reality"? Is there a significant difference between philosophical-theological and literary hermeneutics? If so, what is that difference? In the last analysis, can one have a theory of hermeneutics or merely practice it?

60804. A Language, Symbol, and Vision
(3-3-0)

Our aim will be to study three issues which are absolutely central to medieval thought and culture from the end of the patristic period to the Renaissance (and indeed also beyond these limits). The danger of excessive generality in such an approach will be avoided (1.) by isolating a group of seminal texts from the last ancient or early medieval period for careful scrutiny (wherever possible, in English

translation); (2.) by treating these texts as conceptual nuclei for broader linguistic, hermeneutic, and psychological theories which were widely held and discussed. The texts will be drawn from Origen, Ambrose, Augustine, Jerome, Macrobius, Boethius, Dionysius the Areopagite, and Isidore of Seville. Although a major aim of the course is to introduce important writers to the students and to pursue historical and literary matters, we will also find time to reflect on philosophical questions raised by such a tradition. What is the relation between divine and human language? Why is it necessary to connect language and symbol through psychic activity? What is the relation between secular myth and sacred symbol?

60806. Ecclesiology
(3-3-0)

An examination of the nature and mission of the church, with special emphasis on the Second Vatican Council, its theological and doctrinal antecedents, and postconciliar developments.

60807. Aesthetics and Theology
(3-3-0)

This course takes as its major focus the theological aesthetics of Hans Urs von Balthasar, *The Glory of the Lord*. Beginning with the first volume, *Seeing the Form*, we will consider the case that he makes for an aesthetics that is thoroughly theological in character. We will keep steadily in mind the poetry of Gerard Manley Hopkins and the reading of it proposed in *Studies in Theological Style*. From time to time we will look at relevant passages by von Balthasar's contemporaries, Karl Barth and Karl Rahner.

60808. The Mystery of God
(3-3-0)

The general aim of the course is to introduce the student to the Catholic tradition of reflection on the triune God who always remains mysterious even in, or precisely in, his revelation in history and in our lives. The pedagogic aim is familiarity with the tradition that is the church's common possession.

60809. Theology of Edward Schillebeeckx
(3-3-0)

This course explores the theological insights inherent in the religious practices and spiritual traditions of African American, Latino/a, and European American Catholics. Particular emphasis is given to popular piety as a source for theology and the ways theologians and pastoral ministers can critically engage popular religious traditions.

60810. Theology of Edward Schillebeeckx
(3-3-0)

The theological project of Edward Schillebeeckx traces one trajectory in the development of Catholic theology in the 20th century. This course will explore the evolution in Schillebeeckx's thought from an early sacramental and dogmatic theology grounded in the thought of Thomas Aquinas, through the turn to history and eschatology in the mid 1960s, to his later focus on radical suffering (negative contrast experience) as the necessary starting point for contemporary theology. If numbers permit, the course will proceed as a seminar that will include

background lectures and discussion based on a close reading of selected portions of major works including Revelation and Theology, Christ the Sacrament of the Encounter with God, God the Future of Man, Understanding of Faith, and the christological trilogy Jesus: An Experiment in Christology, Christ: The Experience of Jesus as Lord, and Church: The Human Story of God.

60811. Theologians after Darwin
(3-3-0)

Daniel Dennett, a philosopher at Tufts University, has argued that the modern theory of evolution has not only made it intellectually possible and satisfying to be an atheist, but mandatory. What is the history of this anti-theistic use of Darwin, and how have Christian theologians responded? This course offers an advanced survey of attempts by Christian theologians (both Protestant and Catholic) to come to grips with the challenges raised by the Darwinian revolution. We will begin with an overview of the role of the so-called argument from design in eighteenth-century and nineteenth-century Christian theology. Then we will consider two paradigmatic late nineteenth-century reactions to Darwin: that of Charles Hodge (What is Darwinism?) and of John Zahm, C.S.C. (Evolution and Dogma). From there we will study the largely negative mood of the early twentieth century, with particular attention to the rise of creationism. We will conclude by looking at three influential contemporary responses to Darwin: the modified creationist attack on Darwinism represented by the so-called "intelligent design" argument; the use of Darwin to attack the coherence of Christian faith by figures such as Daniel Dennett and Richard Dawkins; and the argument by John Haught and Denis Edwards (building on Teilhard de Chardin) that the Darwinian revolution can in fact support and enrich Christian faith and theology. This course will build on the study of the Darwinian Revolution. Students who have not had this course are welcome to take "Theology After Darwin," as long as they agree to do a modest amount of reading (three or four chapters) from *The Cambridge Companion to Darwin* prior to the beginning of the course in August.

60812. Conversion to Christ and Modernity
(3-3-0)

This course will examine the expansion of Christianity in the modern period, attending both to various historical encounters of Christianity with cultures and peoples in the past five centuries as well as the theological innovations that accompanied such encounters. Building on a study of several well-documented cases from various places and times, an analysis will be made of the dynamics of conversion from theological as well as other perspectives. The larger historical and social consequences of conversion to Christianity will also be examined.

60813. Theologians of Grace
(3-3-0)

This course explores the diverse theological and doctrinal ways of speaking about the mystery of grace--human experience of the gratuitous love of God. Beginning with the biblical roots of the doctrine, the course will trace key moments in the

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historical development of the Christian traditions, understanding of grace and contemporary efforts to appropriate and reformulate that tradition in the context of secularization, radical suffering, and religious pluralism. Particular attention will be given to the twentieth-century nature-grace disputes in the Catholic tradition to post-Vatican II theologies of grace/salvation.

60814. Theology and Spirituality
(3-3-0)

The course explores the fundamental connections between theology and spirituality in relation to 'The Self, holiness and spiritual transformation'. The course examines different understandings of human identity, of Christian discipleship and of the process of spiritual transformation. The first part will consider basic methodological questions and some classic theological understandings of human identity. The second part will examine how a selection of major texts in Christian spirituality address such related themes as embodiment, sin and alienation, the process of spiritual transformation and the nature of holiness.

60815. Topics in Spirituality
(3-3-0)

The Sacredness of Place. 'Place' is a fundamental category of human culture and an important metaphor in relation to human identity and understandings of the sacred. Western cultures are said to be experiencing a postmodern 'crisis of place' - a sense of dislocation and rootlessness. Because of the close relationship between 'place' and our sense of the sacred, the subject is an important framework for approaching spirituality as well as for theology and liturgical studies. This course will examine: key theological foundations for a spirituality of place; the tension between 'place' and 'placelessness' in the Christian tradition; the theme of 'place' in monastic and mystical traditions; church architecture and 'place'; the design of modern cities and the future of place.

60816. Ignatian Spirituality
(3-3-0)

The approach to prayer, self-examination, and Christian commitment outlined by St. Ignatius of Loyola in his *Spiritual Exercises* has exercised a powerful influence on Christian men and women of all kinds since the early sixteenth century. The Exercises are not only the source of the founding impulse of the Society of Jesus, but have also served through the centuries as the central model of discerning prayer and inner-worldly mystical contemplation for many communities of men and women, as well as for Christian laypeople in all the churches. In this one-week course, we will study Ignatius's own experience of God's work in his life, as presented in his *Autobiography*, journal and letters, then look at the basic theological themes and structure of the Exercises, and finally reflect on the incarnation of this vision of discipleship in the constitutions of the Society of Jesus. We will also ask how Ignatius's way of pray self-commitment to Jesus can serve as an instrument for our own Christian lives.

60817. Myth and Story
(3-3-0)

An interpretation of myth starting from the question "What kind of story are we in?" and "What kind of story am I in?" and dealing with (a) the life story, (b) the spiritual adventure, and (c) the journey with God in time.

60818. Selected Themes in Comparative Theology
(3-3-0)

The purpose of this course is to introduce you to some important recent literature in comparative theology. We will attempt to evaluate the possible significance of theological ideas and religious experiences from Hinduism, Buddhism and Islam for Christian thinking on God, christology, grace and eschatology.

60819. Christianity and World Religions
(3-3-0)

This course is designed to introduce you to the basic teachings and spiritualities of Hinduism, Buddhism and Islam. We will approach these religions both historically and theologically, seeking to determine where they converge and differ from Christianity on such perennial issues as death, meaning, the nature of the ultimate Mystery, the overcoming of suffering etc. That is to say, we will not only attempt to comprehend these religions according to their own self-understanding, but we will also endeavor to appraise their significance in relation to Christian faith, both in the challenge and enrichment they present. We will also examine some traditional and contemporary Catholic and Protestant approaches to the truth claims of other religions. Our own search to know how the truth and experience of other faiths are related to Christian faith will be guided by the insights of important Christian contemplatives who have entered deeply into the spirituality of other traditions. By course end we ought to have a greater understanding of what is essential to Christian faith and practice as well as a greater appreciation of the spiritual paths of others. This course is especially recommended as a preparation for teaching high school and introductory university-level courses.

60820. Hindu and Christian Interaction
(3-3-0)

The purpose of this course is to introduce you to some important recent literature in comparative theology. We will attempt to evaluate the possible significance of theological ideas and religious experiences from Hinduism, Buddhism and Islam for Christian thinking on God, christology, grace and eschatology.

60821. Modern Theology
(3-3-0)

Nineteenth-century Christian theologians were challenged both to defend the legitimacy of Christian faith and theology in an increasingly secularized intellectual culture and to develop an authentic response to a dark underside of scientific, technological, and economic progress that became more and more apparent as the century progressed. In many ways their successes and their failures still set the agenda for theologians today. This course offers a survey of their responses, with a view to understand-

ing the situation in which theology still has to take its bearings. The primary figures we will cover are Immanuel Kant, G. W. F. Hegel, Friedrich Schleiermacher, Johann Sebastian Drey, Soren Kierkegaard, John Henry Newman, and Karl Barth, but we will also attend to other theologians (anti-theologians), such as Ludwig Feuerbach, D.F. Strauss, and Friedrich Nietzsche.

60822. Theology and Practice Lay Ministry
(3-3-0)

Starting with the contemporary experience of the Church, this course will explore the ministry of the laity and some of the issues relevant to this unfolding reality. These will include theological perspectives drawn from Scripture and Vatican II, practical concerns attendant on the evolution of new patterns of Church life, and exploration of possible future developments.

60823. Feminist and Multicultural Theologies
(3-3-0)

An exploration of how the voices of women have helped to reshape theological discourse and to bring to light new dimensions of the living Christian tradition. Like other liberation theologies, feminist theologies take the experience of suffering and missing voices in the tradition as the starting points for theological reflection on the mystery of God and all of reality in relation to God. Using the writings of feminist, womanist, Latina, mujerista, Asian, and Third World theologians, this class will focus on the following questions and areas of theology: the theological task and vocation, the significance of gender and social location in the fields of theological anthropology and Christology, theologies of the cross in the face of contemporary suffering, the mystery of God, and implications of women's spirituality in our day. Students will have the opportunity to join an optional reading group that will focus on classic texts in the development of feminist theologies.

60824. Education in Faith: Catechesis in Catholic Schools
(3-3-0)

This course is designed to assist current or prospective teachers of religion/theology at the junior-high and high school levels in the catechesis of young adults in Catholic schools. The course is open to Theology Department students at the undergraduate and graduate levels (including those enrolled only for the Summer Session), to M.Ed. students serving in the Alliance for Catholic Education, and to Notre Dame undergraduates with minors in Education, Schooling, and Society. Within class sessions designed to be highly dialogical, interactive, and prayerful, participants will explore both theological and practical/pedagogical dimensions of the process of catechesis. Required readings are drawn from *The Catechism of the Catholic Church*, from publications of the United States Catholic Conference (notably the General Directory for Catechesis, the National Catechetical Directory for Catholics in the United States, and the Guide for Catechists) and from the works of several theologians and educational theorists who have contributed significant responses to the two central questions addressed in this course: "What is Catechesis?" and "How Do We Engage

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in Catechesis in the Context of Catholic Schools?". During this course, participants will explore all of the central tasks that constitute the holistic process of catechesis as delineated in the general and national Catholic catechetical directories and other catechetical documents and as adapted for use in Catholic schools: communicating knowledge of the mystery of God's self-revelation; fostering maturity of faith and moral development; sharing and celebrating faith by forming Christian communities of prayerful people; promoting Christian service and social justice; and witnessing to faith through pedagogy and by the example of authentic spiritual lives.

60825. Option for the Poor; Bible and Spirituality (3-3-0)

The sentence "preferential option for the poor" is well known, but it is not always well understood. It expresses the experience and the reflection of many Christian people from Latin America. It was present in the Latin American Bishops' conferences of the last decades and today it belongs to the universal ecclesial magisterium. Pope John Paul II has several times mentioned this perspective in his addresses. This option has numerous consequences in the personal, social and political life of Christians and in the witness of the whole Church. We know how difficult, painful and rich this testimony has been.

The purpose of the course is to provide some elements in order to underline the meaning and the scope of the option for the poor. We need to recall that it is, first of all, a way to be Christian, a disciple of Jesus. This is what we call spirituality. From this deep level we can understand that in a second moment it is an inspiration for doing theology. Talk about God comes after the silence of prayer and after the commitment to others. It is a discourse that is rooted into a faith lived in community and thus inserted into a history of the transmission and acceptance of the Christian message. In order to do that this class will explore the biblical foundations of the option for the poor, revisiting several scriptural texts. In addition, we are going to pay attention to the witness of some great Christians like Bartolome de Las Casas (Dominican missionary from the 16th century), Pope John XXIII and others.

60826. Theology and the Arts (3-3-0)

Christian faith is expressed and shaped by a variety of media: the narratives of sacred scripture, the propositions of ecumenical councils, the moral witness of saints, etc. This course will explore how musical, visual, and literary arts have mediated Christian faith in a variety of cultural contexts. From theological perspectives we will explore and analyze musical compositions, visual arts, and literary works. From artistic perspectives we will explore how beauty signals transcendence and configures the theological task.

60827. Diverse Ministries: Understanding of Ordination (3-3-0)

The course will relate the question of ministries to the theology of the Church especially in the light of the role of the Holy Spirit in the structuring of the Church. In this context, the articulation between

ordained ministries, lay ministries and the responsibility of all will be made evident. Methodological and epistemological issues will be raised in the use of exegesis, the history of dogmatic and sacramental theology and the analysis of current ministerial practices as well as the process of ordination.

60828. Culture, Religion & Evangelization (3-3-0)

This course will examine the theological basis of inculturation, its historical development, ecclesial documentation, and the implications for ecclesiology, liturgy, catechesis, and the theological elaboration. The course will include lectures, videos, class discussion and practical exercises.

60829. Creation and Freedom (3-3-0)

Modern western notions of freedom equate freedom with choice and exalt "doing what I wanna do"- something already exposed by Socrates as effective bondage to our endless needs. When freedom turns out to be bondage, and demands exploitation of other humans and of the earth to satisfy its demands, something seems wrong! We shall examine classical and modern sources to highlight the contrast, locating the signal difference in the presence (or absence) of a creator.

60830. Actuality of the Preferential Option for Poor (3-3-0)

This class will explore the relevance of the option for the poor in contemporary society. We will look at the multi-faceted reality of poverty and the challenges that poverty poses to the lived reality of faith and the understanding of this faith. In other words, we will examine the complex reality of poverty, the role of the poor in history and the important theological reflection that emerges from the life of the poor. In the process we will reflect on the God of life from the perspective of the liberating truths of the gospel, the concrete experience of the poor and the teachings of the Church.

60831. Liberation Theology: Situation and Task (3-3-0)

Theology is always a dialogue between faith and concrete historical situations, including the reflections on people's concrete experiences in history. The context and the meaning of this dialogue "from a Christian perspective" is testimony of the reign of God that the Gospel proclaims. For this it is necessary, as noted by John XXIII and the Second Vatican Council, to be attentive to the signs of the times.

In this perspective we can say that we have three main dimensions of the Christian life that comes from faith and, as a consequence, from theological reflection: modernity and post-modernity, poverty in the world and the diversity of religions in the world. These last two are, without a doubt, ancient realities, but, for a long time, Christian theology has not perceived the radicality of the questions of faith that comes from them.

This class will explore these points, taking account of the authentic challenges that they present and the elements necessary for a new hermeneutic from which to think about faith in this context. On the other

hand it is clear that, for various reasons, it is not possible to confront these challenges in a disconnected way since they are ultimately interrelated.

60832. Ecclesial Ministry (3-3-0)

This course studies the theology of ecclesial ministry -- lay and ordained. Taking into account the biblical background and historical developments, the course focuses on the post-conciliar discussion of ecclesial ministry in the Roman Catholic Church. In seminar format, students will work together to (1) understand church teaching and recent theological debate on the theology of ministry and priesthood and (2) gain a vocabulary and principles for articulating their own ministerial identity.

60833. Muslim and Christian Interaction (3-3-0)

This course has a twofold aim. It not only provides an introduction to the world of Islam but also attempts a comparison and evaluation of Islamic and Christian theological themes from both a systematic and historical perspective. Topics such as the nature of God and the process and content of divine revelation; the person and function of Muhammad and Jesus as exemplars of faith; the role and nature of sacred scripture and tradition; the place and nature of piety and practice in everyday life; the way that each religion sees itself in relation to other faiths; changes that each tradition has undergone in the modern period: these and other topics will be treated with the intention of deeper understanding and appreciation of the other.

60834. Christianity and Islam: Dialect and Relationships (3-3-0)

In this course we will analyze the history of the Muslim-Christian conversation. We will begin with the Qur'an and the earliest Christian writings on Islam and continue with medieval polemical and apologetical works (in English) by Arab and European authors. Turning to the contemporary period we will look, on one hand, at missionary tracts aimed at converting (focusing on material on web sites), and, on the other, at efforts to seek mutual understanding through dialogue (including the development of the Church's teaching on Islam). Finally, we will consider the contribution to this conversation of more recent religious movements -- including Baha'ism, Ahmadism and the Nation of Islam -- and the impact of September 11 on this conversation.

60835. Canon Law (3-3-0)

Note: M.A.-M.Div. students only. The purpose of this course is to provide students studying for ministry with an introduction to the law of the Roman Catholic Church. General principles for the interpretation of canon law as well as its history, and its relationship to theology and pastoral praxis are discussed. Although attention is given to the laws and canonical jurisprudence concerning marriage, other selected canonical topics of value to those in ministry are considered as well.

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60841. Doctrine of the Triune God
(3-11-0)

This course will first examine the biblical roots for the doctrine of the Trinity and the development of this doctrine in the teaching and theology of the Church. Then the course will take up systematic questions, such as the viability of the language of one nature and three persons, the personal existence of the Holy Spirit, the actions of the Trinity, and naming or re-naming the Trinity. The course will end with reflections on the Trinity in art, literature and liturgy.

60842. Thomas Merton
(3-11-0)

This course will look at the significance of Thomas Merton as a contemporary spiritual master. During the course we will read from the journals of Merton abridged in *The Intimae Merton*, selected spiritual writings from *Thomas Merton: Spiritual Master* and as much of *New Seeds of Contemplation* as can be covered in the time frame given to us. Particular emphasis will be placed on his theology of prayer; his critique of culture; and the linkages he makes between contemplation and social justice.

60843. The Option for the Poor: Spirituality Biblical Foundations
(1-1-0)

The sentence, preferential option for the poor is well known. It expresses the experience and the reflection of many Christian people from Latin America. It was present in the Latin American Bishops conferences of the last decades and today it belongs to the universal ecclesial magisterium. This option has numerous consequences in the personal, social and political life of Christians and in the witness of the whole Church.

The purpose of the course is to provide some elements in order to underscore the meaning and the scope of the option for the poor. We need to recall that it is, first of all, a way to be Christian, a disciple of Jesus. This is what we call spirituality. From this deep level we can understand that in a second moment it is an inspiration for doing theology. Talk about God is rooted into a faith lived in community and thus inserted into a history of the transmission and acceptance of the Christian message. In order to do that this class will explore the biblical foundations of the option for the poor, revisiting several scriptural texts.

60844. Introduction to Karl Rahner
(3-0-3)

In this class we will explore the thought of Karl Rahner, one of the most influential theologians in the history of the church. We will read and discuss chapter by chapter his *Foundations of Christian Faith*, the required text, which provides a general overview of his theology. In each class, I will summarize the major ideas in the chapter, offer an opportunity for questions, and lead a discussion of the practical implications of his thought.

65931, 65932. Field Education I: Images and Models of Ministry
(2-2-0)

Field education is an integral component of education for pastoral ministry. Through field education, students pursue the integration of theological competence with pastoral skill in a developing identity as a public minister. For first year students, the specific goals are to provide

initial approaches, of both theoretical and practical kinds, to two sets of foundational questions:

What is theological reflection? How is it done? What are some resources upon which to draw for theological reflection in ministry? How can its practice be inculcated as a habit of heart and mind?

What does it mean to be a minister? How does one go about constructing one's self-understanding as a lay or ordained minister today in the Catholic Church? Where is one's place within the larger mission of the Church? What resources might inform, shape, and sustain one's identity in ministry?

The goals are approached through a threefold constellation of learning contexts: field work in a ministry placement, supervision of that work, and the field education seminar. The primary learning dynamic for the seminar is dialogical and includes conversation about assigned texts, as well as shared reflection on field experiences.

60932. Introduction to Spiritual Direction
(3-3-0)

This course will be an introduction to the theological foundations, theory, practice, dynamics and major issues in the pastoral practice of spiritual direction. Course will utilize case studies, lectures, theological reflection on personal experiences and group work.

60933. Pastoral Counseling II
(3-3-0)

Building on the skills learned in Fundamentals of Pastoral Care and Counseling, this course presents students with practical skills to bring God's healing touch to some of the psychotherapeutic situations central to contemporary ministry, such as grief and loss, substance abuse, marital and family conflict, and crisis intervention. After laying a theoretical foundation in psychodynamic, cognitive behavioral, and humanistic theories of counseling, the course will integrate and apply these theories in a pastoral way to some of the counseling situations encountered in ministry. In addition to learning and applying basic counseling theory and skills, students will learn some of the theory, skills and perspectives unique to the various settings and counseling situations mentioned above. In addition to learning when and how to help as pastoral ministers, students will learn to recognize situations and psychopathologies which call for more professional attention and referral. Throughout the course, students will be challenged to find and integrate a pastoral perspective and identity in their counseling. Students will be assigned readings from primary and secondary sources, be expected to participate fully in classroom discussions and roleplays, and be asked to write four short integration papers and short journal assignments.

65933, 65934. Field Education II: Articulating Faith
(2-2-0)

The goal of the second year of field education is facility in articulating the Christian faith, particularly as understood in Roman Catholic tradition, and in fostering the development of faith with others. In the field education seminars, students explore the role of catechesis in ministry and continue to integrate theory and praxis toward collaborative ministry and community building in fostering the reign of God. The goal is approached through a threefold constellation of learning contexts: field work

in ministry placement, supervision of that work, and the field education seminar. The primary learning dynamic for the seminar is dialogical and includes conversation about assigned texts, shared reflection on field experiences, and faith-sharing.

60943. A Tour of Contemporary Ministry Among Latinos
(1-1-0)

Ministry in the Latino communities is a fun ministry because its potential is only limited by the pastoral team's imagination! The rituals and activities which are most effective are not regulated by liturgical or canonical directives, only by a tradition that is constantly renewing itself.

60945. Pastoral Administration
(1-1-0)

A basic introduction to the administrative dimensions of pastoral ministry, including staff development, planning, programming, and finances. This is a required skills course for second-year M.Div. students.

60946. Liturgical Celebration and Ministry I
(2-2-0)

A study of the structure and practice of the Eucharistic Rite and the Liturgy of the Hours, and Sunday Celebrations in the Absence of a Priest, with emphasis on ministerial roles.

60947. Liturgical Celebration and Ministry II
(1-1-0)

A study of the structure and practice of the liturgical rites of baptism, marriage, and funerals.

60948. Preaching I
(2-2-0)

An introduction to homiletics.

60949. Preaching II
(2-2-0)

A continuation of Preaching I, this course treats exegesis for preaching, methods of homily preparation and delivery.

60950. Preaching III
(2-2-0)

A continuation of Preaching II, with emphasis on the theological dimensions of preaching. The main work of the course will be preparation, delivery, and review of homilies. Assigned readings to be discussed in class. In addition to preaching and reading assignments, each student will prepare a short paper on a theology of preaching.

60951. Reconciliation Ministry
(1-1-0)

Reconciliation Ministry is designed to: (1) introduce ministry students to the history and theology of the Sacrament of Reconciliation; (2) provide an initial "confessional experience" (practicum) from which students can benefit from guidance, supervision, and constructive criticism; (3) assist students in understanding the importance of penance/reconciliation in the life and ministry of the church.

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60952. Fundamentals of Pastoral Care
(1-1-0)

Self-assessment of skills for ministry. This is a required course for first year M.Div. students.

60994. Field Education III: Leadership and Authority
(2-2-0)

During their third year of field education, Master of Divinity students explore issues of leadership, power, and authority in the role of the public minister. The goal is to complement the growth in pastoral skills already attained in the first two years with the acquisition of proficiency in skills for collaborative leadership in the contemporary Church. The goal is approached through a threefold constellation of learning contexts: field work, supervision, and the field education seminar. The primary learning dynamic for the seminar is dialogical and includes conversation about assigned texts, shared reflection on field experiences, and faith-sharing.

63001. Synthesis Seminar
(2-2-0)

Note: Third-year M.Div. students only. As the capstone course for the M.Div., Synthesis Seminar invites integration of the student's entire course of studies. Guided by a faculty advisor, each student chooses a topic that will serve as a focus for synthesis. In developing the topic, attention is paid to at least three theological areas (Scripture, history of Christianity, systematic theology, moral theology, liturgy and practical theology).

63201. Intensive Course: Thomas Aquinas
(4-4-0)

Recent years have seen new interest in the theology of Thomas Aquinas. Much of Catholic thought and life from the end of the Middle Ages through Vatican II has drawn from his thought. "The Theology of Thomas Aquinas" is a single course but it has two tracks. The morning session, taught by Thomas O'Meara, O.P., will introduce students to the patterns and themes of the Summa theologiae. The afternoon session, led by Joseph Wawrykow, will consider Aquinas' Christology in the Summa and in other representative works. Complementing the classroom lectures, by other members of the University faculty will examine the significance of Aquinas in (for instance) literature, politics and art. Although this is an advanced introduction, the course is suitable for those with little exposure to Aquinas. Please note: The usual 50 percent tuition reduction for Notre Dame Alums does NOT apply to the Intensive Course.

63202. Intensive Course: Augustine
(4-4-0)

Augustine is arguably the single most influential theologian in the West. There is in almost every Western theologian some strain that is Augustinian, and many of the disputes in Western Christendom can be regarded as arguments pitting one strain of Augustinian tradition against another. The study of Augustine, therefore, is essential for an understanding of most subsequent Christian theology. This course attempts to introduce students to the study of Augustine in an attempt to gauge the specific and distinctive character of his theology over a broad range of issues. Special attention will be given to the development of Augustine's thought. The class hopes to be useful to students who approach Augustine from a variety of perspectives and interests, and as such will have a strongly textual, rather than thematic, principle of organization, emphasizing the reading of whole works

rather than excerpts topically arranged. Although this is an advanced introduction, the course is suitable for those with little exposure to Augustine.

63203. Intensive Course: Hans Urs von Balthasar
(4-4-0)

This intensive course serves as an introduction to the wide-ranging thought of the Swiss Catholic theologian, Hans Urs von Balthasar. It has three major foci: (1) Balthasar's attempt to relink theology and spirituality, a link that has been broken in the modern period. Balthasar's reflections on the intrinsic relation of holiness and theology, on the non-scientific practice of biblical interpretation, and on prayer will all come in for consideration. (2) Balthasar's fundamental option for an essentially christocentric rather than anthropocentric point of view. Here his difference in fundamental starting point from much of modern and contemporary Catholic theology will be examined. (3) Balthasar's innovative concentration on the centrality of beauty to theology, and the necessity for thinking of God as beautiful as well as good and true. Although it will not be a specific focus, the ecumenical context and orientation of Balthasar's work, and specifically its relation to Protestantism and the Eastern Orthodoxy, will be kept to the fore.

63801. Intensive Course: St. John of the Cross
(4-4-0)

This intensive course will explore the writings of John of the Cross (1542-1591), saint and doctor of the church. The course will develop a hermeneutic with which we can study and comment on the poetry, sayings, letters, and commentaries composed by this great Spanish mystic. We will further inquire what John of the Cross's mysticism can contribute to a contemporary theology of religious experience and how it might heal the breach between theology and spirituality. Special efforts will be made to create collaborative approaches to the writings of John. The professors will attempt to model this collaboration through their joint presentations and interactions. The course will be based on *The Collected Works of Saint John of the Cross* edited by Kieran Kavanaugh, OCD. Participants are requested to get the 1991 edition of that book.

63802. Power to Communion
(3-3-0)

Prerequisite: Six hours of theology. This seminar explores the present and the future of the Catholic Church, placing emphasis on how its future is foreshadowed in the growing ecclesial interdependence that exists between the churches of North and Latin America. Emphasis is placed on the growing involvement of the laity in Latin America and where this may lead the North American church. In a particular way, attention is given to the role of small Christian communities

64102. New Testament Theology
(3-3-0)

Purposes of the Course: 1. To acquire a working knowledge of the NT, especially the theological messages of each NT document. 2. To develop the skills necessary to read ancient texts. 3. To consider the collective witness of the NT documents. Is there any unity in the diverse perspectives? 4. To explore the theological significance of NT texts and their relevance for contemporary theology.

64201. America and Catholicism: Religion and Culture in Tension
(3-3-0)

This course will examine the relationship, indeed the tension, between Roman Catholicism and American culture during the nineteenth and twentieth centuries. It will begin with a study of the influence of democracy on American Catholicism during the republican era, 1780-1820. Then it will focus on how immigration transformed the church in the U.S. We will study such issues as national identity, devotional life, gender, and doctrine over the course of the nineteenth and twentieth centuries. We will also look at more recent history, examining how American cultural values have challenged the Catholic church in the U.S. Readings for the course will include *In Search of an American Catholicism: A History of Religion and Culture in Tension* by Jay P. Dolan and also John McGreevy's, *Catholicism and American Freedom* as well as a course packet of articles.

64202. In God's Image: Mystery of Creation
(1-1-0)

This course offers a rich exploration of the Christian doctrine of creation. This course covers not only the basics of the doctrine, but provides participants the opportunity for deepening reflection by exploring how the Christian tradition has reflected on this doctrine, from biblical accounts in the book of Genesis through the early church fathers (specifically Irenaeus and Augustine). Participants can expect to gain a deeper understanding and appreciation for the doctrine of creation and its centrality to our faith, as it involves perennial questions concerning the origin and identity of the human race and the universe, the mystery of suffering and evil, and explores the continued relevance of the Christian tradition concerning this doctrine in our present day, faced with global and environmental issues that have arisen in the last century.

64801. Christology
(3-3-0)

Who was Jesus Christ? What was his mission? What does it mean for Christians to affirm that he was both God and Man? Jesus Christ's historical and ontological identity is at the basis of any understanding of Christianity or Christian theology. Without an understanding of this identity, the Christian tradition is inscrutable. Theologically, Jesus's identity has necessary linkages to all the divisions of theology but especially to the Christian doctrine of God, anthropology, soteriology, sacramentology and spirituality.

Although the Trinity is rightly termed the central doctrine of the Christian tradition, Christians believe that Jesus Christ, in his message and person, was the primary revelation of this tri-personal God. Therefore, according to the order of revelation, Christology precedes Trinitology. Some systematic theologies mirror this according to the principle that the *modus docendi* (way something is taught) should follow the *modus inveniendi* (the way something is discovered). One might further say that most trinitological doctrines stand or fall on the basis of how well their foundations are constructed in Christology.

In this course, we will examine the historical development of Christology from the age of the New Testament to the late 20th/early 21st century. Particular emphasis will be placed on the New Testament data and on

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conciliar dogmatic formulations in their historical settings, especially as these have determined the course of theological development. Issues addressed will include: the nature of the hypostatic union, the consciousness of Jesus Christ, the necessity of the Incarnation, the works of Jesus Christ, the suffering of Jesus Christ, the necessity of the atonement, etc.

64802. Christology
(3-3-0)

This course examines the contemporary Christology: the meaning of the doctrine of Chalcedon, the theological significance of the historical Jesus, the theological role of belief in the resurrection of Jesus Christ, and the understanding of Jesus Christ as redeemer. It pursues these issues by studying the Christologies of Karl Rahner, Gerald O'Collins, Brian McDermott, and Jon Sobrino.

66001. Directed Readings
(0-0-0)

Research and writing on an approved subject under the direction of a faculty member.

67001. M.T.S. Colloquium
(0-0-0)

Required for all M.T.S. students.

67002. Special Studies
(0-0-0)

Research and writing on an approved subject under the direction of a faculty member.

67801. Faith and Traditions
(3-3-0)

Required for non-degree-seeking seminarians only.

68801. Comprehensive Review: Theology
(1-1-0)

A review of the method and content of theological studies. Course open only to those taking comprehensive examinations

68802. Comprehensive Review
(1-1-0)

A review course open only to those taking comprehensive examinations in July. This course meets MWF in the first week and TH in the second. Monday is dedicated to finalizing comprehensive topics, Wednesday and Friday to the written portion of the exams. The second week, Tuesday and Thursday, focuses on the oral portion of the exams.

68101. CJA Research and Resources
(3-3-0)

A 12-week seminar designed to introduce advanced students to the critical texts, indices, reference works, journals, linguistic tools, systems of abbreviation, searching strategies, textual methods, and electronic resources available for the study of the four fields encompassed by the Christianity and Judaism in antiquity section of the Theology Department. Three weekly sessions will be devoted to each of these four fields: Hebrew Bible, Judaism, New Testament, and early Christianity. Seminar sessions will be run by faculty members with expertise in the area of students represented during that session. This seminar is required of all CJA students.

68201. Research in Biocultural Anthro
(6-6-0)

The Jerusalem field school will engage students in an experiential learning environment which immerses them in anthropological method and theory. Using the large Byzantine St. Stephen's skeletal collection as the cornerstone, historical and archaeological information will be synthesized in a biocultural reconstruction of ancient monastic life. Students will conduct original research, share in a field trip program visiting numerous Byzantine sites and area research institutions, and will participate in a lecture program delivered by top scholars in the fields of biological anthropology, classics, and Near Eastern studies.

78599. Thesis Direction
(0-0-0)

For students doing thesis work for a research master's degree.

78600. Nonresident Thesis Research
(1-1-0)

Required of nonresident master's degree students who are completing their theses in absentia and who wish to retain their degree status.

83003. Advanced Greek
(3-3-0)

Close reading of a selection of Greek inscriptions and literary texts that deal with aspects of Greek religion from the fifth century BCE to the second century CE. While the focus will be on the reading and understanding of Greek texts, the first half of the course will include an introduction to Greek epigraphy (pagan and Christian) as well as to epigraphical tools and resources, while the second half will center on reading selections from a number of Hellenistic authors who provide important descriptions of Greek religious practices (Plutarch, Pausanias and the Greek magical papyri). During the semester, Smyth's Greek Grammar will be systematically read through and discussed when relevant. There will in addition be a lexicographical component of the course in which each student will prepare a study of a particular Greek lexeme.

83002. Advanced Hebrew
(3-3-0)

For Ph.D. candidates who require Hebrew as a major research language. Others should consult instructor before registering.

83101. Hebrew Bible Seminar
(3-3-0)

The topic of the seminar is the history of the high priesthood in the second temple period (516 BCE-70 CE). The high priest appears to have been the leading official in Jerusalem for much of the period, and diverse sources preserve information about the office itself and about the men who held it. The earliest ones are in the Hebrew Bible (Haggai, Zechariah, Ezra, Nehemiah, with relevant pentateuchal passages), while some books found only in the Septuagint add more information (1-2 Maccabees especially). Also important are the writings of Josephus, the gospels and Acts, and a variety of other sources. We will examine all of these in order to determine what can be said about the high priests and their roles.

83102. Hebrew Bible Seminar
(3-3-0)

Literary, textual, historical, and exegetical studies in the Book of Isaiah in its Rabbinic (MT), Qumran, and Septuagintal forms. This seminar will explore the approaches and results of four major commentaries recently published by J. Blenkinsopp, B. Childs, K. Baltzer, and M. Sweeney. The complex process of the composition and redaction of the book viewed from historical, literary, canonical-process, and theological perspectives. Study of manuscripts of Isaiah, especially the Qumran scrolls and the Septuagint. The interpretation of Isaiah at Qumran, in the New Testament, and in early Jewish and Christian authors. Both Hebrew and Greek are required.

83105. Hebrew Bible Seminar: Dead Sea Scrolls
(3-3-0)

The seminar will focus on the Book of Daniel, examining its various parts in their historical and literary environments. Among the subjects to be treated are the teachings in the book, the place of the work in a developing apocalyptic tradition, the differing versions of Daniel, its historical setting, and its use by the Qumran community. We will also pay attention to the history of scholarship on the book. Topics for this seminar will vary.

83107. Introduction to the Hebrew Bible
(3-3-0)

This course provides an overview and critical study of the Hebrew Scriptures in their literary, historical, and theological contexts. The focus will be principally on reading and gaining an informed understanding of the biblical text, but this will be done against the background of the history, literature, and religions of the magnificent civilizations in the ancient Near East. Further aspects include analysis and use of the tools of historical-critical scholarship; ancient mythology; the processes by which the Scriptures were composed; Old Testament theology; and contemporary theological issues. The course is designed to prepare students both for graduate biblical studies and for intelligent effectiveness in the contemporary church.

83109. New Testament Theology
(3-3-0)

This lecture course focuses on the problem of the theological unity of the New Testament and the various ways in which the supposition of theological unity has been conceptualized by New Testament scholars, as well as the perspectives of those scholars who have criticized the entire enterprise. One of the main emphases will be the pervasive issue of the Christology of the New Testament. The course will involve intensive reading assignments and four short papers (4-5 pages), and a midterm and final examination. Texts for the course include Heikki Raesaenen's, *Beyond New Testament Theology*, Rudolf Bultmann's *New Testament Theology*, Georg Strecker's *Theology of the New Testament* (2000) and Larry W. Hurtado's *Lord Jesus Christ: Devotion to Jesus in Earliest Christianity* (2003). This course is designed primarily for PhD students in Theology in areas other than Christianity and Judaism in Antiquity, so competence in Greek is not required, though special provision will be made for those who do have competence in that language as well as in German and/or French.

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83110. New Testament Seminar: "The Neglected Factor in the New Testament: GOD" (3-3-0)

In the early 1970s Nils Dahl published a small but potent article "The Neglected Factor in New Testament Theology: God." This seminar seeks to un-neglect God in the following ways: (1) Greco-Roman philosophy developed a formula for its god-talk, which is very influential in reading Paul; (2) many NT writers talk about the nature of God: [a] God's two attributes -mercy and justice, and [b] God's two powers-creative and executive; (3) the social sciences are indispensable for considering: [a] "be ye holy as I am holy"; [b] honor, glory, and praise; and [c] patron/benefactor and client. (4) In addition, one must consider God in terms of providence (Acts) and debates over theodicy. (5) Always lurking are issues of God's justice (faithfulness and loyalty). (6) No consideration of God is complete without attention to worship: prayer, sacrifice, doxology. Finally, who else is called "god"? Moses in Exod 7:1, but also Jesus in John and Hebrews. This course then has two foci: un-neglect about what is said about God (survey of documents, themes, etc.) and creative research by seminar members to aid in un-neglecting God.

83111. New Testament Seminar (3-3-0)

There is a diverse body of material that extends Paul's career beyond his own lifetime: biographical interest evident in the canonical Acts and non-canonical Acts of Paul, various appropriations of his letters among his disciples in the Deutero-Pauline tradition, efforts to fill in or expand his corpus through pseudonymous correspondence such as 3 Corinthians or the letters between Paul and Seneca, and finally, polemical material, especially in Jewish Christian circles. This seminar will examine the place of Ephesians within the larger Pauline tradition. Members of the seminar are invited to develop their own perspective. My working thesis is that Ephesians is unique in its use of the Pauline tradition. For the author of Ephesians the letters of Paul are inadequate in and of themselves: they are too context specific. Similarly later traditions about Paul, especially Colossians, are inadequate. Looking back on Paul's career and letters, Ephesians views Paul as the catalyst of the movement that shaped the church as the author knew it at the end of the first century. The letter situates Paul's lifetime accomplishment (the rapprochement between Jews and Gentiles) and thought (salvation by grace through faith) into a new framework, "the eternal purpose of God." Paul and his message are no longer for a specific community or group of communities, but for all of the churches. The Apostle to the Gentiles has become the Apostle of the Church.

The seminar will fall into two major parts: first, we will work through the text of Ephesians. Each member of the seminar will select a portion of the Pauline tradition for which he or she will be responsible as we work through text. The thrust of the work will be comparative. The second part of the seminar will consist of presentations in which each member of the seminar will summarize her or his assessment of Ephesians in the Pauline tradition in light of the material through which he or she has worked.

83201. Jewish and Christian Debate during the High Middle Ages (3-3-0)

The growth of urban centers in Europe and Iberia during the Middle Ages rekindled the literary debates between Jews and Christians that began in the Early Church. Both Jews and Christians constructed images of the Other that were grounded in earlier arguments from Scripture and augmented them with the new tools of reason and linguistic knowledge. Our seminar will read both Jewish and Christian documents analyzing them in light of the work of modern historians such as Gilbert Dahan, Jeremy Cohen, David Berger and Gavin Langmuir. In addition to reading disputation literature we shall analyze papal policy, noble patronage and canon law.

83202. Historical Jesus and Historical Law (3-3-0)

This seminar will focus on two problematic entities and their still more problematic intersection: the historical Jesus, as reconstructed by the so-called Third Quest, and the Mosaic Law as it was actually preserved, understood, and lived by Palestinian Jews at the turn of the era. In the first classes, the professor will give introductory lectures on the concepts, sources, and criteria used in the quest for the historical Jesus and offer some observations as to how the quest for the historical Jesus relates to the problem of the Law in the first century. The students will be asked to pick from a list of topics a specific problem related to Jesus and the Law; they will then research the topic and write a seminar paper, which will be distributed and then discussed at a session of the seminar. The seminar papers will then be rewritten in light of the class discussion and resubmitted to the professor. To guarantee that the whole is not lost in examining its parts, weekly readings covering an overview of the historical Jesus will also be discussed in each session.

83204. Early Christianity Seminar (3-3-0)

Studies of selected patristic texts and early Christian history. (Offered with varying topic each spring)

83205. Augustine and Anselm (3-3-0)

An introduction to the thought (philosophical and theological) of Augustine and Anselm of Canterbury. Since Augustine is one of the few intellectual forerunners mentioned by name in Anselm's main works, we shall assume that a reading of the Latin Church Father forms an indispensable foundation for any serious study of the XIC to XIIC archbishop's writings. Although we shall study either at length or in briefer selections the following works in roughly chronological sequence: (Augustine) *On Free Choice of the Will*, *On the True Religion*, *Confessions*, *On the Trinity*, *On the City of God*, (Anselm) *Monologion*, *Proslgion*, *On Truth*, *On Freedom of the Will*, and *On the Fall of the Devil*, certain thematically-connected ideas will be placed in relief in order to reveal the profound coherence and continuity of the Augustinian and Anselmian speculative systems. These ideas will include Being, Truth, Mind, and Will together with associated ontological, epistemological, and ethical questions.

83206. Our Lady of Guadalupe (3-3-0)

Our Lady of Guadalupe has been at the heart of Mexican and Mexican American faith and identity for nearly five centuries; within Roman Catholicism she is officially acclaimed as the patroness of the Americas. This seminar explores the origins and development of the Guadalupe tradition; the Nican mophua, which millions of devotees acclaim as the foundational narrative of that tradition; and theological writings about Guadalupe from Miguel Sánchez's *Imagen de la Virgen María, Madre de Dios de Guadalupe* (1648) down to the present day. Requires a reading knowledge of Spanish.

83207. Historical Seminar: Medieval (3-3-0)

Seminar on a selected theological topic in the medieval period.

83208. Medieval Exegesis: Biblical Interpretation in the Middle Ages (3-3-0)

Our focus during the semester will be on the relationship between biblical interpretation and the polemical literature written by Jewish and Christian authors from 1050-1200. Students will read the recent accounts of this literature by Gavin Langmuir, Anna Sapir Abulafia, Gilbert Dahan and Jeremy Cohen. Excerpts from medieval Christian authors such as Abelard, Gilbert Crispin, Guibert of Nogent, Bernard of Clairvaux, Peter the Venerable, Petrus Alfonsi and Alan of Lille. Passages from Jewish authors such as Rashi, Rabbi Joseph Kara, Rabbi Samuel ben Meier, and Rabbi Joseph of Orleans will also be studied. Students will be expected to make an oral presentation and write a paper that provides an explication of the arguments in a polemical work.

83209. Soren Kierkegaard (3-3-0)

This course will examine the development of Kierkegaard's understanding of the genuine Christian life from the time of his first works written after his break-up with Regine Olsen, to his final statement of the ideal of being a Christian just before his final "attack on Christendom." We will focus in particular on those works that discuss his understanding of sin and faith in Christ. The works to be read will include his *Journals* (edited by Hannay), *Fear and Trembling*, *The Concept of Anxiety*, *Philosophical Fragments*, *Concluding Unscientific Postscript*, *Works of Love*, *The Sickness Unto Death*, and *Practice in Christianity*. We will also use the new biography of Kierkegaard written by Hannay. The written requirements may be fulfilled either by a series of six page essays on the different readings for the semester, or a short paper and one longer research paper on a theme or work of Kierkegaard's.

83210. Historical Theology Seminar: Modern Theology (3-3-0)

This course is an advanced survey of some important figures and schools in 19th century Christian theology. The figures covered are selected in large measure for their importance for understanding 20th century theology, insofar as the most important figures in 20th century theology either continued solutions worked out by Kant, Schleiermacher and Hegel to the problems that the Enlightenment raised for theology, or took up and continued critiques of their solutions first forged by figures whom Paul Ricouer has named the "masters of suspi-

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cion” (Marx, Nietzsche, Freud). Thus, while we cover these figures in their own historical context in order to understand their theologies (or anti-theologies) on their own terms, we will also be attentive to the ways that they set the stage for twentieth century movements such as transcendental Thomism, feminist and liberation theologies, and postmodern theologies. Course requirements: three ten-page analytical papers and a take-home exam

83211. Modern Theology and the Emergency of Secularity (3-3-0)

A number of recent works attempt to reassess our view of modern theology by painting in broad strokes key developments of the 17th and 18th centuries. Did theology create its own crisis by turning to philosophy and away from its own proper resources of scripture and religious experience? Can we discern a counter-history, a lineage of thinkers who kept alive an alternative approach faithful to theology? Do rationalist and enlightenment trends represent a wrong turn or a necessary developmental stage? What is secularity, and are we in the midst of a process of secularization? We will examine Blumenberg’s *The Legitimacy of the Modern Age*, Michael Buckley’s *Origins of Modern Atheism*, William Placher’s *The Domestication of Transcendence*, and relevant portions of Milbank’s *Theology and Social Theory*, along with primary texts which are central to the arguments of these works. In addition to grappling with this particular period, we will discuss broader issues of how the history of theology can be a form of constructive theology and how historical theology differs from other, “secular” forms of history.

83212. Modern and Contemporary Ethics: Protestant (3-3-0)

In this seminar, we will read through major 20th century figures in Protestant ethics, including Barth, both Niebuhrs, Hauerwas, Ramsey, and Gustafson. We will focus on the interplay between theological and ethical issues in these authors, paying particular attention to the ways in which they build on, and stand in conversation with one another. This course is intended for doctoral students; others will need permission of the instructor.

83213. Study of the Bible in Church and Synagogue (3-3-0)

The Bible formed the core revelatory text of both the synagogue and the early church. Although both communities developed differing collections of books considered to be sacred writings, there was a large body of works shared by the two communities. Students in this course will explore three dimensions of how Scripture was studied in Judaism and Christianity.

The first consideration will be the material nature of the Bible. What were the physical characteristics of book or books that Christians and Jews studied? A consideration of scroll and codex will form the basis for an investigation how the manuscripts of transmitted the biblical text from antiquity to the Middle Ages.

A second dimension will be the development of lectionary and liturgical approaches to Scripture. Students will explore how the Bible was read in the Church and Synagogue as part of public worship. In this segment of the course the genres of homily and Midrash and liturgical poem or hymnody will be studied.

The third approach will trace the theoretical or hermeneutics of the Bible. Works such as Origen’s *Peri Archon*, Augustine’s *De Doctrina Christiana*, St. Benedict’s *Rule*, Hugh of St. Victor’s *Didascalicon* and Thomas Aquinas’s *Summa* will provide evidence for the Christian community. From the Jewish perspective students will read portions of the Babylonian Talmud, Saadia Gaon’s *Book of Beliefs and Opinions*, Maimonides’s *Guide of the Perplexed*, and Nachmanides’s *Introduction to the Commentary on the Pentateuch*.

In addition to reading primary sources in translation, students will read from modern authors such as Beryl Smalley, Henri de Lubac, Jeremy Cohen and Sara Kamin who have contributed to the historiography of biblical exegesis.

83214. Syriac Christianity (3-3-0)

This seminar is designed as a basic introduction to the life and worship of the Syriac family of churches. Syriac churches belong to the Oriental (i.e. non-Byzantine) branch of Christianity. Syriac tradition represents the unique phenomenon of a Semitic Christian tradition that is little affected by Greco-Latin influence. The first part of the seminar will consider the main lines of the historical development of Syriac Christianity: its Judaeo-Christian origins; its distinctive Aramaic versions of the Bible with roots in the synagogue; and the on-going interaction between Syriac liturgical development and Judaism. The second part of the seminar will take up specific topics that define the life and worship of Syriac Christianity: the Liturgical Year, Liturgical Books, Eucharistic Prayers, the Role of Liturgical Poetry, Penitential Incense Rites, Liturgy of the Hours, Origins of Mariology. This seminar will be of interest to students in HC, CJA,LS, and ECS.

83222. Bartolomé de las Casas

(3-3-0)
Bartolomé de Las Casas (1484-1566), first a diocesan priest and later a Dominican Friar, is a key figure in the historical moment in which two worlds encountered one another: the Old (Europe) and the New (America, and in a certain sense, Africa). It was at that time that humanity began to perceive that we live in one “globe.” Many of the problems of the last few centuries, and of today’s situation as well, have their roots in this period. These problems include: relations between different cultures, religious freedom, the role of the West in universal history, the meaning of “the other” for our own universe, racist perspectives, and globalization. Las Casas’ primary concern was the proclamation of the Gospel; but he was more than just a missionary who defended the human dignity of the inhabitants of the Indies. The new situation that he confronted led him to a process of theological reflection that began with experience and was shaped by the debate concerning the Indian peoples; but this very process led to a comprehension of the faith along previously unknown paths. With all his achievements and his limitations, Las Casas constitutes an exceptional witness to the presence of the Gospel in history. The accent of this course will be on his spirituality and his theological reflection.

83401. Early Christian Liturgy (3-3-0)

An introduction to the liturgical sources, ancillary documents, and methodologies for the study of Christian

liturgy in the churches of the first four centuries of the Christian era. The course concentrates on the Eucharist and its anaphora, the rites of Christian initiation, the origins and early evolution of the liturgical year, and the Liturgy of the Hours.

83402. Eastern Liturgies (3-3-0)

Topics vary from year to year.

83403. Medieval Liturgies (3-3-0)

The purpose of this seminar is to examine the various sacramental rites in the Middle Ages, especially the Eucharistic liturgy, and to attempt to reconstruct them within the context of liturgical enactment, architectural space, artistic and musical decoration, etc. The seminar must necessarily deal with liturgical texts, but this is only a first step for understanding the broader dimensions of the liturgy. Architectural, artistic and musical components will be taken into consideration. Numerous commentaries on the liturgy are also an important source for garnering the medieval understanding of the liturgy, especially in its allegorical interpretation. A tangential but key element for the understanding is the devotional and spiritual practices that grew up alongside the official liturgy. Therefore, some attention will be given to these dimensions, including liturgical drama.

83404. Reformation Liturgy Seminar (3-3-0)

This course will explore the most important Christian liturgies that appeared during the Reformation(s) of the 16th and 17th centuries in Europe. Beginning with a discussion of Martin Luther’s writings on sacramental theology (plus his proposals, in Latin and German, for liturgical reform), the course will move to a study of Reformed liturgy (Zwingli, Bucer, Calvin, Knox); Anglican liturgy (the 1549 and 1552 prayer books of Edward VI and subsequent [e.g., Elizabethan] revisions of the Book of Common Prayer); the response of the “Catholic Reformation” (sometimes called the “Counter-Reformation”); and the Puritan liturgy (Middleburg, John Cotton, the Westminster director). Following these historical investigations, individual rituals will be examined in greater detail, among them: the rites of Baptism and Confirmation, Eucharist, Marriage, and Christian Burial.

83405. Modern Liturgies Seminar (3-3-0)

The purpose of this course is to introduce students to the movements, documents, issues, and personalities that gradually coalesced to form what is commonly called (in Europe and North America) “the modern liturgical movement.” The period covered stretches from ca. 1600 to 2000 C.E., and deals with historical developments in both post-Reformation Europe and North America, and among both Roman Catholic and Protestant churches.

83406. Liturgical Theology (3-3-0)

“Liturgical theology” is often treated as an exploration of “liturgy as a source of theology,” or “liturgy as *theologia prima*,” approaches that have definite merit. This course, however, will focus on word and sacrament as sacred realities, taking up questions concerning theologies of the word and of the sacraments, and will examine sacramenta in genere, as well as theological approaches to the word of God. The starting point will be an examination

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of the “medieval sacramental synthesis,” but will move from there to contemporary approaches to word and sacraments. Students will have the option of choosing various assignments, but all will prepare a final paper and a “take-home” midterm examination. Depending on class size, students may have the opportunity for in-class “oral presentations.”

83407. Ritual Studies
(3-3-0)

Analysis of the levels of meaning to be found in an observed rite in light of selected ritual theorists.

83408. Topics in Liturgical Study: The Sanctus
(3-3-0)

This course will examine the origins, evolution, variant structures, and theologies of the Anaphora, Prophora, Canon, or Eucharistic Prayer, the central prayer of the central act of liturgical worship within the Christian community. The primary focus of this course is the study of the classic liturgical sources of Christian antiquity, although some current official liturgical texts may also be examined critically.

83601. Ethics Seminar: Methods
(3-3-0)

A selection of American, European, and Latin-American authors, with emphasis on ecumenical interaction and consensus-formation within the discipline. (Topic changes each fall.)

83602. Ethics Seminar: Modern Moral Thought
(3-3-0)

In the wake of 16th-century confessional strife, ethical reflection was typified by an attempt to prescind from theological controversies and to model ethics on scientific and mathematical theories. At the same time, thinkers worked from inherited understandings of the virtues, divine commandments, and natural law. In the first half of the semester, we will focus on the tradition of modern natural law in the 17th century, contrasting it with earlier natural law thinking and considering the reasons for its decline after Locke. In the second half, we will turn to the 18th-century moral sense school, exploring the ways it sought to avoid problematic aspects of modern natural law theory, in particular its theological voluntarism and its elitism. Throughout, we will seek to delineate how the issues that emerged in this period set the terms for all subsequent moral thought, and reflect on the ways in which this period defined moral philosophy over against moral theology. In addition to primary readings taken from J. B. Schneewind's *Moral Philosophy from Montaigne to Kant* and Jonathan Edwards' *The Nature of True Virtue*, we will read selected chapters from Schneewind's *The Invention of Autonomy*, along with short selections by Bonnie Kent, G. Scott Davis, and Alasdair MacIntyre.

83603. Protestant Social Ethics in the 20th Century
(3-3-0)

Questions of theological anthropology lie at the heart of highly disputed theological, ecclesial, ethical, and political issues, yet the discipline itself is in question. This seminar will focus on diverse contemporary approaches to the field of (Christian) theological anthropology. The goal of this survey of selected Catholic, Protestant, and Orthodox theologians will be to identify the questions and resources within the tradition that are most in need

of critical engagement and constructive development today.

Issues to be engaged include: 1) the nature/grace disputes in the Catholic tradition at the beginning of the 20th century and their ongoing influence; 2) the relationship between anthropology, christology, and trinitarian theology and the appropriate starting point for theological anthropology; 3) theological understandings of personhood; 4) the impact of global human suffering and ecological devastation on Christian understandings of what it means to be human; 5) human differences, structural inequalities, and the possibility of human solidarity.

83604. 20th Century Roman Cath. Thought
(3-3-0)

Using Vatican II's call for renewal as a fulcrum, this seminar will examine key figures and movements in Roman Catholic moral theology in the twentieth century. As we trace the challenges to and developments in method from the manualists to the moral encyclicals of John Paul II, we will be concerned in particular with the question of sources for Christian ethics. How are we to conduct the search for truth as a moral community? What properly shapes moral discernment for people of faith? What is a fruitful exchange between theology and science, philosophy, culture?

83606. Virtue and Virtues
(3-3-0)

During the second half of the twentieth century, moral philosophers and scholars of Christian ethics turned to what had once been an unfashionable topic, namely, the nature of virtue and the role of the virtues in the moral life. This turn was motivated by a number of different factors, including dissatisfaction with Kantian and consequentialist models of morality, a conviction of the inadequacy of moral rules, growing interest in character and the moral emotions, and a focus the community as context for moral discernment. By the same token, it has given rise to a wide range of approaches to virtue and the virtues, ranging from fairly traditional Aristotelian/Thomist accounts to pragmatist and post-modern virtue theories. More recently, this topic seems to have played out among philosophers, but it continues to be central to Christian ethics -- suggesting that the idea of virtue is in some way particularly relevant to theological reflection.

In this course, we will examine the development of virtue ethics in recent Christian ethics through a close reading and critical analysis of central works in that development, including the writings of Haring, Gillemann, Haerwas, and Nelson. We will focus on theological works, but we will also read from some philosophers who have been influential in the theological discussion (MacIntyre, Nussbaum). I will try to divide the readings roughly between Protestant and Catholic authors. And for those of you who may have had my “Virtue and Sin” class, the focus this time will be on contemporary authors -- no one earlier than about 1930. Course requirements include two or three class presentations and a longer paper based on one of the presentations.

83607. Theological Perspectives in Medical Ethics
(3-3-0)

This seminar will explore contemporary questions in medical ethics in the context of Christian theological commitments. The seminar will focus, in part, on meth-

odology and the issues surrounding the use of religious language in policy debates within a pluralistic society. We will also consider a set of problems in medicine that raise important theological as well as ethical questions, e.g., developments in reproductive and genetic technologies.

83608. History of Theology, Ethics, and the Social Order
(3-3-0)

The aim of this course is to do close readings in the history of theological social theory and to ask how the theological, ethical, and social claims are related by the writer(s) in question.

83609. Topics: Christian Doctrine and Ethics
(3-3-0)

An exploration of the connection between central doctrinal beliefs of Christians and how they bear on Christian ethical reflection. Doctrines to be examined include the incarnation, pneumatology, nature and grace, and eschatology. Authors include Athanasius, Gregory of Nyssa, Augustine, Aquinas, Luther, Pascal, Blondel, de Lubac, von Balthasar, Rahner, and several contemporary ethicists. Requirements: readings, weekly papers for the first half semester and a long research paper for the second half.

83610. Theological Ethics: US Catholic Social Ethics
(3-3-0)

An examination of the work of John Courtney Murray and his successors and the role they have played in shaping the discourse of Catholic social ethics in the United States. Readings will include several weeks of the writings of Murray along with commentators and interpreters (e.g., Leon Hooper and Joseph Komonchak), to be followed up with works by some of Murray's self-declared successors, including most or all of the following: Bryan Hehir, David Hollenbach, John Coleman, Leslie Griffin, Lisa Cahill, George Weigel, Michael and Kenneth Himes, John Noonan, and Michael Novak. Particular attention will be paid to such methodological issues as the place of natural law in liberal democratic politics, the nature of political community and the modern state, and the place of the Troeltsch-Niebuhr-Gustafson tradition in Catholic social ethics. Requirements will include weekly papers for the first half of the semester, one long paper to be presented in class during the second half of the semester, and a final reflection paper.

83611. Mercy and Justice
(3-3-0)

Explores the meaning of mercy, particularly in its relationship to justice. Examines four major topics: (1) mercy in its relation to retributive justice, focusing on the role of mercy or clemency in the case of criminal sentencing, as well as broader questions of retribution and wrongdoing such as whether there can or should be criteria for the exercises of mercy, whether mercy can be exercised unjustly, and the relationship of forgiveness to mercy; (2) mercy in its relation to distributive justice, focusing on the corporal works of mercy and issues such as the relationship between justice and “private charity”; (3) mercy in its relationship to social justice or the social face of mercy, and (4) divine mercy, focusing on the various ways theologians have attempted to reconcile divine mercy and divine justice. Readings for the class will be interdisciplinary, and will include materials from legal, philosophical and theological sources.

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83801. Doctrine of God
(3-3-0)

This seminar focuses on contemporary understandings of the Trinity. The major focus will be on views that operate within terms defined by Rahner's paradigm shift to the economy of salvation. Here the emphasis will fall important differences in emphases that this paradigm shift allows, and their varying degrees of hospitality to talk of the immanent Trinity and divine possibility. Authors covered include LaCugna, Moltmann, and von Balthasar. Given the economic turn in contemporary discussion of the Trinity a leitmotif in the course is the topic of divine possibility. The Trinitarian thought of Thomas Aquinas constitutes a secondary focus of the course. In addition to a close reading of Aquinas' important treatment of the topic in the Summa, we will survey the contemporary debate about Aquinas' contribution with special focus on the kinds of retrieval of Aquinas at work in John Milbank, Bruce Marshall, and Thomas Weinandy.

83802. Postmodernity
(3-3-0)

The course explores a particular strand of postmodern discourse, that is, the Derridian strand, in its relation to Christian discourse in general, theological discourse in particular. Other strands of post-modern discourse, which had some currency in theology, such as those of Foucault or Habermas (or the Frankfurt School in general), or the so-called Yale school (Frei, Lindbeck et al), will not be treated thematically. (They are welcome guests in our discussions) Nevertheless, despite this limitation, we will be dealing with that form of postmodern discourses that has exercised the most influence on the academy in general, and has shown itself to be interesting at least in the construction of alternatives to regnant theologies. More specifically, the course will attempt to chart the variety in mood and affiliation of Derridian postmodern discourse. Obviously, Derrida himself functions 'foundationally' here, and approximately a third of the course will be devoted directly to his works.

83804. Systematic Seminar: God
(3-3-0)

This seminar focuses on contemporary understandings of the Trinity that operate in terms defined by Rahner's paradigm shift to the economy of salvation. Besides Rahner's classic work, *The Trinity*, we will read works by LaCugna, Moltmann, Balthasar, Pannenberg, and Milbank. The selection of authors is made with a view to underscoring the variety of emphases that this paradigm shift allows, their varying degrees of hospitality to talk of the immanent Trinity, and in the event of hospitality their different emphases in figuration. Given the economic turn in contemporary discussion of the Trinity a leitmotif in the course is the topic of divine possibility. Does the economic turn make it either necessary or advisable to surrender, or at least to seriously qualify, the Patristic axiom of divine impassibility?

83805. Systematic Seminar: Christ
(3-3-0)

Seminar on selected topics concerning Jesus.

83806. Ecclesiology
(3-3-0)

The course will examine the principal ecclesiological themes articulated in the documents of the Second Vatican Council, e.g., sacramentality, community, authority,

collegiality, servanthood, ecumenicity. The conciliar ecclesiology will be situated in its wider historical and theological contexts, taking particular note of the pre-conciliar ecclesiologies of the various Christian traditions and of developments generated by the council.

83807. Systematic Seminar: Topics in Systematic Theology
(3-3-0)

Seminar on selected sources and theologies about systematic theology.

83809. Systematic Seminar: Theological Anthropology
(3-3-0)

Questions of theological anthropology lie at the heart of highly disputed theological, ecclesial, ethical, and political issues, yet the discipline itself is in question. This seminar will focus on diverse contemporary approaches to the field of (Christian) theological anthropology. The goal of this survey of selected Catholic, Protestant, and Orthodox theologians will be to identify the questions and resources within the tradition that are most in need of critical engagement and constructive development today.

Issues to be engaged include: 1) the nature/grace disputes in the Catholic tradition at the beginning of the 20th century and their ongoing influence; 2) the relationship between anthropology, christology, and trinitarian theology and the appropriate starting point for theological anthropology; 3) theological understandings of personhood; 4) the impact of global human suffering and ecological devastation on Christian understandings of what it means to be human; 5) human differences, structural inequalities, and the possibility of human solidarity.

83810. Theological Method
(3-3-0)

This seminar will explore central methodological issues underlying the diversity and pluralism within contemporary theology. It will be divided into three major units. The first and second parts of the seminar will focus on two fundamental issues that have organized the "turn" to method in modern theology: the interpretation of classic texts and events from the past (hermeneutics), and the insistence on praxis as a broader category contextualizing theoretical reflection (liberation theologies). For each of these we will (1) read philosophical sources (e.g., work in philosophical hermeneutics or critical theory), (2) analyze in detail the particular way that these sources are deployed by one or two representative theologians in order to craft a theological discourse that is responsive to a particular challenge to theology posed by late modernity, and (3) investigate how these methodological decisions shape the approach to a particular topic in systematic theology. In the final weeks of the seminar we will evaluate critiques of the "turn to method" in each of the prior two categories. The primary figures to be considered are Hans Georg Gadamer, Paul Ricoeur, David Tracy, Jon Sobrino, Gustavo Gutiérrez, and Ignacio Ellacuría. Course requirements: close reading of assigned texts, active seminar participation, and a final research paper that considers a different theologian of the students choice.

83811. John Henry Newman as Theologian
(3-0-0)

This seminar will investigate the main themes of John Henry Newman's theological vision. After a consideration of the *Apologia Pro Vita Sua* we will look

backwards to his essay on the development of Christian doctrine and forward to his *Grammar of Assent* (in the context of his university sermons). A full research paper will be expected as well as regular in seminar reports during the course of the term.

83812. Eschatology
(3-3-0)

Eschatology, the study in Christian theology of "the last things," can also be understood as the study of Christian hope, as an attempt to understand Christian redemption more fully as a yet unfulfilled promise. The traditional discussions of death, resurrection of the body, purgatory and the parousia can then be grasped as reflections on what we ultimately hope for (for ourselves, for humanity, for all of creation). The revival of interest in eschatology in the twentieth century has focused largely on Christian hopes for history and for humanity as a whole, although there has been some attention to issues of individual salvation as well. More recently, hope for the cosmos, for a "new earth," has reemerged in ecological theologies. This course will examine these major twentieth century eschatological debates, with a particular focus on the diverse methods and insights of political, liberation, latino/a, and feminist theologies.

83813. Comparative Theologies
(3-3-0)

The purpose of this seminar is to introduce students of systematic theology to recent developments in the theological dialogue between Christianity and other religions, and to deepen their theological understanding of God, christology, grace, eschatology and religious experience through the encounter with three specific faiths: Hinduism, Buddhism and Islam. This course presupposes no previous knowledge of other religions; it is designed to provide the student with a solid theological foundation for further scholarly research or for incorporation in the classroom. Required: oral presentation, class discussion, two analytical papers.

86001. Directed Readings
(v-0-0)

Research and writing on an approved subject under the direction of a faculty member.

87001. Special Studies
(v-0-0)

Research and writing on an approved subject under the direction of a faculty member

87002. Preparing for an Academic Career in the Humanities
(1-1-0)

There are a number of issues relating to the culture of academic life that are typically left unaddressed in formal course work and degree programs, but which are of concern for those who plan to spend their careers in academic life. This course introduces doctoral students, especially those in the humanities, to a number of these in an effort to promote professional development. This course is built around four major areas: academic positions and expectations, teaching and teaching skills, research, and service. We will explore a wide range of topics for each of these areas, including the preparation of a C.V., an explanation of the tenure process, syllabus construction, the use of technology in teaching, establishing a research agenda, participation in professional

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societies, external grants, citizenship in the university and society, and principles for a successful career. The course emphasizes the practical requirements of the professorate. It is designed for those in the job market but is open to any who want to learn about the requirements of academia.

88101. CJA Research and Resources Seminar
(3-3-0)

A 12-week seminar designed to introduce advanced students to the critical texts, indices, reference works, journals, linguistic tools, systems of abbreviation, searching strategies, textual methods, and electronic resources available for the study of the four fields encompassed by the Christianity and Judaism in antiquity section of the Theology Department. Three weekly sessions will be devoted to each of these four fields: Hebrew Bible, Judaism, New Testament, and early Christianity. Seminar sessions will be run by faculty members with expertise in the area of students represented during that session. The grade for the successful completion of this course will be "S" (satisfactory), and it is open for students from other areas who wish to take one, two, or three of the three-week segments. This seminar is required of all CJA students.

88401. Dissertation Research Seminar
(3-3-0)

For students in final semester of course work to begin collegially the basic research for their dissertation topics. Required for liturgy students; elective for others.

98699. Research and Dissertation
(0-0-0)

Research and dissertation for resident doctoral students.

98700. Nonresident Dissertation Research
(0-0-0)

Required of nonresident graduate students who are completing their dissertations in absentia and who wish to retain their degree status.

Faculty

Gary Anderson, *Professor*. B.A., Albion College, 1977; M.Div., Duke Divinity School, 1981; Ph.D., Harvard Univ., 1985. (2003)

J. Matthew Ashley, *Director of Graduate Studies, Associate Professor, and Fellow in the Center for Social Concerns*. B.S., St. Louis Univ., 1982; M.T.S., Weston School of Theology, 1988; Ph.D., Univ. of Chicago Divinity School, 1993. (1993)

David Aune, *Professor*. B.A., Wheaton College, 1961; M.A., *ibid.*, 1963; M.A., Univ. of Minnesota, 1965; Ph.D., Univ. of Chicago, 1970. (1999)

Gerard Baumbach, *Concurrent Professor, Professional Specialist and Director of Catechetical Initiatives in the Institute for Church Life*. B.A., Saint Michael's College, 1968; M.Ed., Univ. of Maryland, 1975; Ed.D., New York Univ., 1989. (2003)

Rev. Michael Baxter, C.S.C., *Assistant Professor and Fellow in the Kroc Institute for International Peace Studies*. B.A., Allegheny College, 1977; M.Div., Univ. of Notre Dame, 1983; Ph.D., Duke Univ., 1996. (1999)

Joseph Blenkinsopp, *the John A. O'Brien Professor Emeritus of Old Testament Studies*. B.A., Univ. of London, 1948; S.T.L., International Theological Inst., Turin, 1956; D.Phil., Oxford Univ., 1967. (1970)

Rev. Paul F. Bradshaw, *Professor and Director, Undergraduate London Program*. B.A., Cambridge Univ., 1966; M.A., *ibid.*, 1970; Ph.D., Kings College, Univ. of London, 1971; D.D., Oxford Univ., 1994. (1985)

Rev. David B. Burrell, C.S.C., *the Rev. Theodore M. Hesburgh, C.S.C., Professor Emeritus of Arts and Letters, Professor Emeritus of Theology and Philosophy*. A.B., Univ. of Notre Dame, 1954; S.T.L., Gregorian Univ., 1960; Ph.D., Yale Univ., 1965. (1964)

John C. Cavadini, *Chair and Associate Professor of Theology, and Director of the Institute for Church Life*. B.A., Wesleyan Univ., 1975; M.A., Marquette Univ., 1979; M.A., Yale Univ., 1981; M.Phil., *ibid.*, 1983; Ph.D., *ibid.*, 1988. (1990)

David A. Clairmont, *Assistant Professor*. B.B.A., Univ. of Notre Dame, 1996; M.A. Univ. of Chicago Divinity School, 2000; Ph.D., *ibid.*, 2005. (2005)

Rev. Michael E. Connors, C.S.C., *Director of M.Div. Program and Associate Professional Specialist*. B.A., Illinois College, 1977; M.Div., Univ. of Notre Dame, 1983; Th.D., Regis College, Toronto School of Theology, 1997. (1997)

Lawrence S. Cunningham, *the John A. O'Brien Professor of Theology*. A.B., St. Bernard College, 1957; S.T.L., Gregorian Univ., 1961; M.A., Florida State Univ., 1963; Ph.D., *ibid.*, 1968. (1987)

Rev. Brian Daley, S.J., *the Catherine F. Huisiking Professor of Theology*. B.A., Fordham Univ., 1961; B.A., Oxford Univ., 1964; M.A., *ibid.*, 1967; Ph.D., Loyola Seminary, 1966; Lic. Theo., Hochschule Sankt Georgen, 1972; D.Phil., Oxford Univ., 1979. (1996)

Mary Rose D'Angelo, *Associate Professor*. B.A., Fordham Univ., 1969; M.Phil., Yale Univ., 1972; Ph.D., *ibid.*, 1976. (1994)

Mary Doak, *Assistant Professor*. B.A., Loyola Univ. of Chicago, 1987; M.A., Univ. of Chicago, 1988; Ph.D., *ibid.*, 1999. (1999)

Rev. Michael S. Driscoll, *Director of M.S.M. Program and Associate Professor*. B.A., Carroll College, 1969; S.T.B., Gregorian Univ., 1977; S.T.L., San Anselmo, 1980; S.T.D., Inst. Catholique de Paris, 1986; Ph.D., Sorbonne, Paris, 1986. (1994)

Rev. John S. Dunne, C.S.C., *the John A. O'Brien Professor of Catholic Theology*. A.B., Univ. of Notre Dame, 1951; S.T.D., Gregorian Univ., 1957. (1957)

Keith J. Egan, *Adjunct Professor*. Ph.B., Mt. Carmel College, 1952; M.A., Catholic Univ. of America, 1959; Ph.D., Cambridge Univ., 1965. (1983)

Rev. Virgilio Elizondo, *Notre Dame Professor of Pastoral and Hispanic Theology, Senior Fellow of the Institute for Latino Studies, and Fellow in the Kellogg Institute for International Studies*. B.S., St. Mary's Univ., 1957; M.A., Ateneo Univ., Manila, 1969; S.T.D./Ph.D., Inst. Catholique, 1978. (2000)

David Fagerberg, *Director of Undergraduate Studies and Associate Professor*. B.A., Augsburg College, 1972; M.Div., Luther Northwestern Seminary, 1977; M.A., St. John's Univ., 1982; S.T.M., Yale Divinity School, 1983; M.A., Yale Univ., 1988; M.Phil., *ibid.*, 1988; Ph.D., *ibid.*, 1991. (2003)

Ann S. Goggin, R.C., *Director of Lay Ministry Formation and Professional Specialist*. A.B., Marquette Univ., 1964; M.Div., Weston School of Theology, 1981; D.Min., *ibid.*, 1983. (2000)

Rev. Eugene Gorski, C.S.C., *Professional Specialist*. M.M., Univ. of Notre Dame, 1953; M.M., *ibid.*, 1955; S.T.L., Gregorian Univ., Rome, 1961; S.T.D., Inst. Catholique de Paris, 1971. (1999)

Rev. Daniel G. Groody, C.S.C., *Assistant Professor*. B.A., Univ. of Notre Dame, 1986; M.Div., Jesuit School of Theology in Berkeley, 1992; Ph.D., *ibid.*, 2000; S.T.L., *ibid.*, 2001. (2001)

Rev. Gustavo Gutierrez, O.P., *John Cardinal O'Hara Professor of Theology*. S.T.L. Univ. Catholique (Lyons), 1959; S.T.D., *ibid.*, 1985. (2001)

Jennifer Herdt, *Associate Professor*. B.A., Oberlin College, 1989; M.A., Princeton Univ., 1991; Ph.D., *ibid.*, 1994. (1999)

M. Catherine Hilkert, O.P., *Professor*. B.A., Univ. of Dayton, 1971; M.A., Catholic Univ. of America, 1979; Ph.D., *ibid.*, 1984. (1996)

Maxwell Johnson, *Professor*. B.A., Augustana College, 1974; M.Div., Wartburg Seminary, 1978; M.A., St. John's Univ., 1982; M.A., Univ. of Notre Dame, 1989; Ph.D., *ibid.*, 1992. (1997)

M. Cathleen Kaveny, *the John P. Murphy Foundation Professor of Law and Professor of Theology*. A.B., Princeton Univ., 1984; M.A., 1986; M.Phil., 1990; J.D., 1990; Ph.D., 1991, Yale Univ. (1995)

Rev. Paul Kollman, C.S.C., *Assistant Professor*. B.A., Univ. of Notre Dame, 1984; M.Div., *ibid.*, 1990; Ph.D., Univ. of Chicago Divinity School, 2001. (2001)

Robert A. Krieg, *Professor and Fellow in the Nanovic Institute for European Studies*. B.A., Stonehill College, 1969; Ph.D., Univ. of Notre Dame, 1976. (1977)

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Rev. Edward A. Malloy, C.S.C., *Professor of Theology*. B.A., Univ. of Notre Dame, 1963; M.A., *ibid.*, 1967; M.Th., *ibid.*, 1969; Ph.D., Vanderbilt Univ., 1975. (1974)

Josephine Massyngbaerde Ford, *Professor Emerita*. B.A., Univ. of Nottingham, 1957; B.Div., King's College, Univ. of London, 1963; Ph.D., Nottingham Univ., 1965. (1965)

THEOLOGY

Timothy Matovina, *Director of the Cushwa Center for the Study of American Catholicism and Associate Professor*. B.A., Indiana Univ., 1978; M.Div., Toronto School of Theology, St. Michael's College, 1983; Ph.D., Catholic Univ. of America, 1993. (2000)

Rev. Richard P. McBrien, *the Crowley-O'Brien Professor of Theology*. A.B., St. Thomas Seminary, 1958; M.A., St. John's Seminary, 1962; S.T.L., Gregorian Univ., 1964; S.T.D., *ibid.*, 1967. (1980)

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John Meier, *the William K. Warren Professor of Catholic Theology*. B.A., St. Joseph's Seminary, 1964; S.T.L., Gregorian Univ., 1968; S.S.D., Biblical Inst., Rome, 1976. (1999)

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Rev. Jerome Neyrey, S.J., *Professor*. B.A., St. Louis Univ., 1963; M.A., *ibid.*, 1964; M.Div., Regis College, 1972; M.Th., *ibid.*, 1972; M.A., Yale Univ., 1975; Ph.D., *ibid.*, 1977; S.T.L., Weston School of Theology, 1987. (1992)

Rev. Paulinus I. Odozor, C.S.Sp., *Associate Professor*. S.T.B., Urban, Rome/Bigard Memorial Seminary, Nigeria, 1984; Th.M., Univ. of St. Michael's College, Univ. of Toronto, 1989; S.T.L., Regis College, Toronto; Th.D., Toronto School of Theology, Univ. of Toronto; S.T.D., Regis College, Toronto, 1993. (2005)

Rev. Thomas F. O'Meara, O.P., *the William K. Warren Professor Emeritus of Theology*. Bacc. Phil., St. Thomas College, 1958; Lic.Phil., *ibid.*, 1959; M.A., Aquinas Inst., 1963; M.Div.Theo., *ibid.*, 1963; Ph.D. Theology, Ludw. Max. Univ., Munich, 1967. (1981)

Cyril O'Regan, *the Catherine F. Huisking Professor of Theology*. B.A., Univ. College Dublin, 1974; M.A., *ibid.*, 1978; M.A., Yale Univ., 1983; M.Phil., *ibid.*, 1984; Ph.D., *ibid.*, 1989. (1999)

Rev. Hugh Rowland Page Jr., *Dean of the First Year of Studies and Associate Professor*. B.A., Hampton Inst., 1977; M.Div., Pittsburgh Theological Seminary, 1980; S.T.M., General Theological Seminary, 1983; A.M., Harvard Univ., 1988; Ph.D., *ibid.*, 1990. (1992)

Margaret R. Pfeil, *Assistant Professor*. B.A., Univ. of Notre Dame, 1987; M.T.S., Weston Jesuit School of Theology, 1994; M.A., Univ. of Notre Dame, 1997; Ph.D., *ibid.*, 2000. (2003)

Janice M. Poorman, *Director of Field Education and Professional Specialist*. B.S., Southern Illinois Univ., 1976; M.A., Univ. of Notre Dame, 1988; Ph.D., *ibid.*, 1996. (1997)

Rev. Hugh Rowland Page Jr., *Dean of the First Year of Studies and Associate Professor*. B.A., Hampton Inst., 1977; M.Div., Pittsburgh Theological Seminary, 1980; S.T.M., General Theological Seminary, 1983; A.M., Harvard Univ., 1988; Ph.D., *ibid.*, 1990. (1992)

Rev. Mark Poorman, C.S.C., *Vice President for Student Affairs and Associate Professor*. B.A., Univ. of Illinois, 1976; M.Div., Univ. of Notre Dame, 1980; Ph.D., Graduate Theological Union, Berkeley, 1990. (1990)

Jean Porter, *the John A. O'Brien Professor of Moral Theology*. B.A., Univ. of Texas at Austin, 1976; M.Div., Weston School of Theology, 1980; M.A., Yale Univ., 1981; Ph.D., *ibid.*, 1984. (1990)

Thomas Prügl, *Associate Professor*. B.A., Univ. of Munich, 1984; Lic.Theo., *ibid.*, 1988; Th.D., *ibid.*, 1994. (2001)

Gabriel Said Reynolds, *Assistant Professor*. B.A., Columbia Univ., 1994; M.A., Yale Univ., 2001; M.Phil., *ibid.*, 2001; Ph.D., *ibid.*, 2003. (2003)

Maura A. Ryan, *Associate Professor*. B.A., St. Bonaventure Univ., 1979; M.A., Boston College, 1987; M.Phil., Yale Univ., 1990; Ph.D., *ibid.*, 1993. (1992)

Rabbi Michael A. Signer, *the Abrams Professor of Jewish Studies and Fellow in the Nanovic Institute for European Studies*. B.A., Univ. of California, Los Angeles, 1966; M.A., Hebrew Union College-JIR, 1970; Ph.D., Univ. of Toronto, 1978. (1992)

Gregory E. Sterling, Senior *Associate Dean of Arts and Letters and Professor of Theology*. A.A., Florida College, 1974; B.A., Houston Baptist Univ., 1978; M.A., Pepperdine Univ., 1980; M.A., Univ. of California, Davis, 1982; Ph.D., Graduate Theological Union, Berkeley, 1990. (1989)

Lawrence E. Sullivan, *Professor*. B.A., St. Francis College, Milwaukee, 1971; M.Div., Catholic Theological Union, 1975; A.M., Univ. of Chicago, 1979; Ph.D., *ibid.*, 1981. (2004)

Eugene C. Ulrich, *the Rev. John A. O'Brien Professor of Old Testament Studies*. Litt.B., Xavier Univ., 1961; Ph.L., Loyola Univ., 1964; M.Div., Woodstock College, 1970; M.A., Harvard Univ., 1967; Ph.D., *ibid.*, 1975. (1973)

James C. VanderKam, *the John A. O'Brien Professor of Old Testament Studies*. A.B., Calvin College, 1968; B.D., Calvin Theological Seminary, 1971; Ph.D., Harvard Univ., 1976. (1991)

Joseph P. Wawrykow, *Associate Professor*. B.A., Univ. of Manitoba, 1978; M.A., *ibid.*, 1980; M.A., Yale Univ., 1981; M.Phil., *ibid.*, 1984; Ph.D., *ibid.*, 1987. (1986)

Todd D. Whitmore, *Associate Professor and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.S., Wabash College, 1979; M.Div., *ibid.*, 1985; Ph.D., Univ. of Chicago, 1990. (1990)

Robin Darling Young, *Associate Professor*. B.A., Mary Washington College, 1972; M.A., Univ. of Chicago, 1975; Ph.D., *ibid.*, 1981. (2002)

Randall C. Zachman, *Director of M.T.S. Program and Associate Professor*. B.A., Colgate Univ., 1975; M.Div., Yale Divinity School, 1980; Ph.D., Univ. of Chicago, 1990. (1991)

Matthew C. Zyniewicz, *Director of M.A. Program (Summer), Assistant Chair and Associate Professional Specialist*. B.A., Univ. of Notre Dame, 1988; M.Div., *ibid.*, 1993; M.A., *ibid.*, 1996; Ph.D., *ibid.*, 2000. (2001)

The Division of Science

In the Division of Science, programs in graduate study leading to the degree of doctor of philosophy are offered in the fields of biological sciences, biochemistry, chemistry, mathematics, and physics. Programs leading to the degree of master of science are also available in these departments.

In its programs of research and instruction, the Division of Science proposes: (1) to educate ethically grounded scientists of disciplined intelligence who can participate fruitfully in the affairs of human society; (2) to conduct research dedicated to the discovery and integration of truth and to train additional scientists with comparable skills and ideals; and (3) to interpret the principles and discoveries of science, with their implications and significance, by lectures, research, articles, and books.

Graduate students in the Division of Science are encouraged to cross departmental lines of instruction and to participate in interdisciplinary programs to broaden their outlook and promote the integration of the sciences in areas of overlap.

Biological Sciences

Chair:

Charles F. Kulpa Jr.

Director of Graduate Studies:

Gary A. Lamberti

Telephone: (574) 631-6552

Fax: (574) 631-7413

Location: 107 Galvin Life Sciences Center

E-mail: biosadm@nd.edu

Web: <http://biology.nd.edu/>

The Program of Studies

The graduate program in biological sciences is designed to provide students with depth of knowledge and insight into their particular areas of interest and a broad background in the whole area of biology. Special efforts are made to place the students' areas of interest into proper perspective with the other areas of biology and with cognate sciences. The goal is to train the students to be professional biologists in every good sense of the word "professional."

To achieve this goal, all students are encouraged to take appropriate courses in other departments as well as in biological sciences. Formally structured interdisciplinary programs are available in biochemistry and biophysics (see program description in this *Bulletin*), and with the Department of Civil Engineering and Geological Sciences and the Department of Chemical and Biomolecular Engineering.

The Department of Biological Sciences is housed in the Galvin Life Sciences Center. The facilities are excellent for most types of laboratory research in biology. They include controlled environment rooms, photographic facilities and an optical facility (scanning and high-resolution transmission electron microscopes, plus confocal imaging systems), radio-isotope rooms with specialized equipment, ultra-

centrifuges, centralized automated sequencing and imaging systems, sterile transfer rooms, computing equipment, and facilities for behavioral and electrophysiological research. The recently completed Hank Center for Environmental Science added more than 20,000 square feet of state-of-the-art research space for aquatic ecology and environmental biology that includes greenhouses, wet laboratories, a field sample processing room, and a fully equipped shop.

In addition, the Freimann Life Science Center provides a modern, fully AAALAC-accredited animal care facility for research and teaching. Two lakes on campus, several nearby natural areas, and the University's 7,500-acre Environmental Research Center (UNDERC) in northern Wisconsin and the upper peninsula of Michigan offer a wide variety of habitats for ecological, limnological, and entomological field studies.

A specialized teaching and research library is housed in the Life Sciences Center as a branch of the campus library. The department maintains and operates a PC-based Local Area Network (LAN) and a Macintosh LAN. The LANs are connected to University-wide networks. The department's Greene-Nieuwland Herbarium contains about 250,000 specimens. The Radiation Laboratory, a University institute for high-energy radiation studies, and the Center for Environmental Science and Technology also provide facilities and specialized instrumentation for biological research. In addition, the University maintains a Bioscience Core Facility to provide basic biochemical support for cellular and molecular biology. The University publishes the journal *The American Midland Naturalist*; the editorial office is housed in Galvin.

Because there are many opportunities for fruitful research in areas that tend to bridge gaps between sub-disciplines of biology or between biology and other disciplines, the areas of concentration are not rigidly defined. Special programs exist in aquatic ecology,

evolution and environmental biology, cellular and molecular biology, developmental biology, microbiology, parasitology, physiology, and vector biology, but even within each of these programs there is considerable flexibility in the choice of courses. Students are expected to plan, with their advisory committee, a program of courses and research appropriate to their individual needs.

In addition to the University-wide requirements of the Graduate School, applicants for admission to graduate studies in this department should be adequately prepared in general biology, physics, organic chemistry, mathematics through calculus, and one or more areas of the life sciences. Course deficiencies in these certain areas and prerequisites for advanced graduate courses may be made up at Notre Dame.

The master's degree is a 24-credit-hour program requiring the satisfactory completion of a minimum of 15 credit hours of course work, passing a research proposal review, and completing a suitable master's thesis. A student may include nine of the 24 credit hours in thesis research.

For the degree of doctor of philosophy, the student is expected to complete a 54-credit-hour requirement. This is composed of at least 24 credit hours of course work and the remainder as dissertation research. The student must pass a comprehensive examination consisting of both an oral and a written examination, write and officially have approved a dissertation on research conducted under the direction of an adviser and committee, and pass a defense of the dissertation.

Students in the doctoral degree program must also fulfill a one-year teaching requirement that usually involves assisting in the instruction of undergraduate or graduate laboratory courses. This requirement may be automatically fulfilled if the student has a graduate assistantship for financial aid.

BIOLOGICAL SCIENCES

Incoming graduate students may be assigned an interim faculty adviser by the director of graduate studies. These assignments are made with consideration of the specific academic interests of the student. It is the responsibility of the interim adviser to guide the student's program until a research adviser is selected. By the end of the first semester of the second year of residence, the Ph.D. student must have chosen a faculty member as a research adviser and have begun a research program. The master's student should choose an adviser by the end of the first year of residence. The student, in consultation with his or her adviser, selects an advisory committee. The members of this committee will contribute guidance, expertise, and stimulation to the student in his or her graduate program and will serve as the examining committee for the candidacy examinations and for the final defense.

Financial Assistance

Students are offered financial assistance on a competitive basis, with consideration given to grades, GRE examination scores, recommendations, and other factors. The University offers three types of support to full-time graduate students: fellowships, graduate and research assistantships, and tuition scholarships. Students may receive one type of support or a combination of types. A number of fellowships for women and minorities are available. To be considered, Biological Sciences requires that all application materials must be received by the Graduate Admissions Office by January 15.

Most graduate students in Biological Sciences are awarded full-tuition scholarships and are supported as teaching or research assistants (TAs or RAs). A student supported by a teaching assistantship typically works 10 to 12 hours per week. Typical duties include teaching in an undergraduate laboratory section, setting up the laboratory, and grading papers. The student also takes classes and is expected to carry on thesis research. TA appointments are for nine months and are generally supplemented with a two- or three-month summer stipend from individual faculty research grants and/or departmental funds. A student supported by a research assistantship registers for some classes and carries out thesis research under a faculty research adviser. RA support comes from government, industrial, or private grant funds. RA appointments are generally for 12 months.

Course Descriptions

Each course listing includes:

- Course number
- Title
- Credits per semester — lecture hours per week—laboratory or tutorial hours per week)
- Course description

50527. Stream Ecology
(3-3-0)

Prerequisite: General Ecology (BIOS 30312) or equivalent, and consent of instructor. This course

explores the interaction of biological, chemical, and physical features of streams and rivers. Human impacts on flowing waters are explored, along with current theory of stream ecology.

51527. Stream Ecology Laboratory
(3-1-0)

Pre/Corequisites: BIOS 50527
Quantitative analysis of stream biota and periodic physical features is conducted during field laboratory sessions.

50531. Molecular Biology I
(3-3-0)

The first of a two-semester sequence that will provide an introduction to molecular biology, molecular genetics, and nucleic acid biochemistry. Lecture topics include physical chemistry of nucleic acids, bacterial genetics, principles of cloning, DNA replication and recombination, prokaryotic and eukaryotic transcription, and RNA processing and translation. Listed also as CHEM 50531.

50532. Molecular Biology II
(3-3-0)

Prerequisite: BIOS 50531. The second semester of the sequence. Lecture topics include: transposable elements, yeast genetics, gene families, molecular aspects of development, animal viruses, and computer-assisted analysis of nucleic acids and proteins. Listed also as CHEM 50532.

50544. Environmental Justice
(3-3-0)

Students will examine methodological and ethical problems in current environmental impact assessments (EIAs) and technology assessments (TAs). The goal of the course is doing project-based philosophical analysis of current EIAs and TAs that typically are used to discriminate against poor people and minorities. Most noxious and polluting facilities are sited in poor and minority neighborhoods. Cross-listed with GSC 40474, PHIL 40470 and STV 40496.

60508. Population Genetics
(3-3-0)

Prerequisite: Introductory genetics (BIOS 20250 or BIOS 20303) or equivalent. This course will describe and mathematically analyze the processes responsible for genetic change within populations.

60515. Vector Genetics
(3-3-0)

Prerequisite: A course in genetics (BIOS 20250 or 20303) or equivalent, and consent of instructor. The principles of genetics as they apply to arthropod vectors of disease agents.

60523. Practicum in Environmental Biology
0-3-0)

Taught at UNDERC, Land O'Lakes, Wisconsin. Practical principles and applications of environmental biology are explored with intensive modules selected from among environmental

chemistry, biogeochemistry, environmental microbiology, ecological genetics, limnology/wetlands ecology, and river/watershed science. Emphasis will be placed on developing and refining laboratory and field skills. Prior permission of instructor required.

60525. Community Ecology
(3-3-0)

Prerequisite: General Ecology (BIOS 30312) or equivalent, and consent of instructor. Community ecology concepts, historical development, philosophical, and methodological approaches. Emphasis is on competition, predation, temporal, and spatial variability, exotic species, and food webs.

60529. Theoretical Population Ecology
(3-3-0)

An in-depth discussion of issues in population ecology from the analytical and theoretical points of view.

60530. Immunobiology of Infectious Disease
(3-3-0)

This course provides a critical overview of various infectious organisms and how they interact with their host. Examples will include intracellular and extracellular pathogens, generation of toxins, molecular mechanisms of invasion, and immune activation and protection. Students will be expected to give oral presentations based on critical review of primary literature as well as written reports.

60535. Comparative Endocrinology
(3-3-0)

Prerequisite: Consent of instructor. A systematic comparative analysis of chemical mediation in biological systems with special emphasis on vertebrate species. A study of the structure and function of endocrine tissues, the biochemistry of hormones and their effects on the physiology and behavior of organisms. (On demand)

60539. Advanced Cell Biology I
(3-3-0)

Prerequisite: Consent of instructor. An upper-level course directed at graduate students and advanced undergraduates with previous background in cell and molecular biology. The course focuses on the molecular basis and regulation of cell structure and function, covering key topics that include membrane structure, function, and transport, cellular energetics, organelle biogenesis, protein trafficking, vesicular transport, signaling, and cytoskeletal function. (On demand)

60540. Advanced Cell Biology II
(3-3-0)

Prerequisite: Consent of instructor. A continuation and expansion of topics presented in Advanced Cell Biology I.

BIOLOGICAL SCIENCES

60562. Aquatic Insects
60562. Aquatic Insects Laboratory
(3-4-3)
Prerequisite: A course in entomology, invertebrate zoology, or ecology and consent of instructor. The taxonomy and ecology of insects having aquatic stages in their life cycles.
60570. Topics in Cell Biology
(v-v-0)
Subject matter changes depending on students' needs, ranging from cancer to chemistry of cell organelles to current concepts in modern molecular cell biology.
60571. Topics in Physiology
(v-v-0)
Subject matter changes depending on students' needs. Prospective subjects include invertebrate and vertebrate physiology.
60573. Topics in Ecology
(v-v-0)
Prerequisite: Consent of instructor. Subject matter changes depending on students' needs. Prospective subjects include systems analysis in ecology or biogeography.
60574. Topics in Evolutionary and Systematic Biology
(v-v-0)
Prerequisite: Consent of instructor. Subject matter changes depending on students' needs. Prospective subjects include numerical taxonomy and population genetics.
60575. Topics in Developmental Biology
(v-v-0)
Prerequisite: Consent of instructor. Subject matter changes depending on students' needs. Prospective subjects include developmental physiology, determination and differentiation, extracellular matrix, and invertebrate development.
60577. Topics in Genetics/Molecular Biology
(v-v-0)
Prerequisite: Consent of instructor. Selected topics in molecular biology as reflected by the current literature.
60579. Topics in Parasitology and Vector Biology
(v-v-0)
Prerequisite: Consent of instructor. Subject matter changes depending on students' needs. Prospective topics include specific diseases (e.g., Malaria, dengue), molecular genetics of vectors, bioinformatics, and others.
60581. Graduate Seminar
(1-1-0)
Advanced level, current topics in ecology. An introductory course in the area or consent of the instructor is usually required.
60582. Graduate Seminar
(1-1-0)
Advanced level, current topics in developmental biology. An introductory course in the area or consent of the instructor is usually required.
60583. Graduate Seminar
(1-1-0)
Advanced level, current topics in physiology, neurobiology or behavior. An introductory course in the area or consent of the instructor is usually required.
60584. Graduate Seminar
(1-1-0)
Advanced level, current topics in genetics and molecular biology. An introductory course in the area or consent of the instructor is usually required.
60585. Graduate Seminar
(1-1-0)
Advanced level, current topics in parasitology/vector biology. An introductory course in the area or consent of the instructor is usually required.
60586. Seminars
(1-1-0)
Advanced level, current topics in cell biology or microbiology. An introductory course in the area or consent of the instructor is usually required.
63680. BBMG Seminar
(0-0-0)
Special seminar series for MBP participants.
67500. Biological Sciences Colloquium
(0-0-0)
Presentation of seminars by visiting faculty, Notre Dame faculty, Postdoctorals, graduate students, and others as scheduled. While seminar attendance is expected of all graduate students on a regular basis, first-year graduate students are required to complete two semesters of colloquium.
68599. Thesis Direction
(0-0-0)
Research and direction for resident master's students.
70558. Electron Microscopy
(1-0-0)
Characteristics and biological applications of transmission and scanning electron microscopy. Current methods in ultrastructural preparation and analysis.
70559. Light Microscopy
(1-0-0)
Characteristics and biological applications of modern cutting-edge light microscopy.
77671. Special Problems I
77672. Special Problems II
(v-v-0)
Special topics in the field of interest of individual graduate students or visiting scholars.
88600. Nonresident Thesis Research
(1-0-0)
Students away from campus register for one credit hour each semester during regular academic year only.
90590. Principles of Grantmanship
(v-v-0)
Principles of grantmanship is designed to introduce graduate students to the process of applying for grants.
98699. Research and Dissertation
(v-v-0)
Research and dissertation for resident doctoral students.
98700. Nonresident Dissertation Research
(1-0-0)
Students away from campus register for one credit hour each semester during regular academic year only.

Faculty

- John H. Adams, *Professor*. B.A., Hendrix College, 1978; M.Sc., Univ. of Illinois, 1982; Ph.D., *ibid.*, 1986. (1991)
- Gary E. Belovsky, *the Gillen Director of UNDERC and Professor*. B.B.A., Univ. of Notre Dame, 1972; M.F.S., Yale Univ., 1972; Ph.D., Harvard Univ., 1977. (2001)
- Harvey A. Bender, *Professor*. B.A., Western Reserve Univ., 1954; M.S., Northwestern Univ., 1957; Ph.D., *ibid.*, 1959. (1960)
- Nora J. Besansky, *Professor*. B.S., Oberlin College, 1982; M.S., M.Phil., Yale Univ., 1987; Ph.D., *ibid.*, 1990. (1997)
- Sunny K. Boyd, *Associate Professor*. A.B., Princeton Univ., 1981; M.S., Oregon State Univ., 1984; Ph.D., *ibid.*, 1987. (1987)
- Frank H. Collins, *the George and Winifred Clark Professor of Biological Sciences*. A.B., Johns Hopkins Univ., 1966; M.A., Univ. of East Anglia, 1973; M.S., Univ. of California, Davis, 1980; Ph.D., *ibid.*, 1981. (1997)
- Crislyn D'Souza-Schorey, *the Walther Cancer Institute Associate Professor*. B.Sc., Univ. of Bombay, India, 1986; M.Sc., *ibid.*, 1988; Ph.D., Univ. of Texas, San Antonio, 1992. (1998)
- John G. Duman, *the Martin J. Gillen Professor of Biological Sciences*. B.S., Pennsylvania State Univ., 1968; Ph.D., Univ. of California, San Diego (Scripps Institute of Oceanography), 1974. (1974)
- Jeffrey L. Feder, *Associate Professor*. B.A., Pomona College, 1980; Ph.D., Michigan State Univ., 1989. (1993)
- Michael T. Ferdig, *Assistant Professor*. B.S., Univ. of Nebraska, Lincoln, 1987; M.S., *ibid.*, 1990; Ph.D., Univ. of Wisconsin, Madison, 1997. (2001)

BIOLOGICAL SCIENCES ∞ CHEMISTRY AND BIOCHEMISTRY

Malcolm J. Fraser Jr., *Professor*. B.S., Wheeling College, 1975; M.S., Ohio State Univ., 1979; Ph.D., *ibid.*, 1981. (1983)

Paul R. Grimstad, *Assistant Chair and Associate Professor, Undergraduate Studies*. B.A., Concordia College, 1967; M.S., Univ. of Wisconsin, 1972; Ph.D., *ibid.*, 1973. (1976)

Kristin M. Hager, *Assistant Professor*. B.Sc., Univ. of Illinois, 1989; Ph.D., Univ. of Alabama, Birmingham, 1996. (2000)

Ronald A. Hellenenthal, *Assistant Chair and Professor*. A.A., Los Angeles Valley College, 1965; B.A., California State Univ., Northridge, 1967; Ph.D., Univ. of Minnesota, 1977. (1977)

Jessica J. Hellmann, *Assistant Professor*. B.S., Univ. of Michigan, 1996; Ph.D. Stanford Univ., 2000. (2003)

Edward H. Hinchcliffe, *Assistant Professor*. B.Sc., Univ. of Dayton, 1989; Ph.D., Univ. of Minnesota, 1995. (2001)

Hope Hollocher, *Associate Professor*. B.A., Univ. of Pennsylvania, 1982; Ph.D., Washington Univ., St. Louis, 1991. (2000)

David R. Hyde, *the Navari Family Director of the Center for Zebrafish Research and Professor*. B.S., Michigan State Univ., 1980; Ph.D., Pennsylvania State Univ., 1985. (1988)

Alan L. Johnson, *Professor*. B.A., Univ. of Vermont, 1972; M.S., *ibid.*, 1975; Ph.D., Cornell Univ., 1979. (1993)

Charles F. Kulpa Jr., *Chair and Professor*. B.S., Univ. of Michigan, 1966; M.S., *ibid.*, 1968; Ph.D., *ibid.*, 1970. (1972)

Gary A. Lamberti, *Director of Graduate Studies, Assistant Chair, and Professor*. B.S., Univ. of California, Berkeley, 1975; Ph.D., Univ. of California, Berkeley, 1983. (1989)

Lei Li, *Associate Professor*. B.S., Shandong Univ., China, 1985; Ph.D., Georgia State Univ., 1995. (2003)

David M. Lodge, *Professor and Fellow of the Joan B. Kroc Institute for International Peace Studies*. B.S., Univ. of the South, 1979; D.Phil., Oxford Univ., England, 1982. (1985)

Mary Ann McDowell, *Assistant Professor*. B.S., Univ. of Nebraska, Lincoln, 1988; M.S., *ibid.*, 1990; Ph.D., Univ. of Wisconsin, Madison, 1995. (2001)

Edward E. McKee, *Adjunct Associate Professor*. B.S., Pennsylvania State, 1972; Ph.D., *ibid.*, 1977. (1991)

Jason S. McLachlan, *Assistant Professor*. B.A., Columbia Univ. New York, 1989; M.S., Univ. Washington Seattle, 1994; Ph.D., Duke Univ., 2003. (2006)

Kenneth R. Olson, *Adjunct Professor*. B.S., Univ. of Wisconsin, LaCrosse, 1969; M.S., Michigan State Univ., 1970; Ph.D., *ibid.*, 1972. (1975)

Joseph E. O'Tousa, *Professor*. B.S., Univ. of California, Irvine, 1976; Ph.D., Univ. of Washington, Seattle, 1980. (1985)

Jeanne Romero-Severson, *Associate Professor*. B.S., Univ. of Wisconsin, Madison, 1974; M.S., *ibid.*, 1975; Ph.D., *ibid.*, 1984. (2003)

Jeffrey S. Schorey, *Associate Professor*. B.Sc., Southeast Missouri State Univ., 1985; Ph.D., Univ. of Texas Health Science Center, San Antonio, 1992. (1998)

David W. Severson, *Professor*. A.A., Rochester Community College, 1970; B.A. Winona State Univ., 1975; M.Sc., Univ. of Wisconsin, LaCrosse, 1978; Ph.D., Univ. of Wisconsin, Madison, 1983. (1997)

Neil F. Shay, *Associate Professor*. B.S., Univ. Massachusetts, Amherst, 1976; M.A.T., *ibid.*, 1979; Ph.D., Univ. Florida, 1990. (2000)

Jennifer L. Tank, *the Galla Associate Professor*. B.S., Michigan State Univ., 1988; M.S., Virginia Polytechnic Institute and State Univ., 1992; Ph.D., *ibid.*, 1996. (2000)

Martin P. Tenniswood, *the Coleman Professor of Life Sciences*. B.Sc., Trent Univ., Ontario, 1973; Ph.D., Queen's Univ., Kingston, 1979. (1998)

Kevin T. Vaughan, *Associate Professor*. B.A., Hamilton College, 1984; M.S., State Univ. New York, Buffalo, 1986; Ph.D., Cornell Medical College, 1992. (1998)

JoEllen J. Welsh, *Professor*. B.A., Rutgers Univ., 1975; Ph.D., Cornell Univ., 1980. (1998)

Chemistry and Biochemistry

Chair:

A. Graham Lappin

Director of Graduate Studies:

Kenneth W. Henderson

Telephone: (574) 631-0977

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Location: 251 Nieuwland Science Hall

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The Program of Studies

The graduate programs in chemistry and biochemistry at Notre Dame are directed toward the master's and doctoral degrees. Applications are taken from students seeking a degree in either chemistry or biochemistry.

The Ph.D. program is designed to prepare the student for a career in research or college-level teaching in chemistry, biochemistry, and related fields. Advanced courses in several areas of chemistry and biochemistry are available (see list below) along with regular seminars and special topics courses. Students usually begin active research during the spring semester of their first year. Admission to candidacy for

the doctoral degree occurs after completion of written and oral examinations in the area of specialization.

The department considers teaching an integral part of the education of a graduate student. Teaching performance, therefore, is considered as part of the semi-annual graduate student evaluations. A minimum of one year of teaching experience is required of all advanced degree-seeking students.

Both the Ph.D. and master's degrees require a dissertation based upon experimental and/or theoretical research. The department participates in interdisciplinary programs involving the Departments of Biological Sciences, Physics, and Engineering. These programs include the Keck Transgene Center, the Walther Cancer Research Center, the Radiation Laboratory, the Center for Environmental Science and Technology, and the Center for Nano Science and Technology. A student normally selects his or her area of research and thesis adviser by the end of the first semester.

The Department of Chemistry and Biochemistry has excellent facilities for research, including most modern instruments for investigations in the major areas of chemistry and biochemistry. In addition to equipment found in the research laboratories of individual faculty members, department facilities include the Lizzadro Magnetic Resonance Research Center, the Molecular Structure and Mass Spectrometry Facilities, and the Surface Science Laboratory. The latter is maintained jointly by the Department of Chemistry and Biochemistry and the Department of Electrical Engineering. In addition to holdings in Hesburgh Library, all the major chemical, biochemical, and biophysical specialty journals are available in the Chemistry-Physics Research Library located in Nieuwland Science Hall. Other relevant holdings are found in the Life Sciences Library located in Galvin Life Sciences Center. The Radiation Research Laboratory, which is operated by the U.S. Department of Energy, is one of the world's leading research centers in radiation chemistry and draws scientists from all over the world to the Notre Dame campus. The laboratory has a staff of approximately 20 research scientists, two of whom have joint appointments in the Department of Chemistry and Biochemistry (see Radiation Laboratory in this *Bulletin*).

Currently, there are over 140 graduate students and approximately 50 postdoctoral investigators in the department. Visiting scientists from the United States and foreign countries are often in residence.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester — lecture hours per week—laboratory or tutorial hours per week)
- Course description

50531. Molecular Biology I (3-3-0)

The first of a two-semester sequence that provides an introduction to molecular biology, molecular genetics, and nucleic acid biochemistry. Topics include: physi-

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cal chemistry of nucleic acids, bacterial genetics, principles of cloning, DNA replication and recombination, prokaryotic and eukaryotic transcription, and RNA processing and translation. Listed also as CHEM 60531 and BIOS 60531.

50532. Molecular Biology II
(3-3-0)

The second semester of the sequence. Lecture topics include: yeast genetics and molecular biology; retroviruses and transposable elements; transgenic mice; and special topics covering cell cycle regulation, oncogenes, development in *Drosophila*, signal transduction, and cloning of human disease genes. Listed also as CHEM 60532 and BIOS 60532.

60521. Biomolecular Structure and Function
(3-3-0)

The properties and functions of biological macromolecules, including proteins, nucleic acids, lipids, and carbohydrates. Physical and chemical principles are utilized to understand biological processes. Protein structure and function will be emphasized.

60522. Glycobiology
(1-1-0)

Structure and function of glycoconjugates. Includes analysis of mono-, oligo-, and polysaccharides by chemical, NMR and mass-spectrometry approaches; biosynthesis and regulation of glycoproteins and glycolipids; role of glycosylation and glycoconjugates in cell adhesion, inborn disorders, and cancer cell metastasis.

60523. Membrane Biochemistry and Transport
(1-1-0)

The physical and chemical properties of biological membranes and membrane function. Topics include membrane energetics, transport, maintenance of gradients, membrane targeting, and membrane fusion and budding.

60524. Metabolic Regulation and Cell Signaling
(2-2-0)

A study of the chemical reactions and pathways characterizing living systems: mechanisms, regulation, energetics, and integration. Topics include anabolism and catabolism of fundamental biomolecules, energy production and storage, mechanisms of intracellular signal transduction and relationships to disease states.

60535. Medicinal Chemistry
(3-3-0)

The chemical, biological, and medical aspects of medicinal agents. The course will include CNS depressants, CNS stimulants, benzodiazepines, cardiovascular agents, analgesics, cascades (arachidonic acid, renin, peptides) antibiotics, cancer, transmitters, teratogens, metabolism, drug design, cholesterol, anti-inflammatory agents, antiulcer agents, Alzheimer's and Parkinson's diseases.

67598. The Congress: Science and Technology Policy
(2-2-0)

This course is interdisciplinary in nature and should be of interest to many students and faculty -- especially those in the colleges of science, engineering and business, as well as public policy/government/political science departments in arts and letters, and the law school. This course will describe the legislative framework in which Congress makes science and technology policy, and the process by which Congress provides funding for S & T programs.

63603. Research Perspectives in Chemistry and Biochemistry
(2-2-0)

Lectures by the faculty of the Department of Chemistry and Biochemistry.

63604. Effective Scientific Presentations
(2-2-0)

Students are instructed in the skills needed to give research-quality scientific presentations.

60610. Organometallic Chemistry
(3-3-0)

Structure and reactions of organometallic compounds and applications to synthetic and catalytic reactions.

60614. Advanced Inorganic Chemistry
(3-3-0)

A course in modern inorganic chemistry, incorporating the chemistry of clusters, organometallic chemistry, bioinorganic chemistry and photochemistry. Emphasis is placed on a molecular orbital approach to topics in main group and transition metal chemistry. Aspects of solid-state chemistry are also included.

61624. Advanced Biochemical Technique
(6-4-2)

Prerequisite: Permission of instructor. Advanced laboratory in biochemical techniques with emphasis on protein purification, enzyme kinetics, and Nucleic acid isolation and manipulation.

60631. Advanced Organic Chemistry I
(3-3-0)

Covalent and non-covalent bonding in organic molecules, reactive intermediates and reaction mechanisms.

60632. Advanced Organic Chemistry II
(3-3-0)

The chemistry of organic functional groups including preparations, reactions, interconversions and transformations. Reagent and reaction design with emphasis on chemo-, regio-, and stereoselectivity including asymmetric synthesis.

60634. Structure Elucidation
(3-3-0)

The interpretation of data from NMR, IR, MS, UV-Vis, and X-ray crystallography with an emphasis on the practical, rather than the theoretical point of view.

60641. Statistical Mechanics I
(3-3-0)

Foundations of statistical mechanics; canonical, microcanonical, and grand canonical ensembles; thermodynamic properties of chemical substances in terms of partition functions; chemical equilibrium; thermal radiation; quantum statistics; and chemical kinetics and the approach to equilibrium.

60649. Quantum Mechanics
(3-3-0)

A survey of quantum mechanics at an intermediate level, oriented toward problems of chemical interest. Relevant mathematical concepts are developed, including Dirac notation, matrix algebra, orthogonal functions, and commutator relations. Topics covered include harmonic oscillators, central field problems, wave packets, angular momentum, and approximation methods.

78599. Thesis Direction
(0-0-0)

Research and reading for master's students

90615. Inorganic Mechanisms
(3-3-0)

A general treatment of the mechanisms of inorganic reactions, including an examination of the sources of mechanistic data.

90616. Solid State and Cluster Chemistry
(3-3-0)

A survey of synthesis, structure (geometric and electronic), spectroscopic, dynamic properties, and reactivity of solid state and molecular cluster compounds of the main group and transition metal elements.

90617, 90618. Special Topics in Inorganic Chemistry
(0-0-0)

Recent offerings have included: Advanced Laboratory Techniques in Inorganic Chemistry; MOs in Organometallics X-ray Crystallography.

90620. Bioinorganic Chemistry
(3-3-0)

The role of metals in biological systems.

90623. Enzyme Chemistry
(3-3-0)

Physical and chemical properties and mechanism of action of enzymes and their role in metabolic processes.

90625. Molecular Biophysics
(3-3-0)

An investigation of the forces that drive intra- and inter-molecular recognition, including hydrophobicity, electrostatics, and configurational entropy. Topics include the thermodynamics of protein folding and ligand binding and their relationships to chemical properties and three-dimensional structure; mathematical treatment of folding, binding, and linkage via partition functions; and the determinants of ligand binding specificity and kinetics. Advanced theory supplemented with primary literature.

CHEMISTRY AND BIOCHEMISTRY

90626. NMR Spectroscopy in Chemistry and Biochemistry (3-3-0)

A survey of modern NMR methods used to determine molecular structure and conformation, study chemical and biochemical reactivity, and probe metabolic processes in biological systems. 1D, 2D, and 3D spectroscopy and MRI/MRS are treated.

90627. Special Topics in Biochemistry (0-0-0)

Recent offerings have included: Glycoconjugates; Spectroscopy in Biochemistry; Chemistry and Biology of RNA.

90628. Special Topics in Biochemistry (0-0-0)

Recent offerings have included: Glycoconjugates; Spectroscopy in Biochemistry; Chemistry and Biology of RNA.

93635, 93636. Seminar in Organic Chemistry (1-1-0)

Lectures on the topic of organic chemistry.

90638. Special Topics in Organic Chemistry (0-0-0)

Recent offerings have included: Advanced Physical Organic Chemistry; Computers in Chemistry; Enzymes in Organic Synthesis; Bioorganic Chemistry.

90639. Synthetic Organic Chemistry (3-3-0)

A systematic and critical study of the synthetic methods of modern organic chemistry including the development of multistage syntheses and organometallic reagents.

90647, 90648. Special Topics in Physical Chemistry (0-0-0)

Current topics of modern theoretical physical chemistry.

90650, 90651. Computational Chemistry I (3-3-0)

An overview of the fundamental theory, methodology, and applications of computational chemistry. Topics include molecular dynamics and Monte Carlo simulations, as well as a wide range of quantum chemistry methods. Applications center on organic molecules and biological systems such as proteins and DNA. Hands-on computer experience is an integral part of these courses.

90652. Molecular Spectroscopy (3-3-0)

A study of the interaction of light with matter, at the single- and multi-photon level. Topics include group theory, molecular vibrational analysis, nonseparability of electronic, vibrational, and rotational motion, angular momentum coupling, and time-independent and time-dependent perturbation theory.

90653. Surface Chemistry (3-3-0)

The chemistry and physics of surfaces and interfaces. Topics covered include an overview of the fundamentals of crystal structure and solid-state physics; the differ-

ences between surface and bulk properties; the effect of defects, impurities, and local structure on surface properties and reactivity; the practical and theoretical details of scanning-probe techniques for investigating surfaces; and nanotechnology.

90697. Directed Readings (0-0-0)

Reading and research on specialized topics that are immediately relevant to the student's interests and not routinely covered in the regular curriculum.

93601, 93602. Seminar in Chemistry (0-0-0)

Prerequisite: Registration as graduate student in chemistry. Lectures by invited speakers.

93611, 93612. Seminar in Inorganic Chemistry (1-1-0)

Lectures on the topic of inorganic chemistry.

93621, 93622. Seminar in Biochemistry (1-1-0)

Lectures on the topic of biochemistry.

93643, 93644. Seminar in Physical Chemistry (1-1-0)

Lectures on the topic of physical chemistry.

93645, 93646. Seminar in Radiation Chemistry (1-1-0)

A continuing informal discussion of areas in radiation chemistry.

93680. Seminar in Biochemistry, Biophysics and Molecular Biology (1-1-0)

Lectures on the topics of biochemistry, biophysics, and molecular biology.

98698. Research and Dissertation (0-0-0)

Research and dissertation for resident doctoral students.

98699. Visiting Student Research (0-0-0)

Research for visiting students.

98700. Nonresident Dissertation Research (1-0-0)

Required of nonresident graduate students who are completing their dissertations in absentia and who wish to retain their degree status.

Faculty

Brian M. Baker, *Assistant Professor*. B.S., New Mexico State Univ., 1992; Ph.D., Univ. of Iowa, 1997. (2001)

Subhash Chandra Basu, *Professor*. B.S., Calcutta Univ., 1958; M.S., *ibid.*, 1960; Ph.D., Univ. of Michigan, 1966; D.Sc., Univ. of Calcutta, 1976. (1970)

Seth N. Brown, *Associate Professor*. B.S., Massachusetts Institute of Technology, 1988; Ph.D., Univ. of Washington, 1994. (1996)

Ian C. Carmichael, *Professor and Director of Radiation Laboratory*. B.Sc. Hons., University of Glasgow, 1971; Ph.D., University of Glasgow, 1974. (2004)

Francis J. Castellino, *Dean Emeritus of Science, the Kleiderer-Pezold Professor of Biochemistry, and Director of the Keck Center for Transgene Research*. B.S., Univ. of Scranton, 1964; M.S., Univ. of Iowa, 1966; Ph.D., *ibid.*, 1968. (1970)

Bakshy Chibber, *Research Associate Professor*. B.Sc., Indian Institute of Technology, 1968; Ph.D., Univ. of Waterloo, 1972. (1982)

Patricia L. Clark, *the Clare Booth Luce Assistant Professor*. B.S., Georgia Institute of Technology, 1991; Ph.D., Univ. of Texas, 1997. (2001)

Steven Corcelli, *Assistant Professor*. B.S., Brown University, 1997; Ph.D., Yale University, 2002. (2005)

Xavier Creary, *the Charles L. Huisiking Sr. Professor of Chemistry*. B.S., Seton Hall Univ., 1968; Ph.D., Ohio State Univ., 1973. (1974)

Jennifer L. DuBois, *Assistant Professor*. B.S., Cornell Univ., 1995; Ph.D., Stanford Univ., 2000. (2004)

Thomas P. Fehlner, *the Grace-Rupley Professor of Chemistry*. B.S., Siena College, 1959; M.A., Johns Hopkins Univ., 1961; Ph.D., *ibid.*, 1963. (1964)

J. Daniel Gezelter, *Assistant Professor*. B.S., Duke Univ., 1989; CPS, Univ. of Cambridge 1990; Ph.D., Univ. of California at Berkeley, 1995 (1999)

Holly V. Goodson, *Assistant Professor*. A.B., Princeton Univ., 1988; Ph.D., Stanford Univ., 1995 (2000)

Gregory V. Hartland, *Associate Chair and Professor*. B.S., Univ. of Melbourne, 1985; Ph.D., Univ. of California, Los Angeles, 1991. (1994)

Paul Helquist, *Professor*. B.A., Univ. of Minnesota, 1969; M.S., Cornell Univ., 1971; Ph.D., *ibid.*, 1972. (1984)

Kenneth W. Henderson, *Associate Professor and Director of Graduate Studies*. First Class Honours in Chemistry, Univ. of Strathclyde (U.K.), 1990; Ph.D., *ibid.*, 1993. (2002)

Paul W. Huber, *Professor*. B.S., Boston College, 1973; Ph.D., Purdue Univ., 1978. (1985)

Takayuki Iwaki, *Research Assistant Professor*. M.D., Hamamatsu Univ. School of Medicine, 1996; Ph.D., *ibid.*, 2001. (2003)

Dennis C. Jacobs, *Vice President and Associate Provost, and Professor and Fellow of the Center for Social Concerns*. B.S., Univ. of California, Irvine, 1981; B.S., *ibid.*, 1982; Ph.D., Stanford Univ., 1988. (1988)

David E. Joyce, *Research Assistant Professor*. B.S., John Carroll Univ., 1987; M.D., St. Louis Univ., 1992. (2004)

Prashant V. Kamat, *Professor*. B.S., Karnatak University, 1972; M.S., Bombay Univ., 1974. Ph.D., Bombay Univ., 1979. (2005)

S. Alex Kandel, *Assistant Professor*. B.S., Yale Univ., 1993; Ph.D., Stanford Univ., 1999. (2001)

Viktor Krchnak, *Research Professor*. Ph.D., Institute of Organic Chemistry, Prague, 1974. (2003)

M. Kenneth Kuno, *Assistant Professor*. B.A., Washington Univ. - St. Louis, 1993; Ph.D., MIT, 1998. (2003)

A. Graham Lappin, *Chair and Professor*. B.Sc., Univ. of Glasgow, 1972; Ph.D., *ibid.*, 1975. (1982)

Marya Lieberman, *Associate Professor*. B.S., Massachusetts Institute of Technology, 1989; Ph.D., Univ. of Washington, 1994. (1996)

Joseph P. Marino, *the William K. Warren Foundation Dean of the College of Science, and Professor of Chemistry*. B.S., Pennsylvania State Univ., 1963; Ph.D., Harvard 1967. (2002)

Dan Meisel, *Professor*. B.S., Hebrew Univ. in Jerusalem, 1967; Ph. D., *ibid.*, 1974. (1998)

Marvin J. Miller, *the George and Winifred Clark Professor of Chemistry*. B.S., North Dakota State Univ., 1971; M.S., Cornell Univ., 1974; Ph.D., *ibid.*, 1976. (1977)

Shahriar Mobashery, *the Navari Family Professor in Life Sciences*. B.S. Univ. of Southern California, 1981; Ph.D., Univ. of Chicago, 1985. (2003)

Bruce C. Noll, *Research Associate Professor*. Ph.D., Univ. of California at Davis., 1994. (2003)

Thomas L. Nowak, *Associate Chair and Professor*. B.S., Case Institute of Technology, 1964; Ph.D., Univ. of Kansas, 1969. (1972)

Jeffrey W. Peng, *Assistant Professor*. B.S., Cornell Univ., 1987; Ph.D., Univ. of Michigan, 1993. (2003)

Victoria A. Ploplis, *Research Professor and Associate Director of the Keck Center for Transgene Research*. B.A., The Dominican Univ., 1975; Ph. D., Univ. of Notre Dame, 1981. (1998)

Mary Frances Prorok, *Research Associate Professor*. B.S., State Univ. of New York at Buffalo, 1982; Ph.D., *ibid.*, 1991. (1998)

W. Robert Scheidt, *the William K. Warren Professor of Chemistry and Biochemistry*. B.S., Univ. of Missouri, 1964; M.S., Univ. of Michigan, 1966; Ph.D., *ibid.*, 1968. (1970)

Anthony S. Serianni, *Professor*. B.S., Albright College, 1975; Ph.D., Michigan State Univ., 1980. (1982)

Slavi C. Sevov, *Professor*. B.S., Univ of Sofia, 1983; M.Sc., *ibid.*, 1985; Ph.D., Iowa State Univ., 1993. (1995)

Bradley D. Smith, *Professor*. B.S., Univ. of Melbourne, 1982; Ph.D., Pennsylvania State Univ., 1988. (1991)

Richard E. Taylor, *Professor*. B.S., State Univ. of New York, Oswego, 1987; Ph.D., Rensselaer Polytechnic Institute, 1992. (1995)

Sergei B. Vakulenko, *Research Assistant Professor*. Ph.D., National Research Center of Antibiotics in Moscow., 1981 (2003)

Igor N. Veretennikov, *Research Assistant Professor*. M.S., Moscow Institute of Physics and Technology, 1989; Ph.D., Univ. of Notre Dame, 1997. (2003)

Rev. Joseph Walter, C.S.C., *Chair of Preprofessional Studies and Associate Professor*. B.S., Duquesne Univ., 1951; Ph.D., Univ. of Pittsburgh, 1955. (1961)

Olaf Guenter Wiest, *Associate Professor*. Vordiplom, Univ. of Bonn, 1987; M.S., *ibid.*, 1991; Ph.D., *ibid.*, 1993. (1995)

Concurrent Faculty

David M. Bartels, *Concurrent Professor*. B.A., Hope College, 1977; Ph.D., Northwestern University, 1982. (2004)

Daniel M. Chipman, *Concurrent Professor*. B.S., Iowa State Univ., 1967; Ph.D., Univ. of Wisconsin, 1972. (2004)

William F. Schneider, *Concurrent Associate Professor*. B.Sc., University of Michigan-Dearborn, 1986; Ph.D., Ohio State Univ., 1991. (2004)

GLOBES

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Graduate students in GLOBES — an interdisciplinary program in global linkages of biology, the environment, and society — enroll in a home department in which they pursue their Ph.D. degrees. Participating Notre Dame departments include Biological Sciences, Mathematics, Physics, Chemistry and Biochemistry, Economics and Econometrics, Philosophy, History, History and Philosophy of Science, and Theology. The Department of Anthropology is also an active participant in GLOBES, but does not have a formal Ph.D. program. Students interested in anthropology can enroll in the Department of Biological Sciences and be co-advised by faculty from both Biology and Anthropology.

In addition to taking elective courses in their home Ph.D. programs, GLOBES fellows participate in:

1. Field research projects that group students and faculty into interdisciplinary research teams investigating issues concerning environmental health, infectious diseases, and invasive species on-site in North America, China, West Africa, Bali, and Haiti.

2. A new series of cross-disciplinary gateway courses and seminars covering such topics as "Environment, Human Well-being and Governance," "Human Culture and Genes," "Disease Ecology," "Biodiversity and Law," and "Science, Technology and Values."
3. Summer modules that provide practical, hands-on experience with techniques ranging from genomics to policy, economics, ethics, and risk assessment analysis.
4. Training on campus and in Washington, D.C. to hone teaching, communication, policy, and leadership skills.
5. Student-led seminars and symposia organized around seminal GLOBES topics dealing with issues in human and environmental health.

The GLOBES curriculum leads to a myriad of educational experiences and career opportunities for students. On the ground, with their boots on, participants face the realities of addressing critical environmental and health problems. They acquire real-world knowledge and skills as well as a fluency in the languages of biology, the social sciences and the humanities. Armed with a global perspective and the ability to engage in meaningful dialogue at many levels, GLOBES students are well prepared to be tomorrow's leaders.

A unique feature of GLOBES is that Ph.D. fellows and mentoring faculty are organized as teams at the onset of the program via the interdisciplinary field projects, creating a culture of intellectual synergism and shared research experience.

The central theme of the research projects is that environmental degradation in the form of habitat destruction, biodiversity loss, water pollution, and the spread of invasive species and infectious disease has interrelated causes and feedbacks that are both biological and social in nature. To address these problems requires the coordinated effort of biological and social scientists working in concert with experts in public policy and the law.

Training of GLOBES scholars in team-based, interdisciplinary problem-solving occurs initially in five areas, with additional topics emerging as student and faculty interests evolve:

- The Ecology, Economics, and Management of Invasive Species in the United States and China.
- West African Mosquitoes and Malaria: Roles of Environmental Change, Poverty, and Cultural Practices in Fostering the Spread of Infectious Disease.
- Bali Macaque Monkeys and Humans: Historically Changing Land-Use Practices, Tourism, and the Potential for Disease Transmission.
- Sudden Oak Death in California and other States: Genetics, Spread, Impact, and Management.
- Te-emergence of Schistosomiasis in China: Human-Environment Interactions and the Potential for Biocontrol.

The team-based research projects will augment, not replace, the independent dissertation work required of GLOBES scholars for their Ph.D. degrees in their home departments. Students in the real-world projects have the option of expanding an original aspect of the team project into their dissertation, or of developing their own Ph.D. project in a related or different area.

The disciplinary guidelines for dissertations foster traditional independent research skills, while the real-world projects put into practice the interdisciplinary and leadership principles imparted by the GLOBES curriculum.

Mathematics

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The Program of Studies

The purpose of the doctoral program in mathematics is to assist students in developing into educated, creative, and articulate mathematicians. The program consists of basic courses in the fundamentals of algebra, analysis, geometry, logic, topology and ; more advanced topics and seminars; and approximately two to three years of thesis work in close association with a member of the faculty. Limited enrollment and the presence of active groups of strong mathematicians provide excellent opportunities for research in algebra, complex analysis, partial differential equations, logic, algebraic geometry, differential geometry, topology, and applied mathematics. Most students complete the program within five years; some finish in four years; a few in three.

Students are supported by fellowships and teaching assistantships. Students' teaching responsibilities are integrated into their professional development as mathematicians.

First-year students have no teaching duties and usually devote themselves full time to courses. The written candidacy examinations are taken by the beginning of the second year. The oral candidacy examination is taken during the second year. A reading knowledge of one approved language, in addition to English, is required. Ideally, the language requirement is completed by the end of the year. For more about these, see the Doctoral Regulations on the website.

The Department of Mathematics has its own building with good computer facilities and a comprehensive research library of nearly 35,000 volumes that subscribes to 275 current journals. Graduate students are provided with comfortable office space and are assured a stimulating and challenging intellectual experience.

Areas of Research

Applied Mathematics

The Department of Mathematics has about half-a-dozen faculty members actively involved in a variety of areas of mathematics and its applications to physics, engineering, biology, and problems arising from industry. The research disciplines they are pursuing, often in conjunction with members of other departments at Notre Dame, include the following: numerical analysis of PDE and of polynomial systems, nonlinear dynamical systems and partial differential equations, control theory, mathematical biology, optimization theory, interior point algorithms, coding theory, and cryptography.

Applied PDE. Partial differential equations arise from various applications in the real world; the important role of mathematical analysis and numerical study is to provide qualitative and quantitative information about the system being considered. The objectives are: to study the existence, uniqueness, convergence, and asymptotic behaviors of the solution; to establish mathematical theory about the model; to study the special properties of the solution.

There are many exciting examples of such problems where faculty at Notre Dame are involved.

- (1) Free boundary problems (a PDE problem where the domain is moving) appear in material with solid and liquid states, in cell growth problems from biology, in semiconductor manufacturing through film growth.
- (2) Homogenization problems. Many systems from engineering and industry have two or more different scales which are treated through Homogenization technique, an important technique which is very useful for obtaining important features of the system.
- (3) Blowup problems. In many reaction diffusion systems with nonlinear source terms, finite time blowup may occur. Understanding the exact behavior of the blowup will be very helpful in understanding the system.

Coding and Cryptography. In collaboration with several faculty in the electrical engineering department we investigate the algebraic properties of block codes and convolutional codes. Coding theory is concerned with the storage and transmission of information and the ability to recover the information as completely as possible even if some of the data are lost. A good example is the genetic code stored in a DNA molecule or the ISBN used by book publishers. Coding theory is widely applied in data communication and mathematically it is interconnected with algebraic geometry on the algebraic side and with information theory on the analytic side. For about three years, one to two faculty members and several graduate students have been working on the construction of new one-way trapdoor functions to be used in the next generation of public key cryptography.

Computation and Numerics. One on-going project, being carried on with mathematicians and engineers at other institutions, is the development of the new area of numerical algebraic geometry. This area is to algebraic geometry what numerical linear algebra is to linear algebra. Its goal is the development of efficient numerical algorithms to solve systems of polynomials in several variables. This amounts to the development of numerical techniques to manipulate algebraic varieties. The approach taken is to numerically model the classical notion of generic points by random points on irreducible components of the solution set. Classical interpolation techniques combined with homotopy continuation techniques are used to numerically do what elimination theory does in computer algebra programs. One recent success is the development of numerical techniques to decompose a complex algebraic variety into its irreducible components. In particular, this gave the first homotopy algorithm to find the exact set of isolated solutions of a system of polynomials: previous homotopy algorithms find a finite set of solutions containing the isolated solutions, but often also containing solutions from positive dimensional components.

Another project, involving mathematicians, engineers, and scientists from Notre Dame and elsewhere, is the development of numerical and analytical techniques for the solution of free boundary and boundary value problems. Such problems arise in fluid mechanics (free surface fluid flows), biology (tumor and blood vessel growth), and electromagnetics and acoustics (direct and inverse scattering of radiation from complicated geometries), to name just a few. The techniques currently being investigated are geometric perturbation theory (the "small parameter" is the deformation of the free or complicated boundary from a canonical geometry) coupled with analytic continuation techniques (e.g., Pade approximation). This area of research involves rigorous mathematical analysis for the justification of the proposed perturbation series coupled with numerical implementation of these algorithms and large-scale computational simulations to gain new insight into the underlying physical models.

Mathematical Biology. Several members of the department are participating in an interdisciplinary biocomplexity program at Notre Dame which is supported by NSF. Biocomplexity is the study of the unique complex structures and behaviors that arise from the interaction of biological entities (molecules, cells, or organisms). While physical and chemical processes give rise to a great variety of spatial and temporal structures, the complexity of even the simplest biological phenomena is infinitely richer.

The biocomplexity group, which consists of researchers from the physics, mathematics, and computer science and engineering departments, studies multicellular aggregates, such as embryonic and mature tissues, which often share the properties of "excitable media" and "soft matter," familiar to modern condensed matter physics and dynamical systems theory. Changes in tissue shape and form during development and repair, skeletal formation, gastrulation, segmentation, are well suited to analysis by physical and mathematical concepts, particularly in conjunction with modern knowledge of cells' adhesive forces and the molecular

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composition and rheology of cytoplasm and extracellular matrix.

Optimization. Optimization is an interdisciplinary area of applied mathematics. Recently there have been breakthrough developments in the area of interior-point algorithms of optimization which enabled researchers to solve important large scale problems in electrical engineering, mechanical engineering, portfolio allocation, protein folding, and many other areas. Most of the departments in the University have faculty who use optimization as an important tool for solving problems.

Algebraic Geometry and Commutative Algebra

The roots of algebraic geometry and commutative algebra are to be found in the 19th-century study of algebraic equations in relation to the geometry of their solutions. Such a line of investigation goes back at least to Descartes and the idea of coordinatizing the plane. Commutative algebra and algebraic geometry study the solutions of those equations by forming an algebraic object, called a ring, given by polynomial functions on the set of solutions. While commutative algebra deals with the algebraic structure of such a ring, algebraic geometry focuses on the geometry of solution sets. Such sets include parabolas, spheres, Euclidean space, projective spaces, and a vast array of beautiful and intricate concrete curves, surfaces, and higher dimensional sets. For example, to study the set of solutions of the parabola $y=x^2-3x+1$ in C^2 , we construct the ring $C[x,y]/(y-x^2+3x-1)$ where C represents the complex numbers. This ring represents polynomial functions on the parabola. In the same way we study the solution set of a system of any number of polynomial equations by relating the algebraic structure of its ring of polynomial functions to the geometry of the set.

In the Department of Mathematics research is conducted in many parts of this subject, including adjunction theory, Castelnuovo theory, curve theory, various aspects of the projective classification of varieties, the study of group actions, liaison theory, minimal free resolutions, Rees algebras, and the numerical analysis of polynomial systems. There is also activity in nearby areas dealing with coding theory, cryptography and nonlinear partial differential equations. (See the section on interdisciplinary mathematics.)

The main areas of focus in research on algebraic geometry and commutative algebra include:

Theory of Infinitesimals. This study involves using polynomials to construct the “simplest possible” geometric object obeying certain restraints; for example, a surface containing certain points and having specified tangents and curvatures. This has immediate application to the study of infinitesimal interpolation in science overall, as well as to the analysis of singularities and deformations in algebraic geometry.

Commutative Noetherian Rings. Properties of ideals in a commutative Noetherian ring R are studied; more precisely, with invariants associated to an ideal as well as to structures of various algebras associated to an ideal as the Blowup algebras. These are algebraic constructions that are related to an essential step in the process of desingularization, the blowup of a variety along a subvariety. For example, a curve that has a singular point (such as the solution set of $-y^2=x^3$ in the plane) may be “treated” by blowing up the point (in this case the origin).

Liaison Theory. This deals with the idea that when the union of two solution sets is especially nice, then a good deal of information about one may be gleaned from information about the other. Several aspects of liaison theory (also called linkage theory) are studied in our department. It is an old theory, but developments of the last five years or so have reestablished it as an exciting area.

Minimal Free Resolutions. The minimal free resolution of an ideal describes all the generators of the ideal, all the relations among the generators, the relations among the relations, etc. Current interest includes finding the minimal free resolutions for ideals of generic forms and ideals of fat points.

Differential Geometry

The striking feature of modern differential geometry is its breadth, touching so much of mathematics and theoretical physics. It uses a wide array of techniques from areas as diverse as differential equations, real and complex analysis, topology, Lie groups, and dynamical systems. Activity at Notre Dame covers the following areas at the forefront of current research:

Submanifold Geometry. The geometry of a space is often reflected in its distinguished classes of submanifolds. Our research in this area includes minimal submanifolds, surfaces of constant mean curvature, isoparametric submanifolds, and volume minimizing cycles. Such submanifolds are themselves of physical interests (membranes, soap films, soap bubbles, and supersymmetric cycles). Umbilic points of immersed surfaces have also been extensively studied. This theory has connections to compressible plane fluid flow and general relativity.

Global Differential Geometry. One of the most important areas of differential geometry is the study of how curvature influences the topological and analytic structures of Riemannian or Kähler manifolds. Our research in this area includes results on the Euler number of Kähler manifolds, complex surfaces of positive bi-sectional curvature, A-genus and metric of positive scalar curvature, Witten genus and metric of positive Ricci curvature, spectrum of the Laplace operator, connections between manifolds of negative curvature, dynamical systems and ergodic theory, closed geodesics and marked length spectrum, harmonic functions on non-compact spaces with Gromov’s hyperbolicity, splitting theorems, isoperimetric inequalities, minimal volume and CR-structures on spaces with non-positive curvature.

Partial Differential Equations and Riemannian Geometry. Many geometric problems are equivalent to problems in the theory of partial differential equations. Indeed, some properties of partial differential equations are best interpreted in a geometric way. Prescribing the curvature of surfaces in three-dimensional space, the isometric imbedding problem, variational problems in Riemannian geometry such as the Yamabe problem—all of these are geometric questions which involve a deep understanding of nonlinear partial differential equations.

Gromov-Witten Invariants and Quantum Cohomology. String theory has been a great source of inspiration for many exciting new developments in mathematics, one of which is the theory of Gromov-Witten invariants and quantum cohomology. It has profound applications in symplectic geometry, algebraic geometry, and integrable systems. Our research here has been focused on the generating function of Gromov-Witten invariants and its relation with the Virasoro algebra.

Algebra—Lie Theory

The notion of a Lie group had its origins in the study of the “continuous symmetries” of differential equations. Lie theory has subsequently become an enormously rich and beautiful theory with fundamental applications in mathematics (e.g., group theory, differential equations, topology, harmonic analysis, differential geometry), physics, and chemistry.

The algebra group at Notre Dame studies the representation theory, structure and geometry of semisimple Lie groups and Lie algebras, Kac-Moody Lie algebras and groups, finite and algebraic groups, and quantum groups, using a variety of algebraic, geometric and combinatorial methods. Our research involves the detailed study of specific representations (e.g., constructing and parametrizing representations, determining their dimensions, tensor products, extensions, etc), the study of spaces with Lie group actions and their connections to representations, and the study of global properties of representation categories.

Detailed Study of Representations. The character table of a finite group provides a rich collection of invariants of the group; classically, the “characters” correspond to ordinary (complex) representations. Of course, modular representations provide even more invariants. Some aspects of the classification of finite simple groups relied on the availability of precise information about the nature of representations for the finite Lie type groups. A finite Lie type group is closely related to the group of rational points of a simple algebraic group over a field of positive characteristic. We study mainly the “rational” representation theory of these algebraic groups; one may typically obtain from such study information on the modular representations of the corresponding finite Lie type groups.

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Representation Theory and Geometry. One can often study representations of a group by constructing the group as the symmetries of a geometrical object and considering some class of functions on the object. For example, the rotation group in three variables may be regarded as the symmetry group of the two-dimensional sphere, and the representations of the rotation group arise from decomposing functions on the sphere according to the action of the Laplace operator. In more sophisticated settings, representations are associated to geometric objects with singularities, and it is a subtle and interesting question to understand the relation between the singularities and the corresponding representations.

One can also study the reverse problem and use representation theory to study geometrical problems, including classical 19th-century intersection theory. In particular, a certain kind of geometric structure called a Poisson structure yields a new approach to intersection theory problems. The Poisson structure is closely related to quantum groups.

Global Structure of Lie Representation Categories. There are many important relationships which have emerged in recent years between categories of finite or infinite-dimensional representations of algebraic groups, affine Lie algebras, and quantum groups. In all these theories, an important role is played by the Weyl group, which is a crystallographic Coxeter group. We have initiated the study of certain representation theories naturally associated to (possibly non-crystallographic) Coxeter groups and begun to study, for crystallographic Coxeter groups, the relationships of such categories with categories of representation-theoretic or geometric interest in Lie theory. We have also begun to study certain very similar representation categories which are less directly related to classical Lie theory.

Partial Differential Equations

Partial differential equations is a many-faceted subject. Our understanding of the fundamental processes of the natural world is based largely on partial differential equations. Examples are the vibrations of solids, the flow of fluids, the diffusion of chemicals, the spread of heat, the interactions of photons and electrons, and the radiation of electromagnetic waves. Today partial differential equations have developed into a vast subject that interacts with many other branches of mathematics such as complex analysis, differential geometry, harmonic analysis, probability, and mathematical physics.

The Laplace equation and its solutions, the harmonic functions, form a link between partial differential equations and complex analysis, since analytic functions are the solutions to the Cauchy-Riemann equations. Boundary behavior of analytic functions on a domain is studied through the Neumann problem, which is a boundary value problem for an elliptic (Laplace-like) operator. Furthermore, nonelliptic equations appear as natural objects in the study of manifolds that are boundaries of domains. These equations are similar to the degenerate elliptic equations arising in sub-Riemannian geometry and diffusion processes. Solvability and regularity of solutions to such equations form an active direction of

research. The methods involved include subelliptic estimates and microlocal analysis.

Another direction of research is devoted to nonlinear elliptic partial differential equations with emphasis on second order equations. Differential geometry provides a rich source of such equations. Examples are the minimal surface equation and the Monge-Ampere equation. One important property studied by researchers in this field is the regularity of solutions, in particular the impact of regularity of coefficients and boundary values on that of solutions. An active area is the study of properties of geometric objects associated to solutions, e.g., level sets of solutions. Studies are focused on the geometric structure of these sets, and methods are from geometric measure theory.

Yet another direction involves the study of nonlinear evolution equations arising in mathematical physics such as the Euler equations of hydrodynamics or various infinite dimensional analogues of completely integrable Hamiltonian systems like the Korteweg-de Vries equation. A large amount of work is devoted to the study of the corresponding Cauchy problem for such equations. Recent developments in the area involve the use of harmonic analysis techniques to establish existence and uniqueness of solutions under low regularity initial data.

In fact, there is a very close connection between partial differential equations and harmonic analysis, starting with Fourier series and the heat equation and continuing with fundamental solutions, the construction of inverses to elliptic equations and pseudo-differential equations, the solution to wave equations and Fourier integral operators, to spectral analysis, and asymptotic techniques methods. Harmonic analysis techniques form a major part of the modern theory of linear and nonlinear partial differential equations.

The research of the partial differential equations group also includes the study of free boundary problems, reaction-diffusion equations, variational inequalities, homogenization problems, and other equations arising from industrial applications.

Logic

The research in mathematical logic at Notre Dame is mainly in two broad areas: computability theory and model theory. Computability theory concerns computability and complexity, often measured by Turing degree. A set is computable if there is a program for computing its characteristic function on an ideal computer that never crashes. Set A is Turing reducible to set B if there is a program for computing the characteristic function of A on a computer equipped with a CD-ROM giving the characteristic function of B . Turing reducibility is a partial ordering on the set of subsets of the natural numbers, and the Turing degrees are the equivalence classes of the corresponding equivalence relation. A set is computably enumerable if it is the range of a computable function, or, equivalently, the domain of a partial computable function. The set E of all computably enumerable subsets of the natural numbers forms a lattice under the operations of union and intersection. Soare

showed that the collection of “maximal” sets is a definable orbit in E . There is ongoing work on automorphisms and the relation between complexity and structural properties, definable in the lattice.

Well-known theorems may pose interesting problems in computability. This is true, in particular, for Ramsey’s theorem, on which there is recent work. There has been quite a lot of work on computability and complexity in familiar kinds of mathematical structures—groups, linear orderings, Boolean algebras, etc. Much of this work has involved connections between definability and complexity. There has also been work on complexity of models of arithmetic. The standard model, consisting of the natural numbers with addition and multiplication, is computable; i.e., the operations are computable. Tennenbaum showed that no non-standard model can be computable. A recent result says that for any non-standard model there is an isomorphic copy of strictly lower Turing degree.

The other broad area of active work is model theory, particularly classification theory and o-minimality. In recent years, methods developed in the context of stability theory have been used to analyze structures such as pseudofinite fields, pseudo-algebraically closed fields, difference fields, and quadratic forms over finite fields. This research has yielded applications to arithmetic number theory. Model-theorists now have a good understanding of how these dependence relations fit in a general framework. Ongoing work generalizes techniques from the geometrical stability theory of superstable theories to this broader class. This research is likely to give insight into the model-theoretic properties of bilinear forms and groups definable in structures such as those mentioned above.

The standard example of an o-minimal structure is the field of real numbers. In the early 1980s, it was noticed that many properties of semi-algebraic sets (sets definable in the field of reals) can be derived from a very few axioms, essentially the axioms defining o-minimal structures. After Wilkie proved that the exponential field of real numbers is o-minimal, the subject has grown rapidly. From a model-theoretic point of view, these structures resemble strongly-minimal structures, and many tools and methods of classification theory can be adapted to o-minimal structures. This remarkable combination of tools from stability theory and methods of semi-algebraic and subanalytic geometry provides elegant and surprisingly efficient applications not only in real algebraic and real analytic geometry, but also in analytic-geometric categories (e.g., groups of Lie type) over arbitrary real closed fields.

Topology

There is a large topology group at Notre Dame, and the research of its members covers a wide area of currently active areas. For a more detailed view of our current research one can consult the departmental Web page and its information about individual faculty members.

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Basic algebraic topology is one active area of research here. Research continues on various types of homotopy theory, both stable and unstable, often from an axiomatic point of view. One area of application is to the study of Lie groups by homotopy theoretic methods. Other problems in homotopy theory under active consideration are problems that elucidate the influence of topology on differential geometry. A particular interest is in questions of which manifolds support metrics, the curvature of which is positive in various senses and of how many such metrics there are.

Controlled topology is another area of active research. One direction concerns various aspects of rigidity, which loosely means describing the ways that a discrete group can act on Euclidean space. This problem is a rich source of inspiration and has led to groundbreaking work on stratified spaces by many people, not just at Notre Dame. Work on various foundational issues in controlled topology leads to the study of stratified spaces.

Basic geometric topology is an area that overlaps some of the above. Work not previously mentioned includes work on how algebraic invariants of a manifold affect the homotopy type of its group of topological or differentiable symmetries. This leads to further problems in algebraic topology and in algebra. There is also research on the classification of various geometrically interesting manifolds.

Algebraic K-theory is an active area of research as well. Ongoing research investigates the link between algebra and topology that lies at the center of K-theory. Contributions have been made to the study of L-theory, the quadratic analogue of K-theory that figures prominently in applications of topology to the study of manifolds and stratified spaces.

Research in low-dimensional manifolds is yet another area represented at Notre Dame. Research in gauge theory is applied to the study of four dimensional manifolds as well as more traditional techniques applied to the algebraic topology of four manifolds, their topological classification, and their differentiable classification. There is also research in three manifolds and the four manifolds they bound using gauge theory, especially the invariants based on the Sieberg-Witten equations.

Course Descriptions

The following course descriptions give the number and title of each course. The basic course sequences numbered 60350 – 60520 are given every year, as is the basic course 60690. Other basic courses are given approximately every other year. Seminars 671-686, and reading and research courses 698-700 are offered every year. Other courses, with numbers up to 666, are topics courses. Each year topics courses are offered in algebraic geometry, differential geometry, algebra, partial differential equations, complex analysis, topology, logic, and applied mathematics. The particular topics change (probably never repeating), and the instructors rotate within groups. Thus, students are exposed to a variety of topics in which various members of the faculty have interest and expertise. The list below includes the courses offered

every year, plus a typical selection of topics courses. Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

60210. Basic Algebra I

60220. Basic Algebra II

(3-3-0), (3-3-0)

Standard results in group theory and ring theory; modules, linear algebra, multilinear algebra; Galois theory; Wedderburn theory; elements of homological algebra; introduction to an advanced topic in algebra.

60350. Basic Real Analysis I

60360. Basic Real Analysis II

(3-3-0), (3-3-0)

This course includes a rigorous review of the calculus of several variables, general measures and Caratheodory's Theorem, Borel measures in real line and the Lebesgue measure, integration and the dominated convergence theorem, modes of convergence, product measures and the Fubini theorem, the n-dimensional Lebesgue integral and the change of variables theorem. Also, it may include topics from L^p spaces, signed measures, functional analysis, and Fourier analysis.

60370. Basic Complex Analysis I

60380. Basic Complex Analysis II

(3-3-0), (3-3-0)

Analytic functions; Cauchy's theorem; Taylor and Laurent series; singularities, residue theory; complex manifolds; analytic continuation; conformal mappings; entire functions; meromorphic functions.

60430. Basic Topology I

60440. Basic Topology II

(3-3-0), (3-3-0)

Topological spaces and metric spaces; the fundamental group and covering spaces; homology theory; basic theorems in algebraic topology.

60510. Basic Modern Logic I

60520. Basic Modern Logic II

(3-3-0), (3-3-0)

Propositional calculus and predicate logic, completeness, compactness, omitting types theorems, results on countable models; recursive and recursively enumerable sets, Turing degrees, the Friedberg-Muchnik theorem, minimal degrees; axioms of ZFC, ordinals and cardinals, constructible sets.

60610. Discrete Mathematics

(3-3-0)

The course will provide an introduction into different subjects of discrete mathematics. Topics include (1) Graph Theory: Trees and graphs, Eulerian and Hamiltonian graphs; tournaments; graph coloring and Ramsey's theorem. Applications to electrical networks. (2) Enumerative Combinatorics: Inclusion-exclusion principle, Generating functions, Catalan numbers, tableaux, linear recurrences and rational generating functions, and Polya theory. (3) Par-

tially Ordered Sets: Distributive lattices, Dilworth's theorem, Zeta polynomials, Eulerian posets. (4) Projective and combinatorial geometries, designs and matroids.

60620. Optimization

(3-3-0)

Vector spaces and convex sets; convex Hull; theorems of Caratheodory and Radon; Helly's Theorem; convex sets in Euclidean space; the Krein-Milman theorem in Euclidean space; extreme points of polyhedra; applications; the moment curve and the cyclic polytope; the cone of nonnegative polynomials; the cone of positive semidefinite matrices; the idea of semidefinite relaxation; semidefinite programming; cliques and the chromatic number of a graph; the Schur-Horn theorem; and the Toeplitz-Hausdorff theorem.

60630. Geometric Methods for Dynamical Systems

(3-3-0)

An introduction to the theory of nonlinear dynamical systems. Topics include: geometry of the phase space, symplectic structures, variational methods, nonlinear Hamiltonian systems, bifurcation theory, perturbation theory and transition to chaos, discrete dynamical systems, lattice based models, theory of pattern formation with examples from physics and biology.

60650. Applied Analysis

(3-3-0)

Laplace equations: Green's identity, fundamental solutions, maximum principles, Green's functions, Perron's methods. Parabolic equations: Heat equations, fundamental solutions, maximum principles, finite difference and convergence, Stefan Problems. First order equations: characteristic methods, Cauchy problems; vanishing of viscosity-viscosity solutions. Real analytic solutions: Cauchy-Kowalewski theorem, Holmgren theorem.

60660. Differentiable Manifolds

(3-3-0)

Topics covered will include: differentiable manifolds, vector fields, differential forms, and tensor analysis; inverse and implicit function theorems, transversality, Sard's theorem, Morse theory, integration on manifolds, Stokes Theorem, de Rham cohomology.

60670. Differential Geometry

(3-3-0)

This course provides an introduction to modern differential geometry. Topics include: Riemannian manifolds, connections, parallel translation, geodesics, the exponential map, the torsion and curvature, Jacobi fields, first and second variation of arc length, cut loci and conjugate locus, and elementary comparison theorem.

60690. Numerical Analysis I

60790. Numerical Analysis II

(3-3-0)

A solid theoretical introduction to numerical analysis. Polynomial interpolation. Least squares and the basic theory of orthogonal functions. Numerical integration in one variable. Numerical linear algebra. Methods to solve systems of nonlinear equations.

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Numerical solution of ordinary differential equations. Solution of some simple partial differential equations by difference methods.

60850. Probability
(3-3-0)

A thorough introduction to probability theory. Elements of measure and integration theory. Basic setup of probability theory (sample spaces, independence). Random variables, the law of large numbers. Discrete random variables (including random walks); continuous random variables, the basic distributions and sums of random variables. Generating functions, branching processes, basic theory of characteristic functions, central limit theorems. Markov chains. Various stochastic processes, including Brownian motion, queues and applications. Martingales. Other topics as time permits.

60860. Stochastic Modeling
(3-3-0)

This course is a sequel to Math 60850 (Probability). It gives an introduction to stochastic modeling and stochastic differential equations, with application to models from biology and finance. Some topics covered will be: stochastic versus deterministic models; Brownian motion and related processes, e.g., the Ornstein-Uhlenbeck Process; diffusion processes and stochastic differential equations; discrete and continuous Markov chain models with applications; the long run behavior of Markov chains; the Poisson processes with applications; and numerical methods for stochastic processes.

60920. Probabilistic Aspects of Linear Control and Optimization
(3-3-0)

We present a variety of probabilistic techniques for the analysis of control and optimization problems: measure concentration results, Markov chains, large deviations, martingales. We describe various applications in control and optimization.

60950. Topics in Applied Partial Differential Equations
(3-3-0)

Elements of variational calculus with application to: theory of interfaces; existence of solitons, vortices and bubbles; image segmentation; control theory. Implicit function and fixed-point theorems with application to: Bose-Einstein condensation; existence of discrete breathers; existence of small data solutions of nonlinear Schroedinger, heat and wave equations; economics. Gradient and Hamiltonian systems: energy conservation versus energy dissipation; stability of stationary solutions and traveling waves; stability of periodic solutions and Floquet theory.

70220. Topics in Lie Groups
(3-3-0)

Lie groups and representation theory are important topics in many parts of mathematics and physics, including algebra, differential geometry, mathematical physics, and differential equations. This course is designed to introduce students from various parts of mathematics and physics to this area. Prerequisites are minimal; a solid background in linear algebra is the most important one. The course covers Lie groups from the point of view of matrix groups. We

will introduce the Lie algebra and the exponential mapping, and investigate the relationship between Lie groups and Lie algebras. Then we will cover elementary representation theory. The last part of the course will gradually introduce the machinery of semisimple groups and Lie algebras, starting with the representations of $SU(2)$ and $SU(3)$ as motivating examples.

70410. Topics in Algebraic Geometry
(3-3-0)

Topics from recent years include geometry of compact complex surfaces, complex adjunction theory, intersection theory of algebraic schemes.

70670. Differential Geometry
(3-3-0)

This course provides an introduction to modern differential geometry. Topics include: Riemannian manifolds, connections, parallel translation, geodesics, the exponential map, the torsion and curvature, Jacobi fields, first and second variation of arc length, cut loci and conjugate locus, and elementary comparison theorem.

70750. Partial Differential Equations
(3-3-0)

This is a one semester course that cover basic PDE theories. We will cover: 1. Transport equations. 2. Laplace equations: Green's identity, fundamental solutions, maximum principles, Green's functions, Perron's methods. 3. Parabolic equations: Heat equations, fundamental solutions, maximum principles, finite difference. 4. Wave equations: spherical means, d'Alembert's formula, Kirchhoff's formula, Poisson's formula. 5. First order equations: Characteristic methods, Cauchy problems, vanishing of viscosity - viscosity solutions. Hamilton-Jacobi equations, Hopf-Lax formula. 6. Real analytic solutions: Cauchy-Kowalevski theorem, Holmgren theorem.

70870. Introduction to Ergodic Theory
(3-3-0)

We present some global properties of dynamical systems where individual orbits seem very erratic. We first study the case example of hyperbolic automorphisms of the torus, then go to more general hyperbolic maps, then to maps which look like hyperbolic, but satisfy only weaker conditions.

70950. Topics in Applications: Partial Differential Equations
(3-3-0)

Topics in partial differential equations and applications related to the instructor's research interests.

80210, 80220. Topics in Algebra
(3-3-0)

Basic properties of polytopes and polyhedra with an emphasis on counting the numbers of faces using techniques from commutative algebra and representation theory.

80350, 80360. PDE Methods in Complex Analysis
(3-3-0)

Topics from partial differential equations, linear and nonlinear, depending on the instructor's research interests.

80370, 80380. Topics in Complex Analysis
(3-3-0)

Topics related to instructor's research interests.

80430. Topics in Topology
(3-3-0)

Topics related to instructor's research interests.

80440. Ends of Manifolds and Maps
(3-3-0)

Topics related to the instructor's research interests.

80510. Topics in Logic: Computable Structures and the Hyperarithmetical Hierarchy
(3-3-0)

Topics considered depend on the instructor's research interests.

80520. Topics in Logic-Finite Model Theory
(3-3-0)

Topics related to the instructor's research interests.

80610. Topics in Algebraic Geometry
(3-3-0)

Topics related to the instructor's research interests.

80770. Low Density Parity Check Codes
(3-3-0)

This course will serve as an introduction to recent research in LDPC codes for students who have already been exposed to the basics of error control codes. The first half of the course will focus on the construction of linear block codes characterized by sparse parity check matrices and the performance of those codes when used over noisy communication channels and decoded with the belief propagation (i.e., message passing) algorithm. The second half of the course will address recent and ongoing research results related to LDPC codes and iterative decoding.

80780. Topics in Applied Math
(3-3-0)

Topics related to the instructor's research interests.

Other Graduate Courses

56800. Directed Readings
(0-0-0)

Readings not covered in the curriculum which relate to the student's area of interest.

58900. Thesis Direction
(0-0-0)

Prerequisite: Consent of director of graduate studies in mathematics. Students in the Applied Mathematics masters program have the option of writing a thesis on an advanced subject under the direction of a faculty advisor.

86700. Directed Readings
(0-0-0)

Readings not covered in the curriculum which relate to the student's area of interest.

88900. Research and Dissertation
(0-0-0)

Corequisite: MATH 93210
Research and dissertation for resident graduate students.

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93210. Research Seminar
(0-0-0)
Corequisite: MATH 88900
Topics vary by semester.

98900. Nonresident Dissertation Research
(1-1-0)
Required of nonresident graduate students who are completing their dissertations in absentia and who wish to retain their degree status.

Faculty**Algebra**

Katrina D. Barron, *Assistant Professor*. A.B., Univ. of Chicago, 1987; Ph.D., Rutgers Univ., 1996. (2001)

Matthew J. Dyer, *Associate Professor*. B.Sc., Sydney Univ., 1983; M.Sc., *ibid.*, 1985; Ph.D., *ibid.*, 1988. (1989)

Samuel Evens, *Associate Professor*. P.A. and B.A., Haverford College, 1984; Ph.D., Massachusetts Institute of Technology, 1988. (1999)

Alexander J. Hahn, *Director of the Kaneb Center for Teaching and Learning, Professor of Mathematics, and Fellow of the Nanovic Institute for European Studies*. B.S., Loyola Univ., Los Angeles, 1965; M.S., Univ. of Notre Dame, 1968; Ph.D., *ibid.*, 1970. (1972)

Timothy O'Meara, *Provost Emeritus of the University and the Rev. Howard J. Kenna, C.S.C., Professor Emeritus of Mathematics*. B.Sc., Univ. of Capetown, 1947; M.S., *ibid.*, 1948; Ph.D., Princeton Univ., 1953. (1962)

Richard Otter, *Professor Emeritus*. A.B., Dartmouth College, 1941; Ph.D., Indiana Univ., 1946. (1947)

Barth Pollak, *Professor Emeritus*. B.S., Illinois Institute of Technology, 1950; M.S., *ibid.*, 1951; Ph.D., Princeton Univ., 1957. (1963)

Warren J. Wong, *Professor Emeritus*. B.S., Univ. of Otago, 1954; M.S., *ibid.*, 1955; Ph.D., Harvard Univ., 1959. (1964)

Algebraic Geometry

Mario Borelli, *Associate Professor Emeritus*. B.S., Scuola Normale di Pisa, 1956; Ph.D., Indiana Univ., 1961. (1965)

Karen Chandler, *Assistant Professor*. B.S., Dalhousie Univ., 1987; Ph.D., Harvard Univ., 1992. (1995)

Alan Howard, *Professor Emeritus*. B.A., Rutgers Univ., 1953; Ph.D., Brown Univ., 1965. (1968)

Juan C. Migliore, *Professor*. B.A., Haverford College, 1978; Ph.D., Brown Univ., 1983. (1989)

Claudia Polini, *Associate Professor*. B.S., Università degli Studi di Padova, 1990; Ph.D., Rutgers Univ., 1995. (2001)

Dennis M. Snow, *Professor*. B.S., Merrimack College, 1975; M.S., Univ. of Notre Dame, 1977; Ph.D., *ibid.*, 1979. (1982)

Andrew J. Sommese, *the Vincent J. Duncan and Annamarie Micus Duncan Professor of Mathematics*. B.A., Fordham Univ., 1969; Ph.D., Princeton Univ., 1973. (1979)

Applied Mathematics

Mark S. Alber, *Professor*. M.S., Moscow Institute of Technology, 1983; Ph.D., Univ. of Pennsylvania, 1990. (1990)

Leonid Faybusovich, *Professor*. M.S., Leningrad Polytechnic Institute, 1978; Ph.D., Harvard Univ., 1991. (1991)

Michael Gekhtman, *Associate Professor*. B.S., M.S., Kiev State Univ., 1985; Ph.D., Ukrainian Academy of Science, 1990. (1999)

Brian Hall, *Associate Professor*. B.A. and B.S., Cornell Univ., 1988; Ph.D., *ibid.*, 1993. (1999)

Bei Hu, *Professor*. B.S., East China Normal Univ., 1982; M.S., *ibid.*, 1984; Ph.D., Univ. of Minnesota, 1990. (1990)

Cecil B. Mast, *Associate Professor Emeritus*. B.S., DePaul Univ., 1950; Ph.D., Univ. of Notre Dame, 1956. (1959)

Gerard K. Misiolek, *Associate Professor*. M.S., Warsaw Univ., 1987; Ph.D., State Univ. of New York, Stony Brook, 1992. (1993)

David P. Nicholls, *Assistant Professor*. B.S., Univ. of Illinois, Urbana, 1993; Sc.M., Brown Univ., 1995; Ph.D., *ibid.*, 1998. (2001)

Joachim J. Rosenthal, *Notre Dame Chair in Applied Mathematics and Concurrent Professor of Electrical Engineering*. Vordiplom, Univ. Basel, 1983; Diplom, *ibid.*, 1986; Ph.D., Arizona State Univ., 1990. (1990)

Michael Sigal, *the Rev. Howard J. Kenna, C.S.C., Memorial Professor of Mathematics*. Ph.D., Tel Aviv Univ., 1976. (2003)

Andrew J. Sommese, *the Vincent J. Duncan and Annamarie Micus Duncan Professor of Mathematics*. B.A., Fordham Univ., 1969; Ph.D., Princeton Univ., 1973. (1979)

Complex Analysis

Jeffrey Diller, *Associate Professor*. B.S., Univ. of Dayton, 1988; Ph.D., Univ. of Michigan, 1993. (1998)

Pit-Mann Wong, *Professor*. B.Sc., National Taiwan Univ., 1971; Ph.D., Univ. of Notre Dame, 1976. (1980)

Differential Equations

Matthew Gursky, *Director of Undergraduate Studies and Professor*. B.S., Univ. of Michigan, 1986; Ph.D., California Institute of Technology, 1991. (2001)

Qing Han, *Professor*. B.S., Beijing Univ., 1986; M.S., Courant Institute, 1991; Ph.D., *ibid.*, 1993. (1994)

A. Alexandrou Himonas, *Associate Chair and Professor*. B.S., Patras Univ., 1976; M.S., Purdue Univ., 1982; Ph.D., *ibid.*, 1985. (1989)

Mei-Chi Shaw, *Professor*. B.S., National Taiwan Univ., 1977; M.S., Princeton Univ., 1978; Ph.D., *ibid.*, 1981. (1987)

Nancy K. Stanton, *Professor*. B.S., Stanford Univ., 1969; Ph.D., Massachusetts Institute of Technology, 1973. (1981)

Differential Geometry

Jianguo Cao, *Professor*. B.S., Nanjing Univ., 1982; M.S., *ibid.*, 1985; Ph.D., Univ. of Pennsylvania, 1989. (1996)

Richard Hind, *Assistant Professor*. B.A., Cambridge Univ. U.K., 1993; Ph.D., Stanford Univ., 1997. (2000)

François Ledrappier, *the John and Margaret McAndrew Professor of Mathematics*. B.S., École Polytechnique, 1968; Ph.D., Univ. Paris, 1975. (2002)

Xiaobo Liu, *Associate Professor*. B.S., Tsinghua Univ., P.R. China, 1987; Ph.D., Univ. of Pennsylvania, 1994. (1999)

Brian Smyth, *Professor*. B.S., National Univ. of Ireland, 1961; M.S., *ibid.*, 1962; Ph.D., Brown Univ., 1966. (1966)

Frederico J. Xavier, *Professor*. B.S., Univ. Federal De Pernambuco, 1971; M.S., *ibid.*, 1973; Ph.D., Univ. of Rochester, 1977. (1985)

Logic

Steven A. Buechler, *Professor*. B.A., B.S., Eastern Illinois Univ., 1975; M.A., Univ. of Maryland, 1977; Ph.D., *ibid.*, 1981. (1987)

Peter Cholak, *Professor*. B.A., Union College, 1984; M.A., Univ. of Wisconsin, 1988; Ph.D., *ibid.*, 1991. (1994)

Abraham Goetz, *Associate Professor Emeritus*. M.S., Univ. of Wrocław, 1949; Ph.D., *ibid.*, 1957. (1964)

Julia F. Knight, *Director of Graduate Studies and the Charles L. Huisiking Professor of Mathematics*. B.A., Utah State Univ., 1964; Ph.D., Univ. of California, Berkeley, 1972. (1977)

Sergei Starchenko, *Associate Professor*. M.S., Univ. of Novosibirsk, 1983; Ph.D., *ibid.*, 1987. (1997)

Vladeta Vuckovic, *Associate Professor Emeritus*. M.S., Univ. of Belgrade, 1949; Ph.D., *ibid.*, 1953. (1963)

Topology

Francis X. Connolly, *Professor*. B.S., Fordham Univ., 1961; M.S., Univ. of Rochester, 1963; Ph.D., *ibid.*, 1965. (1971)

John E. Derwent, *Associate Professor Emeritus*. B.S., Univ. of Notre Dame, 1955; Ph.D., *ibid.*, 1960. (1963)

MATHEMATICS ∞ M.D./PH.D

William G. Dwyer, *Chair and the William J. Hank Family Professor of Mathematics*. B.A., Boston College, 1969; Ph.D., Massachusetts Institute of Technology, 1973. (1980)

Liviu Nicolaescu, *Associate Professor*. B.S., Univ. Al. I. Cuza, Iasi, Romania, 1987; Ph.D., Michigan State Univ., 1994. (1998)

Stephan A. Stolz, *the Rev. John A. Zahm, C.S.C., Professor of Mathematics*. B.S., Univ. of Bielefeld, 1975; M.S., Univ. of Bonn, 1979; Ph.D., Univ. of Mainz, 1984. (1988)

Laurence R. Taylor, *Professor*. B.A., Princeton Univ., 1967; Ph.D., Univ. of California, Berkeley, 1971. (1973)

E. Bruce Williams, *Professor*. B.S., Massachusetts Institute of Technology, 1967; Ph.D., *ibid.*, 1972. (1975)

M.D./Ph.D. Joint Degree Program

Director:

Rudolph M. Navari

Telephone: (574) 631-5574

Fax: (574) 631-7821

Location: 1234 Notre Dame Ave., South Bend, Indiana 46617

E-mail: scbme.1@nd.edu

Web: <http://galen.sbcme.nd.edu>

The Program of Studies

The University of Notre Dame and Indiana University School of Medicine offer a joint M.D./Ph.D. degree for exceptional students interested in academic medicine. This unusual partnership between a private Catholic university and a state-supported medical school was formed in 1995. The program draws on the strengths of the medical faculty and the research excellence of the graduate program faculty to train scientists who can bridge the gap between clinical medicine and basic life sciences.

The Indiana University School of Medicine – South Bend (IUSM – SB) has just moved into a new facility that also houses Notre Dame's Keck Center for Transgene Research. This facility offers expanded opportunities for joint degree students.

General Requirements

To earn the joint degree, students will complete the first two years of medical school at IUSM – SB, and continue at Notre Dame for three more years to pursue the University's doctoral degree through the Graduate School. The last two years of medical school then will be completed at the Indiana University School of Medicine's main campus in Indianapolis.

Program descriptions and requirements, as well as course and faculty listings for all of Notre Dame's doctoral programs, may be found elsewhere in this *Bulletin*. Students in the M.D./Ph.D. program may pursue the doctoral degree in any of these disciplines. Course and faculty listings specific to the medical training may be found below.

Admission

Admission to the program requires separate applications to the Notre Dame Graduate School and the IUSM – SB. The Graduate School will accept MCAT scores in place of the GRE scores required of all applicants. The parallel applications will be coordinated and tracked by the South Bend Center for Medical Education, which serves as the central office for the combined degree program. Representatives from Notre Dame and the I.U. School of Medicine monitor and oversee the program.

Application to the joint degree program will not jeopardize a student's application to either the Graduate School or the School of Medicine. The student may be admitted to either school independently. Students admitted into the joint degree program will receive both tuition and stipend assistance.

For information and application materials, interested students should contact the IUSM – SB.

Course Descriptions

The following courses are central to center programs. Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

60501. Gross Anatomy
61501. Gross Anatomy Laboratory
(8-3-3)

An intensive study of the gross structure of the human body, accomplished through maximum student participation in the dissection of the human cadaver together with formal lectures and assigned readings.

60503. Neuroscience
(5-5-0)

An integrated course that coordinates the neuroanatomy, neurophysiology and neurology of the human nervous system. The neurologic exam and patient contact are emphasized.

60504. Human Physiology
61504. Human Physiology Laboratory
(7-7-3)

The study of the physiology of the cardiovascular, respiratory, renal, endocrine, and gastrointestinal systems. Emphasis is placed on medical aspects of human physiology. Student participation laboratories are used to demonstrate classic physiologic principles and current bioanalytic techniques.

60505. Histology/Embryology
61505. Histology Laboratory
(4-3-1)

The study of microscopic anatomy of normal human tissues. Light microscopy receives the major emphasis, but electron microscopic structure is included in areas of special interest. Two lecture hours per week are devoted to the fundamentals of embryology.

60512. Introduction to Clinical Medicine I: Behavioral Science

70651. Introduction to Clinical Medicine II
(2-1-0)

A multidisciplinary interdisciplinary course designed to introduce clinical medicine. Includes medical history taking and physical examination skills learned at the bedside with direct patient contact. Clinical medicine is surveyed concurrently with emphasis on pathophysiology and diagnosis. Problem-solving skills are stressed, including synthesis and interpretation of medical data.

60556. Medical Microbiology
61556. Medical Microbiology Lab
(7-2-1)

This course covers a diverse range of topics in medical microbiology and immunology, including host defense and recognition mechanisms, virology, bacteriology, parasitology, mycology, and contemporary topics in infectious disease. Primary emphasis is on biology and pathogenic mechanisms of individual organisms, and issues relating to host-microbe relationships.

60667. Biochemistry
(7-4-0)

Lectures and discussions provide an analysis of current biochemical topics and an introduction to those areas of biochemistry that are especially relevant in medicine. Emphasis is placed on metabolic pathways, endocrine control, and related clinical problems.

66597. Directed Readings - Mini Med School
(1-1-0)

Students enrolled in this course will be expected to attend six medically related presentations and submit a 2-3 page writeup of the topics presented at five of these two hour sessions.

70604. Pharmacology
(7-3-0)

A systematic study of the mechanism of action, disposition, and fate of drugs in living systems with emphasis on drugs of medical importance.

70605. Medical Genetics
(2-3-0)

A survey course of lectures and discussions dealing with the mechanisms and patterns of inheritance, with emphasis on human genetic disorders. Students will be introduced to genetic diagnosis, risk calculation, management, and counseling of patients with genetic diseases. Students may also participate in the Memorial Hospital Regional Genetic Counseling Clinic.

70652. Biostatistics

(1-1-0)

Consideration of statistics and probability, population distribution, statistical inference, and test for significance are covered. Their relation to regression, clinical trials, and epidemiology are also discussed.

70653. General Pathology

71653. General Pathology Laboratory

(3-3-0)

The study of diseases that affect human tissues. Emphasis is placed on the principles of inflammation, necrosis, repair, growth disturbances, and hemodynamic and metabolic disorders. Student participate in laboratory exercises, which are constructed for problem case analysis.

70654. Systemic Pathology

(7-7-0)

The study of disease and its relationship to structural and functional abnormalities of specific organ systems. Emphasis is placed on both pathologic anatomy and clinical manifestations of disease.

Additional programs in biomedically related sciences appear elsewhere in the *Bulletin* under the program in Biological Sciences (parasitology, vector biology, virology, bacteriology, and chemistry and biochemistry).

Faculty

William C. Hamlett, *Adjunct Professor (biological sciences)*. B.S., Univ. of South Carolina, 1970; M.S., *ibid.*, 1973; Ph.D. Clemson Univ., 1983. (1991)

Robert E. Kingsley, *Adjunct Associate Professor (biological sciences)*. B.A., Univ. of Michigan, 1965; Ph.D., Indiana Univ., 1971. (1974)

Edward E. McKee, *Adjunct Associate Professor (chemistry and biochemistry)*. B.S., Pennsylvania State Univ., 1972; Ph.D., *ibid.*, 1977. (1991)

Kenneth R. Olson, *Adjunct Professor (biological sciences) and Concurrent Professor of Chemical and Biomolecular Engineering*. B.S., Univ. of Wisconsin, LaCrosse, 1969; M.S., Michigan State Univ., 1970; Ph.D., *ibid.*, 1972. (1975)

John F. O'Malley, *Adjunct Associate Professor (biological sciences)*. B.S., Holy Cross College, 1952; M.S., Worcester State, 1957; Ph.D., Creighton Univ., 1971. (1971)

Joseph A. Prahlow, *Adjunct Associate Professor (clinical) (biological sciences)*. B.S., Valparaiso Univ., 1986; M.D., Indiana Univ. School of Medicine 1990. (2000)

The Molecular Biosciences Program

Director:

Paul W. Huber, *Professor of Chemistry and Biochemistry*

Telephone: (574) 631-6042

Location: 437 Stepan Chemistry

E-mail: phuber@nd.edu

Current research probing the molecular details of the biological sciences requires simultaneous application of genetic, biochemical, and molecular biological principles and expertise. The Molecular Biosciences Program (M.B.P.) provides a broad range of training opportunities for students seeking careers within this active research field. Faculty participants of the Department of Biological Sciences and the Department of Chemistry and Biochemistry administer the M.B.P. within the College of Science. Students interested in the M.B. program should apply for admission to the Department of Biological Sciences or Chemistry and Biochemistry depending on their research interests.

Research Facilities

The Department of Biological Sciences, housed in the modern Galvin Life Sciences complex, has excellent facilities for all laboratory research in molecular biology. Facilities and training opportunities are available in genetics, molecular and cell biology, and developmental biology. The Department of Chemistry and Biochemistry has training opportunities in the fields of gene expression, protein structure and enzyme kinetics. Many M.B.P. faculty have research activities within the newly established Walther Cancer Center and Keck Transgene Center.

The University maintains modern research facilities in support of the Molecular Biosciences Program. The Biosciences Core Facility maintains instrumentation for DNA, RNA, and peptide synthesis, amino acid and carbohydrate analysis, and protein and peptide sequencing. The Department of Biological Sciences houses an optics facility for confocal microscopy and scanning and transmission electron microscopy and a new flow cytometry facility equipped with a Coulter Epics XL flow cytometer and a Coulter ALTRA flow sorter. The College of Science NMR Facility contains state-of-the-art high field spectrometers that support both chemical and biological nuclear magnetic resonance research. The Mass Spectrometry Facility is equipped to analyze high mass biomolecules and determine exact masses of low and medium size molecules. The Freimann Life Science Center provides a modern animal care facility. The staff of certified veterinary technicians ensures proper care and use of laboratory research animals. Several science libraries are found on campus in Nieuwland Science Hall, the Radiation Laboratory, and the Galvin Life Sciences Building. Additional resources are available in the main campus Hesburgh Library.

Degree Requirements

Students participating in the Molecular Biosciences Program must complete the degree requirements of either the Department of Biological Sciences or the Department of Chemistry and Biochemistry. Several courses are designed for all M.B.P. students, and are usually taken during the first year of graduate school. There are additional elective courses in each department to allow for specialization within the M.B.P. Students in the Biological Sciences are required to take Molecular Biology I and II, Fundamentals of Biochemistry, and five elective courses. These are minimum requirements. The student's research adviser and committee may require additional courses based on the background and research interests of the student. In the Department of Chemistry and Biochemistry there are specific requirements depending on the focus of the study. A student in Biochemistry is required to take Fundamentals of Biochemistry, Intermediary Metabolism, Molecular Biology I, and Advanced Biochemical Techniques. In Organic Chemistry, a student is required to take Advanced Organic Chemistry I, Advanced Organic Chemistry II, and Synthetic Organic Chemistry, with an additional nine credit hours of courses.

All M.B.P. students must pass both oral and written comprehensive examinations. Students will conduct original research and write an approved dissertation on this work. The work is conducted under the direction of an adviser participating in the M.B.P. Students in the program also must complete a one-year teaching requirement that usually involves assisting in the instruction of laboratory courses within their discipline. All students participate in the seminar activities of the program.

Course Descriptions

Both required and elective courses of the Molecular Biosciences Program are categorized according to the department offering the course. Please refer to the section on degree requirements for more information.

Biological Sciences

Developmental Genetics

Analysis of the cellular and molecular genetic mechanisms underlying animal development, with emphasis on major vertebrate and invertebrate model systems.

Immunology

An introductory course emphasizing the cells and tissues of the immune system and the nature and function of antigens and antibodies.

Molecular Biology I

Physical chemistry of nucleic acids, bacterial genetics, principles of cloning, DNA replication and recombination, prokaryotic and eukaryotic transcription, RNA processing and translation. Listed also as CHEM 531.

MOLECULAR BIOSCIENCES

Molecular Biology II

Yeast genetics and molecular biology; retroviruses and transposable elements; recombinant DNA: tools and applications in *Drosophila*, yeast, and mice. Listed also as CHEM 532.

Advanced Cell Biology I

The basic biochemical, structural, and biophysical properties of key systems involved in membrane transport, protein trafficking, bioenergetics, cell signaling, vesicular transport, organelle biogenesis, and cytoskeletal functions.

Advanced Cell Biology II

The biochemical, structural, and biophysical properties of key systems involved in cellular adhesion, cell cycle regulation, programmed cell death (apoptosis), and the relationship to mechanisms of disease leading to carcinogenesis, aging.

Immunobiology of Infectious Diseases

Course focuses on the cellular and molecular mechanisms behind human diseases. Specifically, the design and effects of drug treatments on microbial and cellular processes and the development and implementation of vaccines.

Topics in Tumor Biology

Course examines the cell and molecular basis of tumor genesis and development in specific cancer cell types.

Chemistry and Biochemistry**Fundamentals of Biochemistry**

Chemistry of carbohydrates, amino acids, proteins, nucleotides, nucleic acids, lipids, and enzymes.

Intermediary Metabolism

A study of the chemical reactions characteristic of living systems.

Molecular Biology I

Physical chemistry of nucleic acids, bacterial genetics, principles of cloning, DNA replication and recombination, prokaryotic and eukaryotic transcription, RNA processing and translation. Listed also as BIOS 531.

Molecular Biology II

Yeast genetics and molecular biology; retroviruses and transposable elements; recombinant DNA: tools and applications in *Drosophila*, yeast, and mice. Listed also as BIOS 532.

Enzyme Chemistry

Physical and chemical properties and mechanism of action of enzymes and their role in metabolic processes.

NMR Spectroscopy in Chemistry and Biochemistry

A survey of modern NMR methods used to determine molecular structure and conformation, study chemical and biochemical reactivity, and probe metabolic processes in biological systems.

Chemical Basis of Gene Expression

Emphasis is placed on eukaryotic gene structure, replication, transcription, and translation.

Advanced Organic Chemistry I and II

The theoretical basis of organic chemistry and a detailed study of the preparation and reactions of organic compounds.

Synthetic Organic Chemistry

A systematic and critical study of the synthetic methods of modern organic chemistry, including the development of multistage syntheses.

Teaching, Research Fellowships

Financial support is available to all students. The Molecular Biosciences Program nominates outstanding applicants for University-wide fellowships, some of which are specific for female and minority candidates. The M.B.P. also administers program-specific fellowships that support incoming and matriculating students. Research assistantships are available in many of the research laboratories, and teaching assistantships are available to all students. Teaching assistantships typically involve 10 to 12 hours of work per week teaching within an undergraduate laboratory course. All M.B.P. students are awarded full-tuition scholarships.

Application and Admission

Students interested in the Molecular Biosciences Program must apply for admission to one of the departments involved in the program, Biological Sciences or Chemistry and Biochemistry. Applicants should choose the department that best serves their training goals. Each department has different degree requirements, as described above. Usually the research adviser will be in the same department as the student, although this is not a necessity.

To apply to this program, please submit a completed Graduate School application form. On this application, you must specify to which of the host departments (Biological Sciences or Chemistry and Biochemistry) you are applying, and specify that your area of interest or specialization will be the Molecular Biosciences Program. Transcripts of all previous academic credits, three recommendation forms from undergraduate instructors aware of your qualifications, and a statement of purpose are also required.

Graduate Record Exam (GRE) General Test scores must also be submitted and your choice of one Advanced Study Examination. The GRE advanced test is required for consideration within the Department of Biological Sciences and is highly recommended for the Department of Chemistry and Biochemistry. Information about these tests can be obtained from:

GRE ETS
P.O. Box 600
Princeton, NJ 08541-6000

Faculty and Research**Biological Sciences**

John H. Adams, molecular interactions of malaria merozoites with host erythrocytes and genetic/antigenic variation of *Plasmodium*.

Crislyn D'Souza-Schorey, Small GTPases in cell signaling and membrane trafficking.

John G. Duman, Physiological and biochemical adaptations to subzero temperatures, especially (1) structure and function of antifreeze proteins and ice nucleating proteins, and (2) studies of transgenic plants expressing insect antifreeze proteins.

Malcolm J. Fraser Jr., baculovirus molecular genetics, transposons, transgenic engineering of insects.

David R. Hyde, molecular genetics of *Drosophila* vision, molecular genetics of eye development and retinal degeneration in zebrafish, mechanisms of neuronal regeneration in zebrafish.

Alan L. Johnson, ovarian follicular growth, differentiation, and atresia; apoptosis.

Lei Li, molecular genetic basis of visual disorders, circadian clock and olfactory centrifugal inputs on visual sensitivity.

Joseph E. O'Tousa, maturation, structure, and function of rhodopsin, molecular genetics of retinal degeneration, control of cell death processes.

Jeffrey S. Schorey, molecular and cellular processes of mycobacterium-host cell interactions.

Neil F. Shay, molecular, cellular, and physiological aspects of nutrition and nutrient deficiencies.

Martin P. R. Tenniswood, tumor biology; apoptosis in hormone-dependent cancers.

Kevin T. Vaughan, dynactin complex, dynein-mediated organelle transport.

JoEllen J. Welsh, breast cancer, apoptotic mechanisms.

Chemistry and Biochemistry

Brian M. Baker, biophysical chemistry of macromolecular interactions, receptor-ligand interactions in immunity.

Subhash C. Basu, regulation of glycosyltransferases during development, DNA polymerase-associated lectin in eukaryotic DNA replication.

Francis J. Castellino, in vivo and in vitro structure-function relationships of blood coagulation and fibrinolysis proteins.

Patricia L. Clark, protein folding in cellular environments, ribosomal interactions with polypeptide chain conformations.

Holly V. Goodson, dynamics of microtubule assembly, regulation of cytoskeletal structure.

Paul Helquist, design, synthesis, and mechanism of antibiotics and anticancer agents.

Paul W. Huber, RNA-protein interactions, RNA localization, regulation of transcription.

Marvin J. Miller, synthetic and bioorganic chemistry, microbial iron transport agents, amino acids, peptides and β -lactam antibiotics.

Thomas L. Nowak, mechanisms of enzyme activation and catalysis, carbohydrate metabolism, biochemical applications of NMR spectroscopy.

Anthony S. Serianni, biomolecular structure determination via isotope-edited NMR methods.

Bradley D. Smith, biomimetic chemistry, biomembrane fusion, phospholipid flip-flop, antimicrobial agents.

Olaf G. Wiest, physical and computational organic chemistry protein-ligand interactions, rational drug design.

Further Information

For additional information about the Molecular Biosciences Program, write Dr. Paul W. Huber, at the addresses given above.

For information specific to the departments involved in the Molecular Biosciences Program, please write the corresponding graduate director:

Biological Sciences:

Dr. Martin Tenniswood
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Chemistry and Biochemistry:

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Physics

Chair:

Mitchell Wayne

Director of Graduate Studies:

Kathie E. Newman

Telephone: (574) 631-6386

Fax: (574) 631-5952

Location: 225 Nieuwland Science Hall

E-mail: physics@nd.edu

Web: <http://www.physics.nd.edu/>

The Program of Studies

The graduate physics program at Notre Dame offers students a broad range of choice of research areas for a Ph.D. degree. Almost all areas of study in physics are represented within the department, including astrophysics, biophysics, atomic, condensed-matter, high-energy, nuclear, and statistical physics. This program combines course work and research, preparing the student for a career in university, industrial, or governmental research or in college or university teaching. Students take a sequence of basic courses in the fundamental areas of physics. In addition, the student will take advanced courses and seminars in specialized areas. Students join in a physics research program of the department within the first year.

The graduate program is primarily a doctoral program, leading to the degree of doctor of philosophy. The department ordinarily will not accept students who intend to complete only the master's degree. However, a program leading to the degree of master of science is available; it involves satisfactory completion of graduate course work without any thesis requirement.

The master of science nonresearch program requires 24 credit hours of approved course work and passage of an oral Master's examination. Each program of course work is chosen in consultation with a faculty adviser.

Interdisciplinary programs between physics and chemistry or biology are also available.

Requirements for the Ph.D. include thirty-six credit hours in courses, seminars, and research. Courses taken include Methods of Theoretical Physics I (PHYS 70003), Theoretical Mechanics (PHYS 70005), Methods of Experimental Physics (PHYS 71010), Quantum Mechanics I, II, and III (PHYS 70007, 70008, and 80003), Electromagnetism and Electrodynamics (PHYS 70006 and 80001), and Statistical Thermodynamics (PHYS 80002). Three physics electives are required, generally chosen from the set astrophysics, atomic physics, condensed matter physics, elementary particle physics, and nuclear physics (PHYS 70201, 80301, 80501, 80601, and 80701, respectively). There is no foreign language requirement for a Ph.D. in physics. Students who have satisfactorily completed courses equivalent to the required courses listed above will have the corresponding requirements waived or transferred. Students lacking the background to begin the basic curriculum may be advised to take some advanced

undergraduate courses. Additional courses, supplemented by colloquia and informal seminars on topics of current interest, are available to the advanced student.

In addition to course work, there are three examinations to be passed for a Ph.D., a written qualifying examination on undergraduate physics, a written and oral Ph.D. candidacy examination, and an oral Ph.D. dissertation defense. Students first take the qualifying exam in the fall of their first year, and must pass it by the end of the second year. The candidacy examination is typically taken in the third year, after course work is complete. In this exam, the candidate must present a research proposal, demonstrate the ability to perform the proposed research, and show a broad understanding of physics. The post-candidacy student then concentrates on research, and generally writes the doctoral dissertation within three years of the candidacy examination. A dissertation is required and must be approved by the student's doctoral committee and defended orally by the student at the final examination, the Ph.D. defense.

To remain in good standing, students are required to maintain a 3.0 grade point average, to pass the qualifying examination by the end of the second year, to pass the candidacy exam by the end of the fourth year, and to complete the Ph.D. degree program by the end of the eighth year. The minimum residence requirement for the Ph.D. degree is four consecutive semesters and may include summer session.

Research Areas

Astrophysics

Astrophysics research at Notre Dame is directed toward the study of astrophysical origins. The group's activities contribute to the recently established Center for Astrophysics. The center supports interdisciplinary research in three basic areas: theoretical astrophysics and cosmology, ground-based optical astronomy, and space science.

Ground-Based Astronomy. The flagship of Notre Dame's ground-based observational effort is the partnership with the Large Binocular Telescope (LBT) in Arizona. Notre Dame has joined a consortium of other universities for construction and use of this telescope. The members of this consortium are excitedly anticipating the arrival of first light in early 2004. The LBT will be one of the most powerful and versatile telescopes in the world. It will be the premier instrument for many astronomical problems ranging from studies of the early universe to searches for planets in other star systems.

Current observational programs involve a variety of telescopes around the world including the *Keck* observatory in Hawaii and the Hubble Space Telescope. Ongoing research includes studies in the mysterious dark energy which is accelerating the expansion rate of the universe, studies of distant supernovae and gamma-ray bursts, studies of planet formation in young stellar systems, and studies of gravitational microlensing to search for dark matter and planets in the Galaxy.

PHYSICS

Theoretical Research. Ongoing theoretical research includes all aspects of the origin and evolution of the universe, galaxies, stars, planets, and the interstellar medium. The astrophysics theory group has pioneered the development of modern numerical methods for hydrodynamic simulations of complex astrophysical systems. Theoretical work concerning the formation and evolution of galaxies, stars and the interstellar medium is being investigated with complex adaptive mesh magnetohydrodynamics. The group is also doing cosmological simulations of the origin and evolution of the very early universe, from the birth at the Planck scale, through inflation and various particle-physics processes, primordial nucleosynthesis, the emission of the cosmic microwave background, and the formation of large-scale structure and galaxies. These simulations are used to constrain theories for the nature of space-time and the origin of the universe. General relativistic numerical hydrodynamic simulations are also being performed as a means to understand exploding supernovae, black-hole and neutron star formation, and the formation of jets and electromagnetic bursts from accreting systems.

Another focus is theoretical nuclear astrophysics. This includes nucleosynthesis in the big bang, in supermassive population III stars, during late stellar evolution (AGB stars), and explosive nucleosynthesis on accreting white dwarfs (novae), accreting neutron stars (X-ray bursts), and supernovae. The nucleosynthesis is simulated using complex nuclear reaction network models for stellar hydrostatic and/or hydrodynamic conditions. The nuclear-physics input is derived from nuclear structure and nuclear reaction models. The reaction flow is studied within the time scales of static or explosive stellar burning. Energy generation and nucleosynthesis are calculated and compared with observed luminosities and elemental abundance distributions.

Space Science. Research in space science divides into studies of cosmic-ray air showers and the development of a new Notre-Dame satellite mission. In cosmic-ray research, an extensive air shower array (Project GRAND) is used to study cosmic rays and measure angles with high precision. The production mechanisms for UHE cosmic gamma rays and stellar sources such as Cygnus X-3 and Hercules X-1 are being studied along with a search for an association with gamma-ray bursts.

The group's newest endeavor is the proposed Deep Impact Microlensing Explorer Mission (DIME) in which Notre Dame's contribution will be as the Science Analysis center. Scientists at Notre Dame will utilize the onboard telescope to make parallax measurements of distant gravitational microlensing events. These observations will be crucial to characterize the nature of dark matter in the Galaxy.

Atomic Physics

Experimental Program. The experimental atomic physics program at Notre Dame is directed toward the study of the structure, excitation, and de-excitation characteristics of atoms and ions. This work

stimulates advances in the theoretical understanding of atomic systems at the most fundamental level, where relativistic and field-theoretic aspects of the atoms become important.

An experimental laser spectroscopy program focuses on precision measurements of transition amplitudes and energies. These measurements are of interest to the study of parity nonconservation effects in atoms which is motivated by the study of weak interactions and are part of a low energy test of the standard model. High-resolution spectroscopic techniques are also used in other applications. This program involves the use of tunable dye lasers and diode lasers. Highly stripped heavy-ion beams of 10-100 MeV energy are produced at the accelerator facilities of the Nuclear Structure Laboratory. Experiments are also performed at other off-site heavy-ion accelerators. Present investigations concentrate on the precision atomic spectroscopy of highly ionized atoms and the measurement of lifetimes of selected atomic states in these ions. The spectroscopic measurements test current relativistic and quantum electro-dynamic calculations of atomic structure for few-electron ions. The lifetime results reflect the effects of both electron correlations and relativistic contributions in the de-excitation rates of excited atomic states. These data are also important to the diagnostics and modeling of high-temperature astrophysical and laboratory plasmas.

At APAL, the Atomic Physics Accelerator Laboratory in the Nieuwland Science Hall basement, fast heavy ions (up to 200 keV energies) are used for Doppler-free laser studies of atomic hyperfine structures, precision lifetime measurements, and other studies of atomic collisions and structures.

Theoretical Program. Notre Dame atomic theorists work on problems at the interface of atomic and particle physics. Recently, they have been involved in calculations of electron electric dipole moment enhancement factors in heavy rare-earth ions in support of experiments to detect time-reversal (T) violation. The atomic theory group produced the most accurate available prediction of parity nonconserving (PNC) amplitude in cesium, which, when combined with experiment, served as a stringent test of the standard model. Systematic calculations of the PNC amplitudes induced by the nuclear anapole moment have also been carried out. Recently, the atomic theory group calculated isotope shifts in ions of interest in the search for time-variation of the fine-structure constant. Higher-order corrections to quantum field theories for hydrogen, helium, and positronium are other subjects of current investigations. In a different but related atomic theory project, *ab initio* studies of transport properties of warm-dense plasmas are underway.

Condensed Matter and Biophysics

Condensed matter (CM) research at Notre Dame encompasses topics of research ranging from "hard" CM problems such as semiconductor or superconductor systems to "soft" CM problems such as studies of multicellular aggregates or the application

of network theory to biological systems. The topics studied are described below:

Physics on the Nanoscale. Single-electron charging effects and related phenomena are explored to probe the basic physics of few-atom clusters, fullerenes and other exotic systems comprised of only a few atoms. The growth and self assembly of quantum dots, quantum wires, and heterostructures in semiconductor systems is also studied extensively. Work on heterostructures includes the development of blue-light semiconducting lasers. Self-organized quantum dots and other nanophase systems are grown and characterized using optical, magnetic, transport, and x-ray techniques. Facilities include a dual-chamber molecular beam epitaxy machine, extensive facilities for optical and magneto-optical studies of nanoscale systems with micrometer-scale and sub-micrometer-scale (near field) resolution, and instrumentation for the study of electrical transport and magnetic properties.

Semiconductor Physics and Magnetism. Thin-film II-VI, III-V and other semiconductor samples are prepared by molecular beam epitaxy. III-V semiconductors which incorporate Mn ions in the lattice are ferromagnets and are expected to play a key role in future "spintronic" devices. These, as well as other magnetic samples, are studied by a variety of experimental techniques including laser magneto-spectroscopy, x-ray and neutron scattering, and electron transport. Facilities include extensive capabilities for the study of electrical properties, magnetization, and state of the art apparatus for the study of magnetic resonance. In addition, magnetic properties of solids are studied by neutron scattering, carried out off campus at the National Institute for Standards and Technology and at the University of Missouri Research Reactor Center (MURR).

Structural Studies. X-ray scattering and X-ray absorption fine structure (XAFS) are used to study the surfaces and internal interfaces of solids and liquids, phase transformations and ordering phenomena in condensed-matter systems. Examples of recent studies atomic-scale structure of "highly correlated" magnetic materials, interfaces and structure of magnetic semiconductors, the structure of complex nanophase materials, the structure of metalloproteins, and environmental systems on the molecular scale. Because of the unique advantages of synchrotron radiation, these experiments are conducted at national facilities located at the Advanced Photon Source, Argonne National Laboratory, where Notre Dame is a major participant.

Superconductivity and Vortices. High-temperature superconductors are studied from the perspective of microwave absorption and other techniques with a view to probing fundamental mechanisms. These include investigations of the response of high-temperature superconductor thin-film systems to ultrashort duration, far-infrared light to evaluate potential applications for and the intrinsic electronic properties of these novel materials. New materials are synthesized using the traveling solvent float zone (TSFZ) technique in a mirror furnace-based system.

PHYSICS

In a separate effort, new superconducting systems based on dilute-doped elemental superconductors are being developed for micro-refrigerators and transition-edge x-ray sensors for space missions. Facilities include thermal evaporation and multi-source sputtering systems, a cold head for electro-optic studies down to 25K, a SQUID voltmeter, a 10 T superconducting magnet, low-temperature equipment for work to 1 K, and a clean room for contact lithography. A fiber optic link to the lab of a collaborating atomic physicist permits the piping of modulated laser light to these experiments. Collaborations with NIST, Boulder, provide access to an extensive class-100 clean-room, adiabatic refrigeration to 60 mK, and magneto-optic facilities.

Scanning tunneling microscopy and spectroscopy (STM/STS) are used to image vortices induced by an applied magnetic field and probe their spectroscopic properties. These measurements are complemented with studies of the vortex lattice structure using small-angle neutron scattering (SANS). Combined, the two techniques allow a study of how the superconducting gap and the vortex lattice symmetry and orientation evolves as a function of temperature and field. On-site facilities include a low-temperature, ultra-high vacuum STM (under construction) while the neutron scattering studies are largely conducted at the Institut Laue-Langevin, Grenoble, France.

Theoretical Condensed Matter Physics. Notre Dame theoretical condensed matter physicists study superconductors, semiconductors, soft matter, and properties of networks.

In one theoretical effort in superconductivity, finite temperature field-theory techniques are used to study two-dimensional antiferromagnets. Also studied are highly-correlated electronic systems, including disordered and frustrated ferromagnets, such as magnetic semiconductors, high temperature superconductors, the novel superconducting compound, MgB_2 , and mesoscopic superconductivity. In semiconductors, an active collaboration exists between theorists and experimentalists studying mesoscopic and nanoscopic physics. In particular, Zeeman-induced nanoscale localization of spin-polarized carriers in magnetic semiconductor-permalloy hybrids is studied. In another project, Monte Carlo simulations are used to study the microstructure of strained semiconductor alloys and compounds.

Finally, the tools of statistical mechanics are applied to understanding real networks, including metabolic and genetic networks, social networks, the Internet, and the World Wide Web. A special focus is towards understanding the implications of the scale-free characteristics of real networks, a concept developed at Notre Dame.

Biophysics. The department hosts an active program in biophysics, focusing on modeling the structure and development of various biological systems. A strong focus is on understanding the topological properties of cellular networks—the networks formed by the Interactions between metabolites, genes and

proteins, modeling both their structure and dynamical behavior. Using techniques from statistical mechanics, models of “convergent extension” cell rearrangements have been developed as a way to understand one step in embryonic development. At a higher level, multicellular aggregates, such as embryonic and mature tissues, are modeled. These systems often share the properties of “excitable media” and “soft matter,” familiar to modern condensed matter physics and dynamical systems theory. Biological research is carried out in collaboration with other groups on the campus, involving faculty from biochemistry and biology, under the coordination of the Center for Biocomplexity.

High Energy Physics

Experimental Program. An understanding of the fundamental constituents of matter and the forces with which they interact is sought in high energy physics experimental programs that are performed at colliding beam accelerator facilities of two complementary types: Hadron colliders and electron-positron colliders. Each of these programs has a current, operating experiment and a future experiment in either the construction phase or the research and development phase.

The hadron collider program is based upon the currently operating Tevatron 2 Collider and $D\bar{O}$ experiment at Fermilab to be followed (starting in 2007) by the CMS experiment at the CERN Large Hadron Collider (LHC). The physics objectives of this program are to study top and beauty physics, electroweak bosons W and Z , QCD processes, and to search for evidence of electroweak symmetry breaking (such as Higgs bosons or technicolor), supersymmetry, extra (hidden) spatial dimensions, and other new phenomena. This program has provided many important physics results over the last decade, among them the discovery of the top quark in 1995. Notre Dame graduate students have written dissertations in all these research areas. Additionally, Notre Dame has been involved in the recent upgrade of the $D\bar{O}$ detector to magnetic tracking, being a pioneering group in the development of scintillating-fiber tracking technology. Notre Dame manages the operation of the Central Fiber Tracker for $D\bar{O}$, directs the offline track reconstruction effort for the experiment, and is involved in the building of an improved level-1 track trigger processor for enhanced detector performance at increased luminosity. Fiber-optic techniques are also critical to the operation of the CMS hadron calorimeters at the LHC, and Notre Dame has been extensively involved in the design and construction of key elements of the electro-optical readout of these CMS detector subsystems, and has been engaged in R and D on new scintillator and waveshifter materials for improved calorimetry performance under high luminosity operation.

The electron-positron collider program is based upon the currently operating BaBar experiment at SLAC. This program, too has provided remarkable physics results, notably the observation by BaBar of CP violation in the b-quark system in 2000 - the first observation of CP violation outside of K_L decays, which were discovered in 1964. Physics goals

include systematic study of CP violating effects in a variety of decay modes in the b-system as well as studies of rare decays of beauty and charm mesons. Luminosity increases for the BaBar experiment are planned, and Notre Dame is engaged in refinements of the readout electronics of the central tracking chamber to improve track reconstruction.

A variety of R and D projects are underway for the future Linear Collider including, for detectors: scintillator and waveshifter development for fast triggering, calorimetry, muon detection, and tracking; and for accelerators: beam controls and diagnostics systems.

Theoretical Program. In theoretical high energy physics, refinements are pursued in the phenomenology of the standard model as well as ‘new’ physics beyond the standard model, particularly supersymmetry. This new physics can be manifested by its presence in CP asymmetries like the one recently measured at SLAC, the first new CP measurement in 40 years. Also being analyzed is supersymmetry and other attempts to tie the electroweak symmetry breaking in the standard model to a more fundamental understanding of nature, including connections to cosmology such as the dark matter and dark energy. Baryo- and lepto-genesis in the Universe is also studied as well as scenarios with extra space dimensions and even multidimensional time.

Nuclear Physics

Experimental Research. The nucleus is a tiny object with a very wide reach. Indeed, nuclear physics encompasses an enormous variety of phenomena—from the very beginnings of life (the CNO cycle), to determination of the age of stars and their demise in a fiery cataclysm (supernovae). In between, one finds applications of nuclear physics in fields as diverse as medicine, radiocarbon dating, energy, national security, and even detecting art forgeries. The nucleus, as a quantal many-body system, provides the bridge between quarks at one end and solids at the other. Probes of nuclear properties can answer many questions relating not only to the microscopic behavior of quantum systems, but also to the macroscopic behavior of the very largest stars.

Nuclear physics research in the department aims at studying the structure and dynamics of nuclear systems, especially in their relation to astrophysical phenomena. Work is carried out in the Nuclear Structure Laboratory, as well as a large number of accelerator facilities around the world.

A pioneering focus in the Nuclear Physics Laboratory has been the development and application of short-lived radioactive ion beams (RIB) for studies of the structure of nuclei at the very limits of particle stability. Examining nuclear matter under extreme conditions is crucial for understanding of the fundamental properties of nuclear forces, and development of the unified nuclear theory. An opportunity is provided by studies of exotic nuclei near and beyond the line of particle stability (drip line). Knowledge of the properties of exotic nuclei is also important for understanding of many astrophysical processes. Cur-

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rently there is a focus on the spectroscopy studies of very neutron- and proton-rich nuclei and on investigation of mechanism of reactions induced by RIBs.

Research in nuclear structure focuses on the fundamental modes of motion in nuclei. Among the novel aspects of nuclear dynamics under investigation are wobbling motion (akin to that of a wobbling top), breakdown of chiral symmetry (the nucleus demonstrating left- and right-handedness), and anti-magnetic rotation (symmetric rotation of nucleonic currents). The “bulk” properties of nuclei are investigated by means of high-energy nuclear vibrations (the “giant resonances”) to determine the incompressibility of nuclear matter, a crucial component of the nuclear equation of state that is critical to determining the properties of matter in the core of neutron stars.

A major research initiative of the laboratory is understanding the origin of the elements in the universe. This effort is the cornerstone of the newly-established Joint Institute for Nuclear Astrophysics (JINA), a national Physics Frontier Center. Measurements of nuclear reaction rates and decay processes at stellar temperatures and densities comprise a strong part of the experimental effort in nuclear astrophysics. The goal is to understand the origin and distribution of the elements in the universe. Research is directed towards simulating stellar nucleosynthesis in the laboratory, understanding late stellar evolution and explosive nucleosynthesis in novae and supernovae, and explaining the origin of the very high luminosity observed in stellar x-ray outbursts.

Developing Accelerator Mass Spectrometry techniques for astrophysics is another research focus of the laboratory. Accelerator Mass Spectrometry has traditionally been used to detect environment tracers at or below their natural abundance level (^{10}Be , ^{14}C , ^{36}Cl). Its main attribute is its power to accelerate and analyze ions of radioactive nuclei with extremely high sensitivity. Many aspects of this powerful technique can be used for research involving radioactive-beam physics, as well as the study of low cross-section nuclear reactions which are important in stellar evolution. That is the case where counting rates and voltages are very low and there are high isobaric backgrounds.

The major experimental facilities in the laboratory include an FN Tandem accelerator that can provide up to 11 MV terminal voltage for the acceleration of light and heavy ions; the Twinsol radioactive beam facility, based on two, coupled, 6 Tesla-meter superconducting solenoids for the focusing of the radioactive beam particles onto a target; a 4 MV KN and a 2 MV JN Van de Graaff accelerators capable of delivering the intense, low-energy beams necessary for recreating stellar conditions in the laboratory; a number of clover- and Compton-suppressed Ge detectors for gamma-ray spectroscopy measurements and, a superconducting solenoid system for decay studies. A recoil-mass spectrometer is currently in the design stage and is expected to be operational by 2005.

In addition to the high level of activity within the nuclear laboratory, the nuclear group’s research is complemented by experiments done at various national facilities including the superconducting cyclotron at Michigan State University, and accelerator facilities at the Argonne, Berkeley, Oak Ridge, Los Alamos, and Thomas Jefferson National Laboratories. On the international scene, Notre Dame scientists also utilize the High Flux Beam Reactor at Grenoble, France, the GANIL facility in Caen, France, the ISOLDE radioactive ion facility at CERN, Switzerland, and various accelerator facilities in Belgium, France, Germany, Japan, and the Netherlands.

There is also a lively inter-disciplinary programs in radiation chemistry, bio-mechanics, materials testing, and elemental analysis of archaeological samples. The analysis of archaeological samples is a new initiative with the Snite Museum of Art at Notre Dame and uses the proton-induced x-ray emission (PIXE) technique. Collaborations with industries are also being carried out in testing new detectors and determining the durability of artificial human body components.

Theoretical Research. The structure of exotic nuclei, including those with unusual numbers of protons and neutrons, and rapidly spinning nuclei are the focus of the theoretical effort. The structure of such exotic nuclei is likely to become accessible to experimental studies with the development of new national and international facilities. Also investigated are transitions from the superconducting to the normal state in rapidly rotating nuclei, pair correlations in very proton-rich nuclei, and the properties of very neutron-rich nuclei, which play an important role in astrophysical processes. A recent result is the discovery of magnetic and chiral rotation of nuclei.

The methods of many-body theory of finite systems are quite general and can be applied both to nuclei and non-nuclear mesoscopic systems, including atomic clusters and quantum dots.

Education and Outreach

QuarkNet. QuarkNet is a federally funded national program partnering high school teachers with particle physicists working on high-energy colliding beam experiments at Fermilab, CERN and SLAC and on non-accelerator and fixed target experiments. Notre Dame is directly involved in the management of the National QuarkNet Program and also operates the Notre Dame QuarkNet Center located adjacent to the campus where high school teachers and students can participate “hands-on” in construction of state-of-the-art particle physics detectors.

Research Experiences for Teachers (RET). Notre Dame operates a Research Experience for Teachers (RET) program; which pairs high school teachers from the North Central Indiana/Southwest Michigan region with physics faculty in the department. Teachers in RET participate in a paid eight-week program of summer research and receive academic graduate research credit.

In principle, research is possible in any area of physics depending upon the mutual interest of the teacher and faculty mentor. Twelve high school teachers are supported in this program each summer.

Joint Institute for Nuclear Astrophysics (JINA).

The Joint Institute for Nuclear Astrophysics (JINA) is funded by the NSF as a Physics Frontier Center. It is a research collaboration focused at the intersection of nuclear physics and astrophysics. JINA offers a wide range of educational outreach programs at all levels: K-12, undergraduate and graduate. For graduate students, JINA’s educational outreach program offers collaboration opportunities in the exciting field of nuclear astrophysics, including research fellowships for graduate work at or from JINA sites (Notre Dame, Michigan State University, University of Chicago, Argonne National Laboratory, University of Arizona, University of California Santa Barbara, University of California Santa Cruz, and Los Alamos National Laboratory). One fellowship program offers a full year of research experience at Notre Dame for minorities and women to explore the field of nuclear astrophysics. JINA offers professional development training to K-12 teachers and graduate students may participate in these workshops and camps. JINA also has research experience programs for high school teachers and students in which graduate students often mentor teachers and work with them in the lab. For more information on JINA and its educational outreach programs, go to <http://www.jinaweb.org>.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

68098. Directed Research - Physics Teaching (v-v-v)

Directed research courses are for high school teachers participating in research in the physics department, for example as participants in the RET (Research Experience for Teachers), QuarkNet, or similar programs which partner high school teachers with physicists. Research areas available include atomic physics, biophysics, condensed-matter physics, nuclear physics, particle physics, and astrophysics. Instruction will be given in modeling physics phenomena in a classroom setting. Emphasis is given to applications in high school physics teaching. Additionally, students will participate in directed research associated with current experiments being carried out by department faculty. Students maintain a research logbook and submit a written research summary at the conclusion of the research period. (Offered as needed)

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68099. Directed Research
(v-v-v)

Directed Research courses are for high school teachers participating in research in the physics department, for example as participants in the RET (Research Experience for Teachers), QuarkNet, or similar programs which partner high school teachers with physicists.

Research areas available include atomic physics, biophysics, condensed-matter physics, nuclear physics, particle physics, and astrophysics.

Participants will be introduced to research physics in informal lectures with faculty, with course notes and reference texts available. Additionally, they will participate in directed research associated with current experiments being carried out by department faculty. Students maintain a research logbook and submit a written research summary at the conclusion of the research period. (Offered as needed)

Additional directed research (offered as needed and listed by topic) include:

- 68299. Directed Research in Astrophysics
- 68399. Directed Research in Atomic Physics
- 68499. Directed Research in Biophysics
- 68599. Directed Research in Condensed Matter Physics
- 68699. Directed Research in Particle Physics
- 68799. Directed Research in Nuclear Physics

73000. Physics Colloquium
(0-1-0)

A discussion of current topics in physics by guest lecturers and members of the faculty. (Every semester)

70003. Methods of Theoretical Physics I
(3-3-0)

A study of the methods of mathematical physics. Topics include linear vector spaces, matrices, group theory, complex variable theory, infinite series, special functions, and differential equations.

70005. Theoretical Mechanics
(3-3-0)

Lectures and problems dealing with the mechanics of a particle, systems of particles, and rigid bodies. The Lagrangian and Hamiltonian formulations of classical mechanics; theory of small oscillations. Introduction to special relativity. Introduction to nonlinear dynamics and chaos; bifurcation theory.

70006. Electromagnetism
(3-3-0)

Electrostatics; Laplace's and Poisson's equations; Legendre's and Bessel's equations; Green's functions; static multipole expansions; magnetostatics; magnetic vector and scalar potentials; Maxwell's equations; plane waves. (Every year, spring)

70007. Quantum Mechanics I
70008. Quantum Mechanics II
(3-3-0), (3-3-0)

General Hilbert Space formulation of Quantum Mechanics; Schrödinger vs. Heisenberg picture; symmetries and conservation laws; Feynman path integrals; harmonic oscillator; the Coulomb problem; the Bohm-Aharonov effect; the theory of angular

momentum; EPR correlations and Bell's inequality; Bose-Einstein and Fermi-Dirac statistics; elementary approximation methods; scattering theory.

70010. Methods of Experimental Physics
71010. Experimental Physics Laboratory
(3-2-2) Berry

A lecture and laboratory course on methods of all aspects of modern experimental physics, from instrumentation and data acquisition to statistical treatment of data. The course is designed around ten experiments in different areas of physics. The course includes learning about equipment design, various detection systems, electronic pulse-processing, and computer interfaces.

77031, 77032. Current Topics in Physics
(v-v-v), (v-v-v)

Discussions of topics of current interest in physics. (Offered as needed)

70050. Relativity: Special and General
(3-3-0)

An introduction to relativity, both special and general. Special relativity: Lorentz transformations of events, geometry of space-time, relativistic kinetics (energy-momentum), Lorentz transformations of electromagnetic fields. General relativity: gravity and light, principle of general covariance, Einstein's field equations, Schwarzschild solution, precession of perihelions of planets, deflection of light, black holes. (Every year, spring)

70201. Astrophysics
(3-3-0)

A study of the physical problems associated with stellar motions; energy generation and radiation; astronomical distances; celestial mechanics; galactic dynamics; cosmic rays; interstellar matter; thermodynamics; and equations of state of various stellar models. Observational techniques and methods of computation will be discussed. (Every year, fall)

80001. Electrodynamics
(3-3-0)

Scattering and diffraction; special relativity; covariant formulation; radiation from charges; multipole expansions; radiation damping. (Every year, fall)

80002. Statistical Thermodynamics
(3-3-0)

Review of basic elements of phenomenological thermodynamics; kinetic theory and transport equation; dilute gases in equilibrium; classical statistical mechanics; microcanonical, canonical and grand canonical ensembles; quantum statistical mechanics; the renormalization group, critical phenomena and phase transitions. (Every year, spring)

80003. Quantum Mechanics III
(3-3-0)

Advanced topics in nonrelativistic quantum mechanics: advanced approximation methods, partial wave expansions, and the optical theorem, Berry's phase; relativistic quantum mechanics; the Dirac equation, the electromagnetic interactions of the Dirac particle, the fine structure of atoms, Klein's paradox; basic elements of quantum field theory: Lagrangian and Hamiltonian formulation, the existence of

antiparticles, the Feynman rules with elementary applications; one-loop renormalization and the renormalization group. (Every year, fall)

80004. Quantum Field Theory
(3-3-0)

General formulation of quantum field theories; the spin-statistics theorem; CPT invariance and its tests; local gauge theories; symmetries, conservation laws, Ward identities and anomalies; Feynman path integrals; Feynman rules for Abelian and non-Abelian gauge theories; ghosts; the general renormalization program for gauge theories and the renormalization group; asymptotic freedom and slavery; spontaneous realization of symmetries and the Higgs mechanism; grand unification; and supersymmetry. (Offered as needed)

80301. Atomic Physics I

90302. Atomic Physics II
(3-3-0), (3-3-0)

Atomic structure and properties. Spectroscopy of simple and complex atomic systems, the Schrödinger and Dirac equations, Hartree-Fock methods, allowed and forbidden radiative transitions, and hyperfine splitting. Further topics that may be covered are laser-atom interactions, laser cooling and trapping, photoionization, atomic collisions, many-body perturbation theory, quantum electrodynamics, and atomic parity nonconservation. (The first semester is offered every fall; the second semester, PHYS 90302, is offered as needed.)

80303. Quantum Optics
(3-3-0)

This course will cover properties of the quantized electromagnetic field as it interacts with atoms and other forms of matter. The interaction of light with matter is the basis for the phenomena of photoelectric detection, measurement, and nonlinear optics which will be used to investigate the quantum mechanical nature of photon correlations, coherent states of light, squeezed states, and the basics of quantum computing. (Offered as needed)

80501. Condensed Matter Physics I
90502. Condensed Matter Physics II
(3-3-0), (3-3-0)

Free electron theories of solids; Drude and Sommerfeld theory; crystal and reciprocal lattices; diffraction; Bloch electrons; band structure and the Fermi surface; cohesive energy; classical and quantum theory of the harmonic crystal, phonons; dielectric properties of insulators; semiconductors; paramagnetism and diamagnetism, magnetic ordering; superconductivity.

Further topics, covered in Condensed Matter Physics II, are chosen from such areas as: critical phenomena; high-temperature superconductivity; quantum fluids; spin glasses; quantum wells and quantum dots; quantum Hall effect; "soft" condensed-matter systems; survey of modern experimental techniques such as molecular-beam epitaxy; dilution refrigerators; XAFS, ESR, x rays, and neutron scattering.

(The first semester is offered every spring; the second semester, PHYS 90502, is offered as needed.)

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80601. Elementary Particle Physics I
 90602. Elementary Particle Physics II
 (3-3-0), (3-3-0)
 Relativistic transformations and kinematics; symmetries and conservation laws; selection rules; basic elements of group theory; the quark model and fundamental interactions in nature; Abelian and non-Abelian gauge theories; the Standard Model of High Energy Physics, its Feynman rules and renormalization; the Higgs mechanism; the CKM matrix; Supersymmetry and Supergravity; Grand Unification; empirical foundations: accelerators, detectors and experimental techniques; crucial experiments. (The first semester is offered every spring; the second semester, PHYS 90602, is offered as needed.)
80701. Nuclear Physics I
 90702. Nuclear Physics II
 (3-3-0), (3-3-0)
 The nucleus as a Fermi gas; the Von Weizsacker mass formula; tensor algebra and the Wigner-Eckart theorem; isospin; independent-particle motion; the many-body problem in nuclear physics; the Hartree-Fock self-consistent field; the shell model; collective nuclear motion; rotations and vibrations; pairing forces; nuclear reaction theory; electromagnetic and weak interactions; fundamental symmetries and searches for "new physics" in the context of the nucleus; nuclear astrophysics; the solar neutrino problem; use of electron scattering as a tool to investigate the structure of the nucleon and the nucleus; quarks and gluons in relativistic heavy ion collisions. (The first semester is offered every spring; the second semester, PHYS 90702, is offered as needed.)
83100. Theory Seminar
 (2-2-0)
 Discussion of research and current problems in theoretical physics. (Every semester)
83200. Astrophysics Seminar
 (2-2-0)
 Discussion of research and current literature in astrophysics.
83300. Atomic Physics Seminar
 (2-2-0)
 Discussion of research and current literature in atomic physics.
83500. Condensed Matter Seminar
 (2-2-0)
 Discussion of research and current literature in condensed matter physics. (Every semester)
83600. Elementary Particle Physics Seminar
 (2-2-0)
 Discussion of research and current literature in elementary particle physics. (Every semester)
83700. Nuclear Physics Seminar
 (2-2-0)
 Discussions of research and current literature in nuclear physics. (Every semester)
- 87025, 87026. Special Topics in Physics
 (v-v-v)
 Discussions of topical concepts in physics. (Offered as needed)
98698. Research and Dissertation
 (0-0-0)
 Research and dissertation for resident graduate students. Graded with letter grade.
98699. Research and Dissertation
 (0-0-0)
 Research and dissertation for resident graduate students. Graded satisfactory/unsatisfactory.
98700. Nonresident Dissertation Research
 (1-0-0)
 Required of nonresident graduate students who are completing their dissertations in absentia and who wish to retain their degree status.
- In addition to the foregoing, certain advanced undergraduate courses may be taken for graduate credit.
- ### Faculty
- Mark Alber, *Concurrent Professor*. M.S., Moscow Institute of Technology, 1983; Ph.D., University of Pennsylvania, 1990. (2003)
- Ani Aprahamian, *Professor*. B.A., Clark Univ., 1980; Ph.D., *ibid.*, 1986. (1989)
- Gerald B. Arnold, *Professor*. B.S., Northwestern Univ., 1969; M.S., Univ. of California, Los Angeles, 1972; Ph.D., *ibid.*, 1977. (1978)
- Richard E. Azuma, *Adjunct Professor*. B.S., University of British Columbia, Canada, 1951; Ph.D., The University, Glasgow, Scotland, 1959. (2003)
- Dinshaw Balsara, *Assistant Professor*. M.S. (Physics), Indian Inst. of Tech., Kanpur, 1982; M.S. (Astronomy), Univ. of Chicago, 1989; Ph.D., Univ. of Illinois at Urbana-Champaign, 1990. (2001)
- Albert-László Barabási, *the Emil T. Hofman Professor of Physics*. B.A., Univ. of Bucharest, 1989; M.A., Univ. of Budapest, 1991; Ph.D., Boston Univ., 1994. (1995)
- David P. Bennett, *Research Associate Professor*. B.S., Case Western Reserve Univ., 1981; Ph.D., Stanford Univ., 1986. (1996)
- H. Gordon Berry, *Professor*. B.A., Oxford Univ., 1962; M.S., Univ. of Wisconsin, 1963; Ph.D., *ibid.*, 1967. (1994)
- Ikaros I. Bigi, *Professor*. M.Sc., Univ. München, 1973; Ph.D., *ibid.*, 1976; Habilitation, Aachen, 1984. (1988)
- Howard A. Blackstead, *Professor*. B.S., North Dakota State, 1962; M.A., Dartmouth College, 1964; Ph.D., Rice Univ., 1967. (1969)
- Bruce A. Bunker, *Professor*. B.Sc., Univ. of Washington, 1974; Ph.D., *ibid.*, 1980. (1983)
- Neal M. Cason, *Professor*. A.B., Ripon College, 1959; M.S., Univ. of Wisconsin, 1961; Ph.D., *ibid.*, 1964. (1965)
- Philippe A. Collon, *Assistant Professor*. Licencie, Univ. Catholique De Louvain, 1993; Ph.D., Univ. of Wien, 1999. (2003)
- Malgorzata Dobrowolska-Furdyna, *Director of Undergraduate Studies and Professor*. M.S., Warsaw Univ., 1972; Ph.D., Polish Academy of Sciences, 1980. (1988)
- Morten R. Eskildsen, *Assistant Professor*. B.Sc., Univ. of Copenhagen, 1992; M.Sc., *ibid.*, 1994; Ph.D., *ibid.*, 1998. (2003)
- Stefan G. Frauendorf, *Professor*. M.S., Technical Univ. of Dresden, 1968; Ph.D., *ibid.*, 1971. (1999)
- Jacek K. Furdyna, *the Aurora and Tom Markez Professor of Physics and Fellow of the Nanovic Institute for European Studies*. B.S., Loyola Univ., Chicago, 1955; Ph.D., Northwestern Univ., 1960. (1987)
- Umesh Garg, *Professor*. B.S., Birla Institute of Technology, Pilani, India, 1972; M.S., *ibid.*, 1974; M.A., State Univ. of New York, Stony Brook, 1975; Ph.D., *ibid.*, 1978. (1982)
- Peter M. Garnavich, *Associate Professor*. B.S., Univ. of Maryland, 1980; M.S., Massachusetts Inst. of Technology, 1983; Ph.D., Univ. of Washington, 1991. (2000)
- Joachim Göerres, *Research Professor*. B.S., Univ. of Munster, 1974; Diplom., *ibid.*, 1979; Ph.D., *ibid.*, 1983. (1989)
- Anna Goussiou, *Assistant Professor*. B.S., Aristotle Univ. of Thessalonika, Greece, 1989; M.S., Univ. of Wisconsin-Madison, 1995; Ph.D., *ibid.*, 1995. (2003)
- Herman A. Grunder, *Visiting Professor*. B.S., University of Karlsruhe, Germany, 1958; Ph.D., University of Basel, Switzerland, (1967). (2004)
- Johann Wolfgang Hammer, *Visiting Professor*. B.S., Technical Univ. of Munich, 1959; M.S., *ibid.*; Ph.D., Technical Univ. of Stuttgart, 1968. (2005)
- Dale R. Harshman, *Adjunct Professor*. B.S., Pacific Lutheran Univ., 1978; M.S., Western Washington Univ., 1980; Ph.D., Univ. of British Columbia, 1986. (1999)
- Michael D. Hildreth, *Assistant Professor*. A.B., Princeton Univ., 1988; Ph.D., Stanford Univ., 1995. (2000)
- Jay Christopher Howk, *Assistant Professor*. B.A., Hanover College, 1994; Ph.D., Univ. of Wisconsin-Madison, 1999. (2005)
- Anthony K. Hyder, *Associate Vice President for Graduate Studies and Research and Professor*. B.S., Univ. of Notre Dame, 1962; Ph.D., Air Force Institute of Technology, 1971. (1991)
- Boldizsár Jankó, *Associate Professor*. Univ. Dipl., Eötvös Univ., Budapest, Hungary, 1991; Ph.D., Cornell Univ., 1996. (2000)
- Robert V. F. Janssens, *Adjunct Professor*. Univ. Dipl., Universite Catholique de Louvain, Louvain-la-Neuve, Belgium, 1973; Ph.D., *ibid.* 1978. (2004)

PHYSICS

- Colin Philip Jessop, *Associate Professor*. B.A., Univ. of Cambridge (Trinity College); M.A., *ibid.*; Ph.D., Harvard Univ., 1994. (2003)
- Walter R. Johnson, *the Frank M. Freimann Professor of Physics*. B.S.E., Univ. of Michigan, 1952; M.S., *ibid.*, 1953; Ph.D., *ibid.*, 1957. (1958)
- Daniel Karmgard, *Research Assistant Professor*. B.S. Mathematics; B.S. Physics, UCLA, 1993; M.S., Cal. St. U. at Long Beach, 1995; Ph. D., Florida St. U., 1999 (2003)
- Avtandyl (Avto) Kharchilava, *Research Assistant Professor*. B.S., Moscow State Univ., 1975; M.S., *ibid.*, 1978; Ph.D., Tbilisi State University, 1990. (2003)
- James J. Kolata, *Professor*. B.S., Marquette Univ., 1964; M.S., Michigan State Univ., 1966; Ph.D., *ibid.*, 1969. (1977)
- Christopher F. Kolda, *Associate Professor*. B.A., Johns Hopkins Univ., 1990; M.S., Univ. of Michigan, 1992; Ph.D., *ibid.*, 1995. (2000)
- Karl-Ludwig Kratz, *Adjunct Professor*, Univ. Dipl., Universite Mainz, 1967; Habilitation, *ibid.*, 1979; (2002)
- Larry O. Lamm, *Research Professor*. B.S., East Carolina Univ., 1978; M.S., *ibid.*, 1983; Ph.D., Univ. of Notre Dame, 1989. (1994)
- Jay A. LaVerne, *Concurrent Research Professor*. B.S., Lamar University, 1972; Ph.D. University of Nebraska, 1981. (2004)
- Xinyu Liu, *Research Assistant Professor*. M.S., Univ. of Science and Technology of China, 1996; Ph.D., Univ. of Notre Dame, 2003. (2004)
- A. Eugene Livingston, *Professor*. B.Sc., Univ. of Alberta, 1969; M.Sc., *ibid.*, 1970; Ph.D., *ibid.*, 1974. (1978)
- John M. LoSecco, *Professor*. B.S., Cooper Union, 1972; A.M., Harvard Univ., 1973; Ph.D., *ibid.*, 1976. (1985)
- Grant J. Mathews, *Professor and Director of the Center for Astrophysics*. B.S., Michigan State Univ., 1972; Ph.D., Univ. of Maryland, 1977. (1994)
- James L. Merz, *Concurrent Professor*. B.S., Univ. of Notre Dame, 1959; M.A., Harvard Univ., 1961; Ph.D., *ibid.*, 1967. (2001)
- Patrick J. Mooney, *Adjunct Research Assistant Professor*. B.S., University of Notre Dame, 1978; Ph.D., *ibid.*, 1986. (1998)
- Kathie E. Newman, *Director of Graduate Studies and Professor*. B.Sc., Michigan State Univ., 1974; Ph.D., Univ. of Washington, 1981. (1983)
- Simon M. Pimblott, *Concurrent Research Professor*. B.A., Oxford University, England, 1985; M.A., *ibid.*, 1988; D.Phil., *ibid.*, 1990. (2004)
- Terrence W. Rettig, *Professor*. B.A., Defiance College, 1968; M.S., Ball State Univ., 1970; M.A., Indiana Univ., 1972; Ph.D., *ibid.*, 1976. (1983)
- Randal C. Ruchti, *Professor*. B.S., Univ. of Wisconsin, 1968; M.S., Univ. of Illinois, 1970; Ph.D., Michigan State Univ., 1973. (1977)
- Steven T. Ruggiero, *Professor*. B.S., Rensselaer Polytechnic Institute, 1975; M.S., Stanford Univ., 1977; Ph.D., *ibid.*, 1981. (1983)
- Ulyana I. Safronova, *Adjunct Professor*. M.S., Moscow Physical-Technical Inst., 1958; Ph.D., Vilnius Univ., 1964. (1998)
- Jonathan R. Sapirstein, *Professor*. B.S., Stanford Univ., 1973; Ph.D., *ibid.*, 1979. (1984)
- Yang Sun, *Visiting Associate Professor*. B.S., Xuzhou Normal Univ., People's Republic of China, 1978; Diploma, Technical Univ. Munich, Germany, 1988; Ph.D., *ibid.*, 1991. (2002)
- Carol E. Tanner, *Associate Professor*. B.S., Univ. of Illinois, Urbana-Champaign, 1980; M.A., Univ. of California, Berkeley, 1982; Ph.D., *ibid.*, 1985. (1990)
- Erdinch R. Tatar, *Adjunct Assistant Professor*. Ph.D., Univ. of Notre Dame, 2000. (2000)
- Jeffrey H. Terry Jr., *Adjunct Assistant Professor*. B.S., Univ. of Chicago, 1990; Ph.D., Stanford Univ., 1996. (2001)
- Zoltán Toroczka, *Associate Professor*. M.Sc., Babes-Bolyai Univ., Romania, 1992; Ph.D., Virginia Tech., 1997. (2005)
- Nicolai G. Uraltsev, *Adjunct Associate Professor*. Univ. Dipl., Leningrad State Univ., 1979; Ph.D., Leningrad Nuclear Physics Inst., Gatchina Graduate School, 1982. (2000)
- Jadwiga Warchol, *Research Professor*. B.S., University of Warsaw, 1963; Ph.D., *ibid.*, 1969; Habilitation, *ibid.*, 1979. (1984)
- Mitchell R. Wayne, *Chair, Associate Dean of the College of Science and Professor*. B.S., Univ. of California, Los Angeles, 1977; M.S., *ibid.*, 1980; Ph.D., *ibid.*, 1985. (1991)
- Michael C. F. Wiescher, *the Frank M. Freimann Professor of Physics and Director of the Joint Institute for Nuclear Astrophysics*. Vordiplom, Univ. Munster, 1972; Diplom, *ibid.*, 1975; Ph.D., *ibid.*, 1980. (1986)
- James R. Wilson, *Adjunct Professor*. B.S., University of California, Berkley, 1943; Ph.D., *ibid.*, 1952. (1996)
- Andreas Woehr, *Research Assistant Professor*. M.S., University of Stuttgart, Germany, 1986; Ph.D., Johannes Gutenberg Univ. Mainz, Germany, 1992; Certificate in Medical Physics, Univ. of Kaiserslautern, Germany, 1999. (2003)

The Division of Social Sciences

The Division of Social Sciences offers programs of graduate study leading to the Ph.D. in economics, political science, psychology, and sociology. Programs leading to the master of arts degree are also available, including an interdisciplinary master's degree in peace studies, as well as a master of education degree.

The division seeks to professionally develop graduate students by providing them with a thorough analysis of current theoretical developments in the various disciplines, training in modern research techniques, personal contact with faculty and their research efforts, and a program tailored to the students' individual professional needs and interests.

Centers and institutes provide a framework for multidisciplinary approaches to issues in the social sciences. The Helen Kellogg Institute for International Studies promotes comparative international research on themes relevant to contemporary society. Building on a core interest in Latin America, the Kellogg Institute fosters research on many regions of the world, attempting to expand understanding of democracy, development, social justice, and other important international goals challenging humankind. The Joan B. Kroc Institute for International Peace Studies is a leader in addressing political, cultural, religious, social, and economic factors that lay the foundation for peace. Descriptions of these and other research centers may be found elsewhere in this bulletin.

Economics

Acting Chair:

Dr. Christopher Waller

Director of Graduate Studies:

Kali P. Rath

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 Web: <http://www.nd.edu/~ecoe>

The graduate program in economics at the University of Notre Dame is a Ph.D. program designed to prepare successful graduates for careers as professional economists in research and teaching at academic institutions, for positions in government, non-government organizations, international agencies, and the private sector. The Department's faculty are involved in leading developments in research, teaching and governmental economic policies. The graduate program provides the next generation of scholars with the rigorous analytical and quantitative training necessary to continue this tradition.

The Ph.D. program in Economics emphasizes attainment of research skills early in the program. During the first year, students acquire a thorough knowledge of microeconomic theory, macroeconomic theory, econometrics, and quantitative methods. The nature of this material demands that entering students be facile with multivariate calculus, linear algebra, probability, and mathematical statistics. To achieve high average student quality and to facilitate close faculty contact, new enrollment will be targeted at 8 to 10

students per year. Most elective classes are small and permit extensive class participation. The sequence of core courses provides an intensive basic training in the discipline, while advanced courses, seminars, and research opportunities are offered in a variety of specialized fields.

The doctoral student will ordinarily devote the first two years to course work, preparation for the comprehensive theory examinations, and field requirements. The remaining years are devoted primarily to the dissertation. The time required to write a dissertation varies somewhat, but the expected time to completion is five years or less.

Given the Catholic identity of Notre Dame, the doctoral program in economics offers special opportunities for students interested in policy-relevant research that contributes to important current debates on economic, social, and political problems facing humanity. Prospective students interested in research related to these problems may find our program especially attractive, because the University fosters interaction between scholars in a variety of disciplines who conduct research on similar issues through a system of centers and institutes, such as the Kellogg Institute for International Studies, the Institute for Educational Initiatives, and the Center for Environmental Science and Technology.

Program Requirements

Admission

Admission is limited to students whose undergraduate record demonstrates a high capacity for advanced work in economics. An undergraduate major in economics is not necessary, but some previous training

in economics is strongly recommended (intermediate courses in microeconomic and macroeconomic theory are most important). Because modern economics is highly analytical and quantitative, students are expected to have a strong mathematical background. Training in multivariate calculus, linear algebra, and probability and mathematical statistics are essential. Prior work in these courses will dramatically enhance the student's progress during the first year, and possibly eliminate some required courses.

Grades received in these courses at the undergraduate level are important factors in the admission decision. When appraising an applicant's scholarly promise, however, the admissions committee pays close attention not only to the academic record, but also to the results of the Graduate Record Examination, letters of recommendation, and the applicant's statement of purpose. Successful applicants will demonstrate strength in all areas of the application.

International students must demonstrate proficiency in the English language.

Financial Aid

Entering students are automatically considered for financial aid unless they indicate that they have support from elsewhere. Aid decisions are based solely on academic merit. Doctoral students in academic good standing generally receive full-tuition scholarships and multi-year assistantships or fellowships with yearly stipends. Students with assistantships will be required to perform teaching and/or research-related duties for the department.

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Doctoral Course of Study

During the first year of study, students acquire a thorough knowledge of microeconomic theory, macroeconomic theory, econometrics, and quantitative methods. The required courses are referred to as the “core.” Most of these courses are taken in the first year. At the end of this year, usually in May, students take the comprehensive examinations in both microeconomic and macroeconomic theory to determine whether they have secured an adequate command of the essential concepts and methods necessary to comprehend and to contribute to the frontiers of the discipline. Students who fail either examination have one opportunity to retake the examination(s) later that summer, typically in August.

During the second year, students take the remaining required course, Econometrics II. In this year, students also acquire specialized knowledge by taking field courses: two courses in each of two specialized fields of study. Throughout the year, students also will be thinking of an original research topic. Under the supervision of faculty in their chosen field of study, students must prepare a substantive research paper that demonstrates their ability to conduct independent research. This paper may lead to one of the chapters of the student’s dissertation, and must be approved by the majority of the faculty by the beginning of the third year.

In the third year, students complete their course work and devote increasing time and energy to their dissertation research. Developing a dissertation proposal of sufficient quality for subsequent oral defense is the prime objective at this stage. Starting with the third year, students are required to participate in the research seminars of their chosen fields, both by presenting their own research and critically analyzing that of others.

By the beginning of the fourth year, students must be admitted to candidacy (see below). By the end of this year, students should bring their dissertation research to a stage where one or two completed research papers are ready for presentation at other universities or research institutions and conferences.

The Director of Graduate Studies serves as faculty adviser for all students until they have chosen an adviser in their major field of study. There is no general foreign language requirement for graduate students in economics.

Course and Credit Requirements

In addition to the general requirements of the Graduate School, students are expected to meet various departmental requirements. These requirements are continually under review and are subject to revision. Satisfactory performance requires a grade of B- or better in each and every graduate course with an average GPA of 3.0 (corresponding to the grade B). The following paragraphs summarize the remaining requirements at this time.

Credit Hours

A minimum of 45 credit hours (15 courses) of approved course work at the graduate level. In addition, all students are encouraged and students in their third year and above are required to attend a research seminar offered by the department.

Summer Math Camp

A two-week “refresher course” in Mathematics/Statistics will be offered during the summer before the fall semester of the first year of study. This will survey the basic quantitative tools and techniques used in economics. Exercises will be assigned to further improve student understanding.

The First Year: The Core Curriculum

A student’s first year is devoted to the core curriculum. A full course load is:

Fall Semester

ECO 60001: Mathematics for Economists I
ECO 60101: Microeconomic Theory I
ECO 60201: Macroeconomic Theory I
ECO 60301: Probability and Statistics

Spring Semester

ECO 60002: Mathematics for Economists II
ECO 60102: Microeconomic Theory II
ECO 60103: Macroeconomic Theory II
ECO 60302: Econometrics I

Students who are well-prepared in mathematics or statistics may satisfy some or all of the core course requirements as determined by the Director of Graduate Studies in consultation with the Graduate Studies Committee.

Students must pass comprehensive examinations in microeconomic theory and macroeconomic theory by the end of the summer of the first year to remain in good standing. These exams are offered at the end of the academic year, usually in May. If a student does not pass one or both parts at this time, she/he has one opportunity to retake the examination(s) at the end of the summer, usually in August.

The Second Year

During the second year and beyond, students are expected to become actively engaged in research. As a result, the normal load in the second and third years is three courses per semester.

The one remaining required course, ECO 60103 (Econometrics II), is normally taken in the fall of the second year. Second-year students are also encouraged, but not required, to attend research seminars, which are described below.

Field Requirements

Each Ph.D. candidate must successfully complete two specialized fields. Each field is comprised of two courses. There is no separate written exam to test competency in the field. A student’s competency in a specific field area is determined by taking approved courses in the field sequence and by receiving satisfactory grades in those courses.

The program allows some flexibility in forming specialty fields subject to approval by the Director of Graduate Studies in consultation with the Graduate Studies Committee. Field offerings vary from year to year depending on faculty in residence and student interest but are expected to be offered once every other year. The current set of fields includes:

Environmental Economics
History of Economic Thought
International Economics
Industrial Organization
Labor Economics
Monetary & Macroeconomics
Political Economy
Public Economics

Research Paper Requirements

During the second year, students must write an original research paper. The student selects an advisor. In consultation with him/her, the student selects a research topic and develops it to a complete paper, which demonstrates the student’s ability to conduct independent research. This paper is to be successfully presented in a seminar to the faculty and approved by them by the beginning of the third year to remain in good standing. This paper may become one of the chapters of the dissertation.

Seminar Requirements

Research seminars are an extremely important aspect of the Ph.D. program. They provide students with insights into current research topics and offer a forum for students and faculty to present and discuss their recent research. Attendance and active participation in seminars and workshops helps students to formulate their own research topics and stimulates them to engage in independent research. Seminar and workshop attendance is strongly encouraged in the first and second years. Students are encouraged to register for a research seminar in their second year. From the third year on, students are required to register for a research seminar, and are required to present at least one research paper in a workshop by the end of their fourth year in residence.

The Dissertation Proposal

Starting in the third year of residence, students are expected to engage in a significant, original research project. Optimally, this would follow from the second-year research paper. All students are required to have a faculty advisor in their major field of study by the end of their third year in residence. The role of the faculty advisor is to help the student make the transition from coursework to research and to help identify suitable dissertation topics. Often the faculty advisor is the major advisor for the dissertation.

Candidacy

Students are expected to be admitted to candidacy by the beginning of their fourth year, by which time they should have completed all course work and passed the comprehensive examinations. The candidacy examination consists of two parts: a written component and an oral component.

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The written part of the examination normally precedes the oral part. The written part of the candidacy examination is satisfied by either a written dissertation proposal or a paper that will become one chapter of the dissertation.

The oral part of the examination is conducted as soon as feasible after passage of the written part according to the rules of the Graduate School. It can be taken no later than one calendar year prior to defense of the dissertation. The oral part, among other things, is intended to test the student's readiness for advanced research in the more specialized area(s) of his or her field as well as the feasibility of the specific research proposed for the dissertation. That is, the oral part of the examination should be comprehensive. Successful passage indicates that, in the judgment of the faculty, the student has an adequate knowledge of the basic literature, problems, and methods of his or her field.

The Dissertation

The dissertation must contain original research of sufficient quality to be published in well-respected general interest or field journals. It is typically supervised by one major advisor, and it must be orally defended before a committee of the advisor and three reading committee members of the faculty. Usually, students will consult with several members of the department during the dissertation stage and are required to present one research paper from their dissertation in a workshop.

The Masters of Arts Degree

The Department of Economics and Econometrics does not administer a stand alone M.A. program but allows students to apply for an M.A. should they choose to terminate their study in the Ph.D. program. This degree is typically awarded to those who successfully complete the required course work in the core for the first year of the Ph.D. program and meet the University requirements for the M.A.

In particular, a student must have a total of 24 credit hours of course work (as outlined above in The First Year: The Core Curriculum) and successfully pass the comprehensive examinations in Microeconomics and Macroeconomics at the Masters level.

Course Descriptions

Each course listing includes:

- Course Number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course Description

General Economics

60001. Mathematics for Economists (3-3-0)
Exposition of mathematical methods used in economic theory and analysis, with application of these methods to economic theory. Major methods covered include differential and integral calculus and

matrix algebra. Recommended for students planning to go to graduate school in economics.

60011. Statistics (3-3-0)

Exposition of statistical techniques with applications in development, labor theory, and public policy economics. Testing hypotheses in economic theory and estimating behavioral relationships in economics.

60101. Microeconomic Theory I (3-3-0)

Mathematical presentation of neoclassical models of consumer behavior, behavior of the firm, and analysis of markets under perfect and imperfect competition. Analysis of market failures, choice under uncertainty, and the economics of information.

60201. Macroeconomic Theory I (3-3-0)

An overview of alternative static macro models (such as Keynesian, monetarist, new classical, new Keynesian, and post-Keynesian models); microeconomic foundations of macroeconomics; an introduction to business cycles, growth, and open economy issues.

63673. Seminar in International Economics (3-3-0)

Special topics in international trade and open economy macroeconomics. Subject matter to vary from year to year.

70009. Seminar in Economic Theory (3-3-0)

Special topics in economic theory. Subject matter to vary from year to year.

70016. Topics in Applied Econometrics (3-3-0)

Applications of econometric techniques to economic problems in the fields of micro, macro, and international economics.

70051. Game Theory and Applications (3-3-0)

The objective is to develop the basic concepts of game theory and to apply them to understand strategic interactions in both market and nonmarket environments. Specific topics include subgame perfect equilibrium in repeated games, folk theorems, stick and carrot strategies, bargaining, incentive and mechanism design, signaling games, and strategic voting.

70322. Labor Economic Theory (3-3-0)

Three paradigms in labor economic theory: neoclassical, radical, and institutional. Theories of time use, household formation, women's employment, wage determination, efficiency wages, labor market dynamics, and unemployment are among the areas covered.

70361. Industrial Organization (3-3-0)

Introduction to the study of industrial structures and their relationship to economic performance. Competing theories of the determinants of structure at

the level of individual industries and sectors and the role of structure in the competitiveness of firms in the regional, national, and global economy. Role of competitive forces in relatively unregulated environments and role of regulation and industrial policy in creating successful industries.

70421. Financial Institutions, Markets, and Instability (3-3-0)

An examination of the workings of the financial system. Topics include financial crises and the business cycle, institutional and structural change affecting financial markets and institutions, the global financial system, financial fragility, regulatory policy and financial restructuring, the political economy of central banking, and money and credit in the economy.

70552. Open Economy Macroeconomics (3-3-0)

Macroeconomic theory and policy in open economies. Balance of payments accounting, basic theory of fiscal and monetary policy under alternative exchange rate regimes, and recent developments in the area of exchange rate economics. Implications of the social issues for current policy issues in the areas of stabilization policies and international borrowing.

70811. Political Economy (3-3-0)

Alternative approaches to political economy, including classical, Marxian (both classical and contemporary), post-Keynesian, institutional, feminist, and neoclassical approaches. Methods of analysis in these approaches are illustrated by examining the basic concepts of political economy such as class, state, gender, race, power, institutions, crisis, and development as well as concrete historical and contemporary issues.

70813. Problems in Political Economy (3-3-0)

Alternative theories (institutionalist, Marxist, and post-Keynesian) and their application to researchable problems. Major emphasis on preparation for writing a dissertation using an alternative methodology.

70814. International Political Economy (3-3-0)

This seminar explores the interaction between politics and economics in the international system, with an emphasis on the theoretical development of the subfield of international political economy. We will investigate the balance between cooperation and conflict, the effect of international institutions on economic relations, and the mutual impact of domestic and international politics. Throughout the course, we will consider how well models developed in other fields of political science or economics can be applied to international political economy. We will also attempt to identify the "state of the art" in the study of international political economy.

70815. Political Economy Postindustrial Societies (3-3-0)

This course investigates the nexus between politics and economics in the postindustrial societies. After a brief discussion of the theoretical principles of

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economic liberalism, the course focuses on the impact of economic factors and conditions on politics and the political and economic consequences of the organization of the world economy along free market principles. It concludes by scrutinizing the relationship between domestic politics and the project for deeper economic integration in the case of the European Union.

70821. History of Economic Thought and Methodology (3-3-0)

Introduction to the history of economic thought and methodological issues in economics. Survey of preclassical, classical, Marxian, marginalist, and other approaches. Issues in the philosophy of science concerning explanation, verification, and prediction.

70831. The Computer as Social Phenomenon (3-3-0)

This course takes the perspective of "science studies" and applies it to issues that do not fit easily into either computer science or economics. These include: Does the computer have a well-defined existence? How has the computer influenced our theories of human nature? Is the "new information economy" a real phenomenon? It also deals with some emerging issues in Internet commerce.

80324. Seminar in Labor Economics (3-3-0)

Special topics in labor economics. Subject matter to vary from year to year.

80594. Seminar in Development Economics (3-3-0)

Special topics in development economics. Subject matter to vary from year to year.

Economics and Econometrics

60013. Econometrics II (3-3-0)

A survey course in practical, applied econometric techniques. Students learn how to make effective use of such techniques as spline regression, switching regressions, disequilibrium models, robust regression, nonlinear estimation, logit, probit, tobit, censoring, truncation, and event history analysis. Extensive computer applications.

73001. Workshops in Economic Theory, History of Economic Thought and Methodology (1-1-0)

A forum for students to present their current research in economic theory, history of economic thought, and methodology, and to discuss various papers and research of interest to the participants.

73501. Workshops in Development and International Economics (0-0-0)

A forum for students to present their current research in development and international economics and to discuss various papers and research of interest to the participants.

70553. International Finance (3-3-0)

Empirically based examination of exchange -rate and balance-of-payments issues and the debt problem.

73801. Workshops in Institutions (0-0-0)

A forum for students to present their current research in institutional economics (concerning labor, financial, industrial, and public institutions) and to discuss various papers and research of interest to the participants.

76911. Directed Readings (0-0-0)

By arrangement with individual instructors. Satisfactory/unsatisfactory grading with variable number of credit hours.

77911. Special Studies (1-1-0)

Prerequisites: written consent of instructor. Independent study under the direction of a faculty member. Course requirements may include substantial writing as determined by the director. They will disenroll a student early for failure to meet course requirements. Students who have been disenrolled or who have failed at the end of the first semester are disqualified for Special Studies in the following term.

Economics and Policy Studies

61011. Computing for Social Sciences (1-1-0)

This is a laboratory course designed to introduce first-year graduate students to the basic computational and statistical techniques used in social science quantitative research. The main goal of the course is to show students how to build and access a data set for analysis. As such, it is complementary to the core statistical and econometrics course offered in the social sciences. Students will be exposed to the different operating systems available at Notre Dame, and to a variety of statistical software applications. Topics treated include reading data in different formats and checking it for errors, carrying out exploratory analyses, recoding and creation of new variables, merging data sets, performing extracts, and moving a data set between different operating environments.

60012. Econometrics I (3-3-0)

Properties of estimators, methods of estimation, general linear regression model, maximum likelihood estimation, nonlinear regression models, Karnaugh maps, hypotheses testing with likelihood ratio, Wald, Rao tests, ANOVA, and spline regression methods.

60102. Microeconomic Theory II (3-3-0)

General equilibrium analysis, welfare economics, and game theory. Issues in applied microeconomics. Discussion of alternative approaches to microeconomics.

60202. Macroeconomic Theory II (3-3-0)

Analysis of recent contributions and controversies in macroeconomic theory emphasizing alternative approaches such as new classical, new Keynesian, and post-Keynesian approaches. Macroeconomic dynamics involving the analysis of growth distribution and cycles.

60801. Economics for Non-Economists (3-3-0)

This is a course for graduate students in Government, Sociology, Theology, Philosophy, Peace Studies, and History. It is an intensive study of micro- and macro-economic theory with applications to public finance, international trade, theories of justice, economic history, and other areas as required by the interests of students..

61901. Grant Writing for Social Sciences (3-3-0)

This course will provide an overview of the grant writing process in the social sciences focusing on the deadlines and regulations of the funding institutions.

70321. Labor Institutions (3-3-0)

Wage and benefit determination under collective bargaining and the decline of union bargaining power, and labor market segmentation including dual labor market analysis and the labor process debate.

70411. Monetary Economics (3-3-0)

Major theoretical and empirical studies on the demand for and the supply of money, the impact of money in alternative macroeconomic models, and major topics in monetary policy.

70561. Development Economics (3-3-0)

A general introduction to the field of development economics, with concentration initially on questions of a macrostrategic nature. The final topic is macro-analysis of country development programs, examining country studies, and macro models.

70841. Latin American Politics (3-3-0)

This course examines the political and institutional framework underpinning the transition to an economic order in which market forces play a predominant role in the allocation of resources throughout Latin America. After reviewing the post-war economic model of protected, state-led industrialization and contending theoretical perspectives on economic liberalization, it analyzes the roles of various political and social actors and institutions in shaping first and second generation economic reforms. The focus is on the executive, party, legislative, and sub-national political institutions that shape and constrain state and market-oriented reform and economy policy-making. The latter part of the course examines the impact of economic liberalization on electoral cleavages, political representation, and the changing foundations of citizen association and participation.

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73901. Non-resident Dissertation Research (1-1-0)

Required of nonresident graduate students who are completing their dissertations in absentia and who wish to retain their degree status.

77951. Thesis Direction (0-0-0)

This course is taken by a student wishing to earn a research master's degree. The student works under the guidance of one or more faculty member to produce a master's thesis.

Faculty

Rev. Ernest J. Bartell, C.S.C., *Professor Emeritus*. Ph.D., Univ. of Notre Dame, 1953; A.M., Univ. of Chicago, 1954; M.A., Holy Cross College, 1961; Ph.D., Princeton Univ., 1966. (1961, 1966, 1980)

David M. Betson, *Associate Professor*. B.A., Kalamazoo College, 1972; M.A., Univ. of Wisconsin, 1975; Ph.D., *ibid.*, 1980. (1982)

Frank J. Bonello, *Associate Professor*. B.S., Univ. of Detroit, 1961; M.A., *ibid.*, 1963; Ph.D., Michigan State Univ., 1968. (1968)

Kasey Buckles, *Assistant Professor*. B.A., Univ. of Kentucky, 1000; M.A., Boston Univ., 2003; Ph.D., Boston Univ., 2005. (2005)

Charles Craypo, *Professor Emeritus*. B.A., Michigan State Univ., 1959; M.A., *ibid.*, 1961; Ph.D., *ibid.*, 1966. (1978)

John T. Croteau, *Professor Emeritus*. A.B., Holy Cross College, 1931; M.A., Clark Univ., 1932; Ph.D., *ibid.*, 1935; LL.D., St. Joseph's Univ., Canada, 1956; Honorary LL.D., Univ. of Prince Edward Island, 1976. (1953)

Amitava K. Dutt, *Professor*. B.A., Univ. of Calcutta, 1975; M.A., *ibid.*, 1977; Ph.D., Massachusetts Institute of Technology, 1983. (1988)

Teresa Ghilarducci, *Director of the Higgins Labor Research Center, Associate Professor, Fellow in the Nanovic Institute for European Studies, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. A.B., Univ. of California, Berkeley, 1978; Ph.D., *ibid.*, 1984. (1983)

Denis A. Goulet, *the William and Dorothy O'Neill Professor in Education for Justice, Professor Emeritus of Economics, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., St. Paul's College, 1954; M.A., *ibid.*, 1956; Ph.D., Univ. of São Paulo, 1963. (1979)

Daniel M. Hungerman, *Assistant Professor*. B.A., Miami Univ., 2000; Ph.D., Duke Univ., 2005. (2005)

Richard A. Jensen, *Chair and Professor, and Fellow in the Helen Kellogg Institute for International Studies*. B.A., Univ. of Kansas, 1971; Ph.D., Northwestern Univ., 1980. (2000)

Kwan Suk Kim, *Professor*. B.A., Seoul National Univ., 1959; M.A., Univ. of Minnesota, 1961; Ph.D., *ibid.*, 1967. (1967)

William H. Leahy, *Professor*. B.A., Univ. of Notre Dame, 1959; M.A., *ibid.*, 1960; Ph.D., *ibid.*, 1966. (1963)

Byung-Joo Lee, *Associate Professor*. B.S., Seoul National Univ., 1982; M.A., Pennsylvania State Univ., 1984; M.S., Univ. of Wisconsin, 1986; Ph.D., *ibid.*, 1988. (1996)

Nelson C. Mark, *the DeCrane Professor of International Studies and Fellow in the Helen Kellogg Institute for International Studies*. B.A., Univ. of California at Santa Barbara, 1978; Ph.D., Univ. of Chicago, 1983. (2002)

Lawrence C. Marsh, *Associate Professor*. B.A., College of Wooster, 1967; M.A., Michigan State Univ., 1969; Ph.D., *ibid.*, 1976. (1975)

Philip E. Mirowski, *the Carl E. Koch Professor of Economics*. B.A., Michigan State, 1973; M.A., Univ. of Michigan, 1976; Ph.D., *ibid.*, 1979. (1990)

Kajal Mukhopadhyay, *Research Assistant Professor and Associate Director in the Laboratory for Social Research and Concurrent Research Assistant Professor of Economics*. B.A., Indian Statistical Institute, 1987; Ph.D., Indiana Univ., Bloomington, 1996. (1996)

James J. Rakowski, *Associate Professor*. B.A., Creighton Univ., 1963; Ph.D., Univ. of Minnesota, 1968. (1967)

Kali P. Rath, *Director of Graduate Studies and Associate Professor*. B.A., Utkal Univ., 1977; M.A., *ibid.*, 1980; M.A., Johns Hopkins Univ., 1988; Ph.D., *ibid.*, 1992. (1990)

Jaime Ros, *Professor*. B.A., Univ. of Paris XII, 1971; M.A., National Univ. of Mexico (UNAM), 1974; Diploma in Econ., Cambridge Univ., 1978. (1990)

David F. Ruccio, *Professor*. B.A., Bowdoin College, 1976; Ph.D., Univ. of Massachusetts at Amherst, 1984. (1982)

Roger B. Skurski, *Professor Emeritus*. B.S., Cornell Univ., 1964; M.S., Univ. of Wisconsin, 1967; Ph.D., *ibid.*, 1970. (1968)

James X. Sullivan, *Assistant Professor*. B.A., Univ. of Notre Dame, 1993; Ph.D., Northwestern Univ., 2002. (2002)

Thomas R. Swartz, *Professor*. B.A., LaSalle College, 1960; M.A., Ohio Univ., 1962; Ph.D., Indiana Univ., 1965. (1965)

Christopher J. Waller, *the Gilbert Schaefer Chair of Economics*. B.S., Bemidji State Univ., 1981; M.A., Washington State Univ., 1983; Ph.D., *ibid.*, 1985. (2003)

Jennifer L. Warlick, *Associate Professor*. B.A., Duke Univ., 1972; M.A., Univ. of Wisconsin, 1975; Ph.D., *ibid.*, 1979. (1982)

Charles K. Wilber, *Professor Emeritus*. B.A., Univ. of Portland, 1957; M.S., *ibid.*, 1960; Ph.D., Univ. of Maryland, 1966. (1975)

Martin H. Wolfson, *Associate Professor*. B.A., Swarthmore, 1966; M.A., American Univ., 1975; Ph. D., *ibid.*, 1984. (1989)

Abigail Wozniak, *Assistant Professor*. A.B., Univ. of Chicago, 1998; A.M., Harvard, Univ., 2001; Ph.D., *ibid.*, 2005. (2005)

Education

Director:

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The Program of Studies

The master of education (M.Ed.) program is housed in the Institute for Educational Initiatives, which provides research leadership in education and fosters efforts in education that are informed by social science research. The only clients for this master's program are students enrolled in the Alliance for Catholic Education. (The ACE program is described in the "Centers, Institutes, and Laboratories" section of this *Bulletin*.)

Students in this program work toward licensure, consistent with the standards in the state of Indiana, in each of the following areas: middle childhood (i.e., elementary education), early adolescence (middle school), adolescence and young adulthood (high school), English language arts, social studies, science, mathematics, and foreign languages. Like most teacher accreditation programs at the master's level, content-area courses must be completed before entering the master's program, which provides education course work only.

A total of 37 (39 for elementary) credit hours of course work and teaching experience are required, with an overall grade point of at least 3.0. Half of the course work will occur in two summer sessions, with 10 to 12 credits earned in each. The faculty who teach in the M.Ed. program are drawn from a variety of disciplines and colleges within and, in some cases, from outside the University.

The first summer includes practice teaching in South Bend-area elementary and secondary schools as well as nine or 10 credit hours of course work. During each semester of the first school year, students take three credits of supervised teaching experience at an assigned Catholic school in the southern United States and during the second semester, students take two credits of a distance learning seminar. In the second summer, students again take 10 or 11 credit hours of course work. During the second school year, students each semester once again participate in a three-credit supervised teaching experience in their

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assigned school and in a one-credit distance learning seminar that focuses on state standards and assessment methods. Throughout the two years, supervision is accomplished by measuring students against professional performance indicators while students build a teaching portfolio documenting their progress in developing as a teacher.

In addition to the credit-hour and GPA requirements, students must complete two years of service in teaching with supervised teaching grades of not less than 3.0. The teaching portfolio is evaluated by both University faculty and master teachers, who provide recommendations for continued development.

During the summer sessions, students live in community in Notre Dame residence halls, participating in presentations and programs aimed at stimulating their academic understanding of education, especially as it relates to community and spiritual development.

Admission Requirements

The M.Ed. program seeks to admit individuals who have the competence and commitment to be outstanding teachers and who are willing to serve for two years as teachers in cooperating Catholic schools. Competence for admission is assessed through evaluation of written essays, interviews, grade point average (at least a 3.0 in the major), standardized test scores, and letters of recommendation. Commitment to the community and spiritual ideals of the program is necessary.

Admission is a two-stage process. A selection committee composed of Notre Dame faculty, administrators, and staff assesses the candidates, identifying approximately 80 who will be asked to join the program. These 80 students will then be invited to apply to the Graduate School for admission. From this point on, the admissions process is identical to that of every other master's program at the University.

Course Sequence

All ACE students are placed in one of three developmental level curricular tracks: elementary, middle school, or high school, depending on their ACE placement. Those in the middle school and high school tracks are then placed in a content area: mathematics, science, social studies, English/language arts, or foreign language. The particular methods and content courses will depend on the developmental level track.

Additional course numbers are available for the Introduction to Teaching and the Practicum classes.

1. First Summer (11/13 credits)

All tracks:

- 60022. Introduction to Teaching (Elementary, Middle, High School)
- 65032. Practicum (Elementary, Middle, High School)
- 60040. Introduction to Computers in Education
- 60060. Teaching in Catholic Schools or 60070. Teaching Religion in Catholic Schools

- 63500. Integrative Seminar
- Elementary:** 60182. *Teaching of Reading*; 60132. *Mathematics in Elementary Education I*; 60102. *Effective Elementary Classroom Teaching*.
- Middle school:** 60204. *Introduction to Middle School Teaching*; 60605, 60625, 60645, 60665, 60685. *Seminar in Content Area I*.
- High school:** 60256. *Introduction to High School Teaching*; 60605, 60625, 60645, 60665, 60685. *Seminar in Content Area I*.
- Elective:** 60830 **Folk Choir**

2. First School Year: all tracks (8 credits)

- 65950. *Supervised Teaching* (two semesters)
- 65930. *Clinical Seminar* (one semester)
- 60410. *Topics in Educational Psychology* (second semester)

3. Second Summer (10/12 credits)

- Elementary:** 60312. *Exceptionality in Childhood*; 60452. *Child Development and Moral Education*; 60142. *Language Arts in Elementary Education*; 60162. *Content Methods for Elementary Education*; 63500. *Integrative Seminar*
- Middle school:** 60324. *Exceptionality in Early Adolescence*; 60455. *Development and Moral Education in Adolescence*; 60705, 60725, 60745, 60765, 60785. *Seminar in Content Area II*; 63500. *Integrative Seminar*
- High school:** 60336. *Exceptionality in Adolescence*; 60455. *Development and Moral Education in Adolescence*; 60705, 60725, 60745, 60765, 60785. *Seminar in Content Area II*; 63500. *Integrative Seminar*; 60840. *Teaching Art across the Curriculum*; 60860. *Contemporary Educational Technology*; or 60880. *Coaching and Youth*

4. Second School Year: all tracks (8 credits)

- 65950. *Supervised Teaching* (two semesters)
- 65930. *Clinical Seminar* (two semesters)
- 60715, 60735, 60755, 60775, 60795. *Assessment in Content Area II*, or 60172. *Assessment in Elementary Education*

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

60020. Introduction to Teaching (0-0-0)

An introduction to the meaning and practice of contemporary teaching, including classroom organization and management, and to historical highlights in public and Catholic education.

60022. Introduction to Teaching - Elementary (1-1-0)

Corequisite: EDU 60020

An introduction for elementary teachers to the meaning and practice of contemporary teaching, including classroom organization and management,

and to historical highlights in public and Catholic education.

60024. Intro to Teaching - Middle Sch (1-1-0)

Corequisite: EDU 60020

An introduction for middle school teachers to the meaning and practice of contemporary teaching, including classroom organization and management, and to historical highlights in public and Catholic education.

60026. Intro to Teaching -High School (1-1-0)

Corequisite: DU 60020

An introduction for high school teachers to the meaning and practice of contemporary teaching, including classroom organization and management, and to historical highlights in public and Catholic education.

65032. Practicum - Elementary (2-1-1)

An intense practicum in the South Bend elementary area schools during the summer. The experience will include approximately 5-6 weeks of closely supervised teaching experience as well as weekly reflections on that experience. Extensive planning of instruction is required.

65034. Practicum - Middle School (2-1-1)

An intense practicum in the South Bend area middle schools during the summer. The experience will include approximately 5-6 weeks of closely supervised teaching experience as well as weekly reflections on that experience. Extensive planning of instruction is required.

65036. Practicum - High School (2-1-1)

An intense practicum in the South Bend area high schools during the summer. The experience will include approximately 5-6 weeks of closely supervised teaching experience as well as weekly reflections on that experience. Extensive planning of instruction is required.

60040. Introduction to Computers in Education (0-1-0)

Introduction to instructional computing via hands-on experience with productivity/instructional software. Introduction to social, moral and technological issues of educational computing through literature, lecture, and discussions.

60060. Teaching in Catholic Schools (1-1-0)

An overview of six core topics of Catholic teaching along with a discussion of their influence and impact on Catholic school culture and teaching

60070. Teaching Religion in Catholic Schools (1-1-0)

An overview of six core topics of Catholic teaching along with initial planning with grade level master teachers to teach these topics in Catholic schools.

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60102. Effective Elementary Classroom Teaching (2-4-0)

The development of knowledge, skills, and dispositions essential for elementary teachers: lesson and unit planning, yearly planning, cross-curricular planning, and effective teaching strategies in the K-6 classroom. Topics will also include grouping for instruction and differentiated instruction, motivation, effective use of learning centers, use of texts, student learning standards, and multiple resources.

601812. Teaching of Reading/Instruct (3-3-0)

An exploration of the research and instructional strategies of reading instruction including emergent literacy, reading readiness, phonemic awareness, phonics, word recognition, vocabulary development, fluency, cultural literacy, and reading comprehension, as well as particular strategies for reading remediation. The second part of the course will enable students to conceptualize and construct effective unit and lesson plans.

60122. Elementary Language Arts Assessment (1-10-0)

Readings on the theories for and practice in the strategies to construct traditional and performance assessments in the elementary Language Arts classroom. The ability to analyze the results in terms of stated unit goals, to reflect on the effectiveness of the unit planning, and to adjust future units to re-teach core knowledge and skills will be emphasized.

60132. Mathematics in Elementary Education I (2-2-0)

The effective use of teaching materials and strategies in the elementary classroom (K-6) for the teaching of mathematics. Readings will be selected from the National Council of Teachers of Mathematics.

60142. Language Arts in Elementary Education (2-8-0)

An integrated approach to literacy instruction designed to help children make sense of the world through literacy expression. The unit template for planning is used to provide structure and process for inclusion of all language arts elements including grammar, spelling, writing, phonics, literature, and speaking and listening skills. An introduction to children's literature, methods for determining quality literature, and the use of reference materials for selecting literature for specific purposes is included.

60162. Content Methods for Elementary Education (2-2-0)

A program of reading which will enable participants to develop effective units of study which integrate reading, writing, mathematics, social studies and science. Readings will be selected from the publications of the major professional associations in elementary curriculum.

60172. Assessment in Elementary Education (1-1-0)

Readings on the theories for and practice in the strategies to construct traditional and performance assessments in Elementary Education. The ability to analyze the results in terms of stated unit goals, to reflect on the effectiveness of the unit planning, and

to adjust future units to re-teach core knowledge and skills will be emphasized.

60204. Introduction to Middle School Teaching (3-3-0)

An introduction to the culture and dynamics of the middle school classroom. Central to the course is instructional planning that emphasizes unit planning based on goals derived from state standards and assessments which measure student progress in meeting these goals. Lesson planning based on unit goals focuses on an integrative survey of strategies and methods that lead to effective daily instruction.

60256. Introduction to High School Teaching (3-3-0)

An introduction to the culture and dynamics of the high school classroom. Central to the course is instructional planning which emphasizes unit planning based on goals derived from state standards and assessments that measure student progress in meeting these goals. Lesson planning based on unit goals focuses on an integrative survey of strategies and methods that lead to effective daily instruction.

60312. Exceptionality in Childhood (3-3-0)

A survey in exceptionality with emphasis on the elementary-aged child is followed by in-depth study of the common learning problems in the elementary grades, especially reading, writing and mathematics disability. Both teaching strategies and assessment are considered.

60324. Exceptionality Early Adolescence (3-3-0)

A survey in exceptionality with emphasis on the middle grades child is followed by in-depth study of the common learning problems in the middle school, especially reading, writing and mathematics disability. Both teaching strategies and assessment are considered.

60336. Exceptionality in Adolescence (3-3-0)

A survey in exceptionality with emphasis on the high school student is followed by in-depth study of the common learning problems in the high school, especially reading, writing and mathematics disability. Both teaching strategies and assessment are considered.

60410. Topics in Educational Psychology (2-2-0)

Readings and reflections on topics in Educational Psychology relevant to the experiences of first year teachers: Intelligence and Assessment, Instruction and Learning, Motivation, and Effective Teaching.

60452. Child Development and Moral Education (3-3-0)

A systematic treatment of the cognitive, social, biological, and personality development relating to education and an examination of the theoretical and research bases of moral development and their implications for the classroom, with an emphasis on childhood.

60455. Development and Moral Education in Adolescence (3-3-0)

A systematic treatment of the cognitive, social, biological, and personality development relating to education and an examination of the theoretical and research bases of moral development and their implications for the classroom, with an emphasis on adolescence.

63500. Integrative Seminar (1-1-0)

An integration of the professional, communal, and spiritual dimensions of the ACE program. Participants engage in active listening as well as interactive and collaborative learning exercises to integrate these pillars of ACE in their professional service to Catholic Schools.

60605. English Language Arts Education I (2-2-0)

The development of class experiences, activities and content specific methods for middle and high school classes, based on readings selected from the publications of the National Council of Teachers of English and current research and theory.

60625. Social Studies Education I (2-2-0)

The development of class experiences, activities and content specific methods for middle and high school classes, based on readings selected from the publications of the National Council for the Social Studies and current research and theory.

60645. Foreign Language Education I (2-2-0)

The development of class experiences, activities and content specific methods for middle and high school classes, based on readings selected from the publications of the American Council for the Study of Foreign Language and current research and theory.

60665. Mathematics Education I (2-2-0)

The development of class experiences, activities and content specific methods for middle and high school classes, based on readings selected from the publications of the National Council of Teachers of Mathematics and current research and theory.

60685. Science Education I (2-2-0)

The development of class experiences, activities and content specific methods for middle and high school classes, based on readings selected from the publications of the National Science Teachers Association and current research and theory.

60840. Teaching Art Across the Curriculum (3-6-0)

Introduction to art and art activities that enhance and can be effectively integrated into a broad range of curricular areas for all age levels.

EDUCATION

60705. English Language Arts Education II
(3-3-0)

A review of class experiences, activities and content specific methods within the context of unit goals and assessments for middle and high school classes, based on readings selected from the publications of the National Council of Teachers of English and current research and theory.

60715. English Language Arts Assessment
(1-1-0)

Readings on the theories for and practice in the strategies to construct traditional and performance assessments in English/Language Arts. The ability to analyze the results in terms of stated unit goals, to reflect on the effectiveness of the unit planning, and to adjust future units to reteach core knowledge and skills will be emphasized.

60725. Social Studies Education II
(3-3-0)

A review of class experiences, activities and content specific methods within the context of unit goals and assessments for middle and high school classes, based on readings selected from the publications of the National Council for the Social Studies and current research and theory.

60735. Social Studies Assessment
(1-1-0)

Readings on the theories for and practice in the strategies to construct traditional and performance assessments in Social Studies. The ability to analyze the results in terms of stated unit goals, to reflect on the effectiveness of the unit planning, and to adjust future units to reteach core knowledge and skills will be emphasized.

60745. Foreign Language Education II
(3-3-0)

A review of class experiences, activities and content specific methods within the context of unit goals and assessments for middle and high school classes, based on readings selected from the publications of the National Council for the Study of Foreign Language and current research and theory.

60755. Foreign Language Assessment
(1-1-0)

Readings on the theories for and practice in the strategies to construct traditional and performance assessments in Foreign Language. The ability to analyze the results in terms of stated unit goals, to reflect on the effectiveness of the unit planning, and to adjust future units to re-teach core knowledge and skills will be emphasized.

60765. Mathematics Education II
(3-3-0)

A review of class experiences, activities and content specific methods within the context of unit goals and assessments for middle and high school classes, based on readings selected from the publications of the National Council of Teachers of Mathematics and current research and theory.

60775. Mathematics Assessment
(1-1-0)

Readings on the theories for and practice in the strategies to construct traditional and performance assessments in Mathematics. The ability to analyze the results in terms of stated unit goals, to reflect on the effectiveness of the unit planning, and to adjust future units to re-teach core knowledge and skills will be emphasized.

60785. Science Education II
(3-3-0)

A review of class experiences, activities and content specific methods within the context of unit goals and assessments for middle and high school classes, based on readings selected from the publications of the National Science Teachers Association and current research and theory.

60795. Science Assessment
(1-1-0)

Readings on the theories for and practice in the strategies to construct traditional and performance assessments in Science. The ability to analyze the results in terms of stated unit goals, to reflect on the effectiveness of the unit planning, and to adjust future units to re-teach core knowledge and skills will be emphasized.

60830. Folk Choir
(1-1-0)

Work with the folk choir, which continues to build the repertoire for Catholic school use.

60860. Contemporary Educational Technology
(2-2-0)

Integrates computing skills and critical thinking strategies required to use modern technology for enhanced teaching and learning. Credit awarded in the spring semester, with registration required in a summer session and subsequent fall and spring semesters.

60880. Coaching and Youth
(1-1-0)

Readings and discussion on the social scientific research on coaching strategies that promote the social development of youth through sport; applications of research findings are emphasized.

65930. Clinical Seminar
(1-0-1)

The course focuses on the development of the teacher as a professional. Reflective analysis relative to best practices and current research is documented. Evidence is accumulated in the form of written guided reflections, which are placed in a growing professional portfolio.

65950. Supervised Teaching
(2-0-2)

The course focuses on classroom teaching. It includes the observation of classroom teaching, examination of instructional and planning materials, meetings with the ACE teacher, mentor teacher and building principal, and the collection of field notes and evaluations for formative and summative assessment.

67980. Special Topics: Teaching
(1-1-0)

With the approval of the Academic Director, an exploration of issues and experiences in education.

70627. Leadership in Catholic Schools
(1-1-0)

An overview of the distinctive qualities of Catholic school leadership that distinguishes it from other educational and administrative settings. While exploring the unique context of the Catholic school principal, this course builds upon official church documents, Catholic school research, Sacred Scripture, and American Catholic history to assist participants in forming a personal approach to leadership.

73602. Catholic School Leadership II
(1-1-0)

A concluding, summative course for the entire program, this class will place emphasis on the distinctiveness of Catholic schools with reference to educational research and church documents. Lifelong spiritual growth and liturgy in the school receive attention. All participants will be required to form a transition plan for applying for a leadership position and to assemble and organize their program exit portfolio.

70603. Educational Administration
(3-3-0)

An introduction to foundational issues in school leadership for those new to educational administration. Topics include personnel, curriculum and instruction, supervision, power, effective schools research, change theory, collegiality, communication theory, and decision-making skills. Coursework includes selected readings, discussion, lectures, simulations, case studies, and problem-based learning techniques.

70604. Financial Management
(3-3-0)

This course will benefit those in management in not-for-profit financial matters, especially schools. Topics include accountability and stewardship, the finance function in a mission-driven organization, fiscal operations and functions, external constituencies, reporting and compliance, operating budgets, program planning, strategic management, and internal financial reporting.

70605. Human Resource Management
(3-3-0)

Proceeding from a discussion of various theories of managing people in organizations, this course enhances management skills and the understanding of how different strategies are most effectively employed in schools. Management of both professional staff and volunteers is emphasized, as are the skills needed to work effectively with parents and boards. Catholic social teaching serves as a focus for policy and decision-making.

73607. Grant Writing and Development
(1.5-1.5-0)

This course emphasizes professional development, public relations, grant writing techniques, and the creation of development plans. Topics include

aligning the organization's strengths with granting agencies priorities, techniques for writing clear and fundable proposals, community networking, identification and cultivation of benefactors, planned giving, and the development and execution of major campaigns.

73608. Board Relations and Management
(1.5-1.5-0)

This course focuses on the development, composition, role, and responsibilities of school boards. Topics include diocesan school boards, parish boards, Canon Law, the role of the bishop and pastor, and various possible models of governance for parish elementary school, regional, multi-parish schools, and diocesan and private high schools.

73609. Educational Law
(3-3-0)

An overview of the various state, federal, and canonical legislation affecting Catholic schools with an emphasis on comparing and contrasting public and nonpublic school law. Participants will read and analyze legal cases, decisions rendered, and the legal reasoning behind decisions. Real and fictional cases will be discussed.

73633. Media Relations for Principals
(1-12-0)

A skills-based practicum focusing on public relations, school marketing, crisis communications, and media management. Participants will be videotaped in simulations of television interviews, news stories, and commercials for schools.

73634. Facilities Management for Catholic Schools
(1-16-0)

An overview of preventative maintenance for schools, including the relationship of maintenance to asset integrity, contract specifications, utilities management, personnel, and the use of professional vendors. Case studies and a school site visit will be included.

73635. History and Philosophy of Catholic Education in the USA
(1-8-0)

Catholic schools in the USA have historically offered a counter-cultural alternative to public school education. This course analyses various historical episodes of that tendency with a view to helping participants arrive at their own historically grounded philosophy of education.

75610. Internship: Curriculum and Instruction
(3-3-0)

Proceeding from an overview of dominant curriculum theory and curriculum trends, this course will focus on providing the leadership necessary for school-wide curriculum evaluation and instructional improvement. Using a broad definition of curriculum, the course will review current research as it applies to concrete questions of practice in schools and classrooms. A field-based project with curriculum design and instructional improvement will be required of all participants.

75612. Internship: Supervision Staff
(3-3-0)

This course considers the importance and difficulty of motivating educators to seek lifelong personal improvement as reflective, professional practitioners. Strategies of adult motivation and techniques of adult behavioral change will be addressed. Current models of staff evaluation will be analyzed and compared, with a field-based component, giving course participants the opportunity to implement specific techniques and methods.

Peace Studies

Director:

R. Scott Appleby

Director of Academic Programs:

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The Program of Studies

The Joan B. Kroc Institute for International Peace Studies offers an interdisciplinary master's degree in peace studies. Graduate work in peace studies at the Institute is international in character and designed to equip students with both theoretical understanding and practical skills.

The master's program attracts highly qualified students from all continents and cultural regions of the world, with three-fourths of the students coming from outside the United States. In a selective process, the institute accepts 15 - 20 students annually in its two-year master of arts program. The Institute particularly seeks students from war-torn areas or regions where violence could erupt, and actively seeks to ensure cultural, religious, and socioeconomic diversity among participants. Peace studies students engage in community building as they share their diverse perspectives on the problems of peace and justice facing the world. The program prepares students for careers in scholarly research, teaching, public service, religious leadership, political organizing, and social action.

The master's degree program in peace studies is a rigorous academic program. All students enroll in a series of core (required) and elective courses, select a program theme, engage in a five to six month field experience, participate in the Master's Colloquium on Effective Peacebuilding, and produce a substantive master's project. Students indicate their interest in one of five academic themes at the time of application to the program and develop a specialization during their course of study. The Director of Academic Programs assigns the student to a faculty member who serves as a mentor and guide as the student progresses through the program. The Director of Academic Programs serves as co-advisor for all

students, and other Kroc faculty and staff are available for guidance on specific issues.

Theme: Global Politics and International Norms examines the theories and findings of research on the causes of war and the conditions essential for peace; explores the role of international norms, institutions, and sanctions in preventing political violence and building peace and justice; analyzes international law and strategies for improving global governance and enhancing the effectiveness of the United Nations system, regional organizations, and non-governmental organizations; and assesses the prospects for sustainable peace. Cognate fields: political science; sociology.

Theme: Religion, Conflict and Peace examines the religious and ethical contexts of violence and nonviolence across a range of traditions with emphasis on "lived religion." Dialogue among diverse faith communities and the role of religion in conflict transformation in peacebuilding are a particular thrust of this area of study. Cognate fields: comparative religion; philosophy; theology; history.

Theme: Political Economy of War, Peace and Sustainable Development examines the relationship between economy (interpreting economics in a broad sense to include political and sociological factors) and war and peace, discussing concepts, theories and empirical findings regarding causes, consequences, and conduct of armed conflict. Special attention is given to the political economy of development and the global economy. Possible topics include: poverty, the environment, development strategies and politics, foreign aid, globalization, economic stabilization and structural adjustment, civil wars, terrorism, economic sanctions, and economic reconstruction. Cognate fields: economics; political science; sociology.

Theme: Culture, War and Peace investigates the problems of ethnic, gender-related and communal violence, and looks at interpretations of war and peace in cross-cultural context. This focus area delves into the experience of individuals and communities in conflict and explores the methods of grassroots research, activism, and expression in survival, healing and peacebuilding. Cognate fields: anthropology, sociology; cultural and gender studies; the arts.

Theme: Conflict Analysis and Transformation attends to strategies, theories, and case studies of conflict transformation, resolution, and reconciliation. Nonviolent social movements as forces for peacebuilding are also considered as part of this focus area. Methods of mediation and negotiation at levels from individual to community to nation are studied. Cognate fields: political science; psychology; law; sociology.

The Field Experience

A key component of the Kroc M.A. program is the five to six month field experience in which students integrate theories of peacebuilding with work in

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non-governmental organizations and other institutions concerned with conflict resolution, peace studies, economic development, human rights or justice. This is an opportunity for students to acquire comparative experience outside their home country. Only students who are unable to leave the United States because of visa or travel restrictions beyond their control are allowed to complete their field experience in the United States. Students work towards their master's project, bringing data and a fresh perspective back to the Institute when they return to campus for the final semester. In 2005, field sites locations included Jerusalem, Kampala (Uganda), Nairobi (Kenya), Cape Town (South Africa), Phnom Penh (Cambodia), Mindanao (Philippines), and Jakarta (Indonesia).

Master's Colloquium and Project

All students attend a Master's Colloquium on Effective Peacebuilding during the final semester. In this forum, theory and practice are brought together in critical discussion, and students from all five thematic areas engage in dialogue with each other and with Kroc faculty. Each student will produce an individual project stemming from his or her work during the field semester, which will serve as the final product of their master's degree work. These projects may take the form of academic papers or other formats as agreed upon by faculty advisors, seminar leaders, and the Director of Academic Programs. The master's project is the student's opportunity to use experiences and information from the program to make a unique contribution to peace studies and peacebuilding.

Requirements for Graduation

- Completion of the following core classes:
 - Global Politics and Peacebuilding
 - Culture & Religion in Peacebuilding
 - Political Economy of War and Peace
 - Conflict Transformation and Strategic Peacebuilding
- Master's Colloquium on Effective Peacebuilding
- Selection of a theme and completion of a minimum of two elective courses within that theme
- Completion of a practicum or field experience
- Demonstrated proficiency in English plus one other language
- Minimum of 42 graduate credit hours (12 - 15 courses plus the 6-credit field experience)
- A minimum grade point average of 3.0 on a 4.0 scale (a "B" average)
- Continuous enrollment in the Graduate School of the University of Notre Dame for the duration of the two-year program

Course Descriptions

The following list includes IIPS courses offered on a regular basis. Many, although not all, are offered on an annual basis. In addition to the classes listed here, students may select courses cross-listed from other departments in completing the Peace Studies curriculum.

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

50604. Genocide, Witness, and Memory (3-3-0)

How are episodes of mass killing experiences survived and remembered? In this course we consider political, social and cultural trauma as expressed in memoir, documentary, fiction, and academic text. Witness as an ethical stance is examined; the role of memory in shaping morality is questioned. (Does "Never Again" actually work?) We also look at the perpetrators of genocidal killing: Who are they? What prompts their actions? Moreover, are any of us incapable of this kind of violence?

50802. International NGO Management (3-3-0)

This course will provide an introduction to concepts and skills needed to effectively manage projects in international non-governmental organizations (NGOs). Through simulations, case studies, and discussion, the class will critically examine the logframe approach to project planning, which is widely used by NGOs and often required by donor agencies. As a primary assignment in the class, each student will develop a grant proposal and budget for a project he or she has designed using methods discussed in class. The class will also explore several issues related to project evaluation, including how to design a project monitoring and evaluation system, approaches to scaling up; project impact, stakeholder perspectives on evaluation, and the unique challenges which arise in evaluating peacebuilding projects.

60101. Global Politics and Peacebuilding (3-3-0)

In this course students examine the global politics of peacebuilding, including ways and means of preventing war, upholding international human rights, and enhancing the international community's capacities for peacebuilding. Study includes: (1) peace issues such as the effectiveness of the balance of power system in war prevention, arms control, various approaches to prevention of violent conflict, and strategies for implementing fundamental norms of peace; (2) human rights issues such as efforts to implement human rights norms contained in the Universal Declaration and the Covenants, to enhance the rights of women and children, and to hold individuals accountable to prohibitions of crimes against humanity and war crimes; (3) multilateral efforts, particularly by the United Nations and its agencies and transnational nongovernmental organizations, to conduct peacebuilding and to promote structural change aimed at the elimination of war and the enhancement of human rights; (4) issues of identity as they affect the exercise of state sovereignty and compliance with human rights norms; and (5) peace research findings and methods in the areas of peace and human rights, noting similarities and differences between world order/peace studies scholarship and political realism. (CORE)

60102. Culture and Religion in Peacebuilding (3-3-0)

This core course in the graduate studies curriculum examines the religious and cultural contexts of war and peace. Drawing on readings from history, theology, anthropology, sociology, and literature, we examine the origins of violent conflict, communal and individual identities, conceptions of justice across religious traditions and cultures, and the roles of religion and culture in peacemaking. Humanistic as well as social scientific methods in peace studies research and writing are considered. (CORE)

60103. Political Economy of War and Peace (3-3-0)

Reviews key economic concepts and methods relevant for peace research, and examines the relation between political economy issues and war and peace. It examines the political economy of the causes of war, including the roles of arms races, poverty, inequality, ethnicity, natural resources, the environment, and globalization. It explores the economic consequences of war and military expenditures, including those on human development indicators and economic growth. Finally, it discusses the political economy of the prevention of conflict and of post-war reconstruction. For Kroc M.A. students; others by permission only. (CORE)

60104. Conflict Transformation and Strategic Peacebuilding (3-3-0)

This required course will introduce students to the key concepts related to conflict transformation and peacebuilding theory and practice as an integrated framework. The primary purposes are to familiarize students with approaches to promote constructive and strategic change processes in settings of deep-rooted conflict and provide them with opportunity to integrate the theory with practical aspects of designing and implementing those strategies on the ground. During class time, students will be exposed to case studies, simulations, inductive theory development, and elicitive approaches to conflict intervention. For Kroc M.A. students; others by permission only. Spring (CORE)

60201. International Law (3-3-0)

Introduces the international legal system and its lawmaking process. Begins by discussing the means by which state and non-state actors develop norms governing transnational conduct such as the sources of international law. Also includes a discussion of international legal personality including the concept of states and state sovereignty; the law of international obligations; jurisdiction; dispute settlement; and enforcement. A special section will be devoted to the relationship of international and municipal law in the United States and selected other countries. Intended for those students with no prior study in international law.

60202. Theories of International Relations (3-3-0)

This course provides a survey of major theoretical traditions and their applications in the study of international relations. The course explores recent

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changes in and debates on the key theoretical approaches; especially neorealism, liberal institutionalism, and structural theories. A main objective of the course is to clarify and assess various methodological commitments, ranging from empiricism to constructivism, that are built in these theoretical ideas and their consequences for the design and conduct of research. The course does not dwell upon the practice of international relations, but it makes an effort to link up theories and methods surveyed with the real world. This happens by tracing the long-term developments in security (war, peace, and deterrence) and economic (protectionism, free trade, and globalization) strategies by state and non-state actors. In this context, there will be a special focus on the international political and economic orders and their historical transitions. The students are expected to read carefully the assigned material, participate actively in the class discussions, write a publishable book review, develop a research design, and complete a final examination.

60203. International Organizations
(3-3-0)

International organizations (IOs) and institutions are pervasive in international relations. IOs can facilitate cooperation as well as institutionalize competition and conflict, including warfare. This course will examine the origins, roles, and prospects for IOs, with an emphasis on understanding change in intergovernmental organizations such as the UN system and regional organizations. Each student will present a briefing on a selected IO and write a research paper on some aspect of IO politics.

60204. International Migration and Human Rights: Research and Policy
(3-3-0)

This seminar focuses on research reports on U.S. immigration from Mexico and critiques research methods and basic differences in the interpretation of data. A review of the literature is discussed with an emphasis on policymaking on immigration in the U.S. and Mexico. A comparison is made between the debate concerning migrants' human rights in various parts of the world. A critique of scientific theories focusing on the relationship between international migrations and human rights is also included.

60205. International Migration: Mexico/US II
(2-2-0)

A three-week course which refers to a review of basic questions on international migration, with emphasis on immigration to the United States and the methods through which these questions have been adequately or inadequately answered. The numbers, impact, nature, structure, process and human experience will be discussed in terms of the research methods commonly used to approach them. Spring.

60206. Regional Human Rights Protection
(3-3-0)

Studies the regional systems that currently exist to protect human rights in the Americas, Europe and Africa. Compares the rights guaranteed and the procedures established to enforce them. Addresses selected topics such as the death penalty, impunity

and disappearances. Emphasizes the mechanisms for bringing a case and the remedies available. Includes discussions of a potential Asian human rights protection system. Prerequisite: International Law (LAW 74401)

60207. Universal Protection of Human Rights
(3-3-0)

A foundational course in international human rights law. Focuses primarily on examples from United Nations-related human rights regimes, and examines: the historical and jurisprudential bases of international human rights law, the normative frameworks of the principal universal human rights treaties and of customary international law and the institutional mechanisms for interpreting, monitoring compliance with and enforcing those norms. Prerequisite: There are no prerequisites for this course, although it is recommended that students take International Law (LAW 633).

60208. International Humanitarian Law
(3-3-0)

Examines the body of norms applicable to armed conflict, and its relationship with other aspects of international law, particularly international human rights law, international criminal law and international organizations. Discusses international-law standards for the legitimate use of force and the legal regulation of warfare. Gives students a sense of the contents of the Geneva Conventions of 1949 and Additional Protocols of 1977, the Hague Conventions of 1899 and 1907, several thematic conventions such as the recent Land Mines Convention, and customary international-law norms binding on the parties to war. Emphasizes the notion of limitations on weapons and tactics of war, of the principle of distinction between combatants and civilians, and on the rule of proportionality. Discusses special rules designed for civil wars, and the regimen to be applied in protracted civil strife, "failed states" and international peace-keeping operations. Covers responsibility for the violation of those norms, in terms of both states and individuals, stressing the unavailability of the defense of obedience to orders and the doctrine of command responsibility. Explores specific examples of implementation of the laws of war, including international war-crimes tribunals and a future International Criminal Court.

60210. U.N. and Counterterrorism
(3-3-0)

Our attention will be focused on the scope and meaning of the work of the UN Counter-Terrorism Committee (CTC) which was established by the Security Council Resolution 1373 on September 28, 2001. Working under the direction of the project research director, each participant will engage in an intense investigation of one of the numerous topics or queries relevant to the study.

60213. International Cooperation
(3-3-0)

This course begins by considering factors that impede cooperation among self-interested states co-existing in the anarchic international system, even when they share common interests such as liberalizing trade or avoiding wars. We then survey a variety

of strategies that states and other actors may employ to improve the likelihood of international cooperation, and investigate the ways in which international institutions may lead to greater international cooperation than in their absence. Students will be asked to connect theoretical arguments about cooperation dilemmas in international life to substantive issues of their own choosing in a major research project.

60214. International Environmental Law
(3-3-0)

Studies the body of international legal norms that regulate behavior in the field of environmental protection and sustainable development at national, regional and global levels. Reviews the established regimes as well as new and emerging principles and approaches. Addresses the place and role of international environmental law in the system of international law. Focuses on major processes, techniques and dynamics of international environmental law-making and enforcement, and evaluates the system of international environmental governance. Considers the role of environmental security in the system of international security.

60215. World Order, Conflict Resolution and the United Nations
(3-3-0)

Area A: The course deals with the challenges to world order and conflict resolution following the end of the Cold War. It will specifically take up different types of armed conflict, conflict resolution, conflict prevention and the role of the international community in promoting just peace. Examination is through active participation in discussions and by a methodologically structured paper based on a case analysis or a comparative approach. A segment on methodology is included.

60216. American Foreign Policy
(3-3-0)

By reading a 'great book' each week, this course examines in detail theories about international relations focusing on security studies and American foreign policy. The books cover a number of topics, and their theoretical focus ranges from structural, state-level, policy process, to decision-making. We may also review the history of American foreign policy, and assess prominent policy problems currently facing decision-makers. We will work extensively on formulating, critiquing, and testing theories, with a focus on case-study methodology. A major research paper is required. Students will also lead class and present their research papers. Qualified undergraduates may take the course with permission. Highly motivated juniors anticipating writing a senior honors thesis will likely find this course useful.

60301. Modern Religion, Conflict, and Violence
(3-3-0)

This course will focus on modern religion and its capacity for inspiring both deadly conflict and non-violent social change. The first part of the course examines the politically charged religious resurgence around the world—origins, ideologies, social organization, leadership, political impact, cultural influence. Movements to be considered include Sunni Islamist parties and movements in Egypt, Algeria, Sudan,

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Jordan, Palestine, Pakistan, and Indonesia; Shi'ite movements in Iran and Lebanon; Jewish extremists in Israel and New York; Hindu nationalists in India; Sikh radicals in the Punjab, Buddhist nationalists in southeast Asia; Protestant fundamentalism and the Christian Right in the United States; Roman Catholic traditionalisms in the United States and Europe. The second part of the course compares modern religious communities, traditions and groups that pursue social change through conflict resolution, nonviolence, human rights activism, and the like. Cases include The Community of Sant'Egidio, Socially Engaged Buddhists, the World Conference on Religion and Peace.

60302. Christian Attitudes Toward War, Peace, and Revolution (3-3-0)

This course is a survey of Christian understandings of war, peace, and revolution from the time of Christ and the early church to the present. Emphasis will be placed on the way in which theological convictions in the areas of Christology, pneumatology, eschatology, ecclesiology, and so on, have shaped Christian teaching on the nature of peace and the permissibility of using violence. Cases will be used to examine certain aspects of just war theory, with the purpose of addressing the question: is just war theory applicable to warfare in the era of the modern nation state? Other issues will be taken up as well, including the military chaplaincy, ROTC in Catholic colleges and universities, the role of Christian churches in mobilizing for war, and the use of violence in revolution. Texts will include: Reinhold Niebuhr, *Moral Man and Immoral Society*; John Howard Yoder, *Christian Attitudes Toward War, Peace, and Revolution: A Companion to Bainton*; U.S. Catholic Bishops, *The Challenge of Peace*; and others. Undergraduates should receive permission to take this course.

60304. Ethics and International Relations (3-3-0)

Ethics and International Relations explores diverse international issues through normative political philosophy and case studies. It is suitable for students of political theory and international relations alike. Topics include the justice of war, the problem of killing innocents, terrorism, nuclear weapons, intervention, human rights and pluralism, distributive justice, the status of borders, globalization and development, and women's rights. These will be explored through competing moral frameworks, including duty-based and consequentialist frameworks.

60401. Globalization and Multinational Corporate Responsibility (1.5-1.5-0)

Globalization is galloping across our world at a dramatic pace - enhancing global productivity but leaving many people behind in the process. As the key integrating institutions, multinational enterprises deserve much of the credit for the productivity, but are also inextricably involved in the associated social destruction. The objective of this course is to enhance the awareness and understanding of future business executives, governmental officials, or managers of nongovernmental organizations about the evolving role of the multinational enterprise, and how that

role should be managed. The course is offered jointly with the graduate Peace Institute students enrolled in IIPS 611.

60402. Problems in Political Economy (3-3-0)

This seminar course on globalization is concerned specifically with policy problems such as poverty, unemployment, quality of worklife, energy and the environment, corporate power, military power and discrimination. Alternative policy prescriptions and methods of analysis are discussed. Orthodox, conservative and liberal views are studied and later compared with nontraditional approaches to the analysis of global capitalism and its institutional modifications. Special topics include: Capital Mobility, Foreign Direct Investment, International Trade, Free-Trade Agreements, The IMF, Outsourcing to Developing Countries, Immigration, and Labor Solidarity.

60403. Economics for Non-Economists (3-3-0)

This introduction to economics for noneconomists covers four main topics: the existence of different economic theories and their history; the concepts of supply and demand and the neoclassical theory of value; other theories and approaches to economics; and, finally, the contemporary uses of economic analysis on specific topics and themes (from ethics and global inequality to war and third world development).

60404. International Political Economy (3-3-0)

This seminar explores the interaction between politics and economics in the international system, with an emphasis on the theoretical development of the subfield of international political economy. We will investigate the balance between cooperation and conflict, the effect of international institutions on economic relations, and the mutual impact of domestic and international politics. Substantive topics include the international trade system, the international monetary and financial systems, the role of the global economy in economic development, and the impact of economic globalization on domestic societies. Throughout the course, we will consider how well models developed in other fields of political science or economics can be applied to international political economy. We also will attempt to identify the "state of the art" in the study of international political economy. This course serves as a basis for future research in the fields of international political economy, international relations, and comparative political economy. It also prepares students for the international political economy component of the international relations comprehensive exam. Students are expected to participate in all class sessions, to write several short papers, and to write and present a research design at the end of the course.

60405. Political Economy of Postindustrial Societies (3-3-0)

This course investigates the nexus between politics and economics in the postindustrial societies. After a brief discussion of the theoretical principles of economic liberalism, the course focuses on the impact of economic actors and conditions on politics

and the political and economic consequences of the organization of the world economy along free market principles. It concludes by scrutinizing the relationship between domestic politics and the project for deeper economic integration in the case of the European Union.

60406. Development Economics (3-3-0)

A general introduction to the field of development economics, with concentration initially on questions of a macrostrategic nature. The final topic is macro-analysis of country development programs, examining country studies, and macro models.

60502. Gender and Violence (3-3-0)

This upper-level anthropology course focuses on the problematic intersection between gender and violence. The question of male aggression and female pacifism is explored, with attention to female fighters and male practitioners of non-violence. Women in circumstances of war, trauma and healing are studied for the insight such study may provide for peacebuilding initiatives. Gender in the military, gender and violence ritual cross-culturally, and rape as a sociopolitical phenomenon are among the other topics considered. Primary source readings complement intensive class discussion; substantial writing and speaking buttress academic skills.

60503. Protests, Riots, and Movements (3-3-0)

This course is concerned with how people act together to pursue collective political aims via extra-institutional forms of behavior: When and why do people go outside the conventional political structure to address social issues important to them? During the course, we examine political behavior ranging from the relatively mild (like a letter writing campaign) to the severe (like rioting, looting, and killing). We also discuss aspects of collective behavior that are less political in nature (like panics and fads). Some of the social movements we discuss include the civil rights movement, the women's movement, the anti-war movement, the gay and lesbian movement, pro-life and pro-choice movements, and the environmental movement (among many others). In the end, we try to explain how grievances, resources, the political environment, repression, individuals, decision making, and movement tactics all contribute to the success and failure of protest movements, their impact on social change, and the future of activism.

60504. Multicultural Psychology (3-3-0)

This course provides students with theory, knowledge, and skills in diversity issues pertaining to clinical and counseling psychology. (Spring)

60505. Democratic Theory & Multiculturalism (3-3-0)

We live increasingly in a multicultural world. But is this trend compatible with democracy? In recent decades, democratic theory has been a battle field between "liberals" and "communitarians." In both camps, multiculturalism is problematic. Liberals give primacy to autonomous individuals, outside cultural contexts. Communitarians stress community values,

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neglecting the multiplicity of cultural and religious values. The seminar explores the possibility of a multicultural democracy, beyond liberal detachment and communitarian parochialism. Starting from the liberal-communitarian debate, the seminar proceeds to a discussion of multicultural democracy both on the domestic level and on that of "cosmopolitan democracy." Some of the texts used are Charles Taylor's *Multiculturalism*, Bhikhu Parekh's *Rethinking Multiculturalism*, Iris M. Young's *Inclusion and Democracy*, Seyla Benhabib's *Democracy and Difference*, and David Held and Archibugi's *Cosmopolitan Democracy*.

60601. International Conflict Resolution
(3-3-0)

This course explores the theoretical and applied literature related to the causes of and responses to international conflict, using case studies and current events to complement the readings. In addition, the course will introduce students to selected conflict analysis and conflict resolution skills and techniques. Students should be prepared to read extensively and participate in class discussions and activities. Course requirements will include a research paper and a series of short written assignments.

60602. Politics of Reconciliation
(3-3-0)

As countries all across the world have made transitions away from war and authoritarianism over the past couple of decades, reconciliation has emerged as a major approach towards dealing with past injustices. Philosophers, theologians, political scientists and other scholars have embraced the concept, too. But it also remains highly controversial, criticized for betraying victims, inappropriately imposing religion in political orders, imposing forgiveness on victims, and for creating divisions. What is reconciliation? What are the warrants for it? What is its relevance for politics? What criticisms of it are valid? This course will examine reconciliation through political philosophy, theology, and comparative case analysis.

60603. Ethnic Conflict and Peace Processes
(3-3-0)

This team-taught course focuses on the ethnic conflicts that are found across the world today, and considers the special issues of peacebuilding where ethnicity is implicated. A review of theories of ethnicity is followed by in-depth consideration of the following cases: Kashmir, Punjab, Cyprus, Northern Ireland, Israel/Palestine, South Africa, Sri Lanka, and Spain (Basques). Students work in teams to develop plans toward peacebuilding in these and other areas of their choosing. What works and what doesn't work where racial, religious, linguistic, and other "primordial" affiliations entangle with political conflict? We review successes and failures and propose possible new approaches.

60604. Dispute Resolution
(3-3-0)

Surveys the growing alternative dispute resolution field, giving attention to ADR theory and its application in particular settings. Through a modest amount of role-play and skills training, explores the nature of particular dispute resolution processes such as negotiation, mediation and arbitration. In-

dividual projects focus on ADR in specific, real-life settings.

63401. Globalization & Multinational Corporate Responsibility
(1.5-1.5-0)

This research seminar is an option for students who have taken Part I of Globalization & Multinational Corporate Responsibility to continue the discussion during the second half of the semester and complete a full 3-credit hour course.

66301. Directed Readings
(0-0-0)

Directed readings on an approved subject within the theme of Culture and Religion in Peacebuilding under the direction of a faculty member.

66401. Directed Readings
(0-0-0)

Directed readings on an approved subject within the theme of Political Economy of War, Peace and Sustainable Development under the direction of a faculty member.

66501. Directed Readings
(0-0-0)

Directed readings on an approved subject within the theme of Conflict Transformation and Strategic Peacebuilding under the direction of a faculty member.

66601. Directed Readings
(0-0-0)

Directed readings on an approved subject under the direction of a faculty member.

75101. Field Experience I
(3-0-0)

Practicum and research at an approved field site, under the direction of a faculty member.

75102. Field Experience II
(3-0-0)

Practicum and research at an approved field site, under the direction of a faculty member.

78101. Thesis Direction
(0-0-0)

Research and writing on an approved subject under the direction of a faculty member.

78102. Nonresident Thesis Research
(1-0-0)

Required of nonresident graduate students who are completing their theses in absentia and who wish to retain their degree status.

The following directed reading topics are also available, under the direction of a faculty member.

76201. Global Politics and International Norms

76301. Religion, Conflict and Peace

76401. Political Economy of War, Peace and Sustainable Development

76501. Culture, War and Peace

76601. Conflict Analysis and Transformation

Faculty

Scott Appleby, *John M. Regan, Jr. Director*, Professor of History (Ph.D. Univ. of Chicago, 1985)

David Cortright, *Research Fellow* (Ph.D. Union Graduate School, 1975)

Hal Culbertson, *Associate Director for Communications and Finance* (J.D. University of Illinois, 1991)

John Darby, *Professor of Comparative Ethnic Studies* (Ph.D. University of Ulster, 1985)

Jaleh Dashti-Gibson, *Director of Academic Programs* (Ph.D. University of Notre Dame, 1998)

Larissa Fast, *Visiting Assistant Professor of Sociology* (Ph.D. George Mason University, 2002)

Robert C. Johansen, *Senior Fellow, Professor of Political Science* (Ph.D. Columbia University, 1968)

Asher Kaufman, *Assistant Professor of History* (Ph.D. Brandeis University, 2000)

John Paul Lederach, *Professor of International Peacebuilding* (Ph.D. University of Colorado at Boulder, 1988)

George A. Lopez, *Senior Fellow, Professor of Political Science* (Ph.D. Syracuse University, 1975)

Martha Merritt, *Associate Director for International Programs and Faculty Development* (D.Phil. Oxford University, 1994)

Rashied Omar, *PRCP Program Coordinator* (Ph.D. in progress, University of Cape Town)

Daniel Philpott, *Associate Professor of Political Science* (Ph.D. Harvard University, 1996)

Gerard Powers, *Director of Policy Studies* (J.D. University of Notre Dame, 1986)

Jackie Smith, *Associate Professor of Sociology* (Ph.D. University of Notre Dame, 1995)

Fellows

Asma Afsaruddin, *Associate Professor of Classics*

Viva Bartkus, *Associate Professor of Management*

Rev. Michael J. Baxter, C.S.C., *Assistant Professor of Theology*

Mary Beckman, *Associate Director for Academic Affairs and Research, Center for Social Concerns*

Doris L. Bergen, *Associate Professor of History*

Rev. David B. Burrell, C.S.C., *Rev. Theodore M. Hesburgh, C.S.C., Professor of Philosophy and Theology*

Paolo G. Carozza, *Associate Professor of Law*

Paul M. Cobb, *Associate Professor of History*

Kathleen Collins, *Assistant Professor of Political Science*

Barbara Connolly, *Assistant Professor of Political Science*

E. Mark Cummings, *Notre Dame Chair in Psychology*

Fred R. Dallmayr, *Packey J. Dee Professor of Political Science, Professor of Philosophy*

Alan K. Dowty, *Professor Emeritus of Political Science*

Amitava Dutt, *Professor of Economics*

Barbara J. Fick, *Associate Professor of Law*

Michael J. Francis, *Professor Emeritus of Political Science*

Agustín Fuentes, *Associate Professor of Anthropology*

Rev. Patrick D. Gaffney, C.S.C., *Associate Professor of Anthropology*

Teresa Ghilarducci, *Director of the Higgins Labor Research Center, Associate Professor of Economics*

Denis A. Goulet, *William and Dorothy O'Neill Professor Emeritus in Education for Justice and Professor Emeritus of Economics*

Frances Hagopian, *Michael Grace III Associate Professor of Latin American Studies*

Lionel M. Jensen, *Department Chair and Associate Professor of East Asian Languages and Literatures and Concurrent Associate Professor of History*

Ruthann K. Johansen, *Concurrent Associate Professor of American Studies and Visiting Associate Professor of Liberal Studies*

Rev. Paul V. Kollman, C.S.C., *Assistant Professor of Theology*

Keir A. Lieber, *Assistant Professor of Political Science*

Rev. William M. Lies, C.S.C., *Executive Director of the Center for Social Concerns*

Daniel A. Lindley III, *Assistant Professor of Political Science*

Cynthia Mahmood, *Associate Professor of Anthropology*

Scott P. Mainwaring, *Eugene and Helen Conley Professor of Political Science, Director of the Kellogg Institute for International Studies*

A. James McAdams, *William M. Scholl Professor of International Affairs, Director of the Nanovic Institute for European Studies*

Daniel J. Myers, *Chair and Associate Professor of Sociology*

Emily L. Osborn, *Assistant Professor of History*

Catherine Perry, *Associate Professor of French and Francophone Studies*

Teresa Phelps, *Professor of Law*

Richard B. Pierce, *Carl E. Koch Associate Professor of History, Chair of Africana Studies*

Donald B. Pope-Davis, *Associate Vice President and Associate Dean of Graduate Studies, Director of the McNair Scholars Program, and Professor of Psychology*

Gabriel Said Reynolds, *Assistant Professor of Theology*

Maura Ryan, *Associate Professor of Theology*

Kristin Shrader-Frechette, *O'Neill Professor of Philosophy and Concurrent Professor of Biological Sciences*

Nainihal Singh, *Assistant Professor of Political Science*

James P. Sterba, *Professor of Philosophy*

Lee A. Tavis, *C. R. Smith Professor Emeritus of Business Administration (Finance)*

A. Peter Walshe, *Professor of Political Science*

Jennifer Warlick, *Chair and Associate Professor of Economics and Policy Studies*

Andrew J. Weigert, *Professor of Sociology*

Todd D. Whitmore, *Associate Professor of Theology*

Charles Wilber, *Professor Emeritus of Economics*

Rev. Oliver F. Williams, C.S.C., *Academic Director of the Center for Ethics and Religious Values in Business and Associate Professor of Management*

Martin Wolfson, *Associate Professor of Economics*

Political Science

Chair:

Rodney Hero

Director of Graduate Studies:

Benjamin Radcliff

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The Program of Studies

The primary aim of the graduate program in political science is to train qualified candidates for research and teaching. The department offers M.A. and Ph.D. degrees. It has four major subfields:

1. American politics;
2. comparative politics;
3. international relations;
4. political theory.

The department has faculty with a wide range of interests. Its particular strengths include political theory; democratic institutions; ethnicity, religion, and nationalism; political economy; international humanitarian issues and peace studies; Latin American politics; regime change; political participation; politics and literature; and constitutional studies. The highly selective student body is drawn from a large pool of applicants from many countries: in 2005 we had 200 applicants for 9 openings. The department's community of graduate students is marked by a diversity of interests, backgrounds, and nationalities. The small size of the graduate program

facilitates close interaction between faculty and students and allows us to offer financial assistance to virtually all students we admit.

In recent years, 80 percent of Notre Dame Ph.D. recipients in political science have been appointed to full-time teaching and research positions. Recent appointments of Notre Dame Ph.D.s in political science include tenure-track positions at leading universities (e.g., the University of Texas-Austin, the University of Pennsylvania, University of Pittsburgh, Florida State, Purdue, Florida International University, Oklahoma, Louisiana State University, Pepperdine, SUNY-Stony Brook, University of Massachusetts-Boston, University of Wisconsin-Wausau, Western Michigan University, California State University-Sacramento) and at renowned liberal arts colleges (e.g., Bowdoin, Connecticut College, Bates, Whittier). Students in the department have fared well in winning prestigious fellowships and prizes, including the Edwin Corwin Award of the American Political Science Association for the best dissertation in public law and the Leo Strauss Award for the best dissertation in political theory.

The faculty is strong, and it is growing and changing. The department currently has 42 faculty members, including scholars of national and international recognition.

M.A. students must complete a minimum of 30 hours in course credits and must pass a comprehensive written examination in their major field. A minimum of 12 hours of course work is required in the major field, and a minimum of nine in a second field. However, M.A.-only students are not eligible for funding, and we rarely offer admission to those seeking only the M.A.

Doctoral Program

Ph.D. students must complete the following requirements:

1. A total of 60 credit hours of courses, including at least 48 credit hours of substantive courses;
2. At least 12 hours of courses and comprehensive written exams in two of the department's four subfields (American politics, comparative politics, international relations, and political theory);
3. At least nine hours of course credits in a student-defined area of specialization;
4. A proseminar on scope and methods and a quantitative methods course;
5. A reading exam in one foreign language or two additional courses in quantitative methods;
6. A master's paper;
7. An oral examination, based on the student's dissertation proposal;
8. A Ph.D. dissertation and its successful oral defense.

Students in the department are advised to consult the listing of courses in other departments, particularly in sociology, economics, history, philosophy, and theology. Courses in other departments selected

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in consultation with the student's adviser are counted toward a degree.

Research Institutes

Department faculty and graduate students also work in several major research institutions at Notre Dame. The Kellogg Institute for International Studies promotes advanced study, teaching, and research in comparative social science. Kellogg scholars focus on democratization and development in Latin America and on related research on all world regions. The Kroc Institute for International Peace Studies conducts research, teaching, and public education on war prevention and global security, the promotion of human rights and justice, and international dimensions of social, economic, and environmental justice. (Applicants interested in an M.A.-only program in peace studies should apply directly to the Kroc Institute.) The Nanovic Institute for European Studies facilitates lectures, conferences, and research opportunities on a variety of issues relating to contemporary European politics and society. Its programs are designed to appeal to graduate students working in any area of the social sciences or humanities, including comparative European politics, the relations among European states and developments in the EU, and European political theory and history. The Program in American Democracy supports and facilitates research, teaching, and other activities that explore and assess the quality of democracy in the United States. The program currently sponsors a working paper series, a speaker series, occasional conferences, and other activities.

These and other research initiatives of the department faculty aid graduate students through lively scholarly communities; the department offers numerous opportunities for research support, dissertation-year fellowships, and other resources.

Course Descriptions

The following list includes courses offered during the last three academic years by current faculty members. Some courses are offered on an annual basis, and many others are offered less frequently. Because this list is restricted to the past three academic years, it is not exhaustive. Students should also consult the list of courses in other departments.

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

60001. Field Seminar in American Politics (3-3-0)

This is the "core" seminar in American politics, designed to provide a survey of the most important literature in the field. The seminar is intended to present the student with a broad, eclectic view of the current state of the literature in American politics. The readings attempt to provide a sampling of classic and recent theory and substance in the hope of suggesting where scholars stand, and where they seem to

be headed, with respect to some major topics in the American subfield.

60004. American Subnational Politics and Government (3-3-0)

This seminar provides a careful and extensive overview of the scholarly issues and literature concerning American "subnational," especially State, politics. The assumption and approach taken is that state and local governments in the US are important in and of themselves, but they are also critical in how they shape national politics and governance through their own political and policy patterns and in their implementation of "national" domestic policies. Three bodies of literature will be the focus of analysis: US federalism and intergovernmental relations, State Governance, Politics and Public policy, and Urban/Local Politics (with the most extensive attention given to the second of the three).

60009. Elections and Public Policy (3-3-0)

This course examines the relationship between the electoral choices of voters and the public policy regimes that the governments so chosen pursue. The central focus is thus on whether and how different types of electoral outcomes (which parties win elections and in what institutional contexts) actually determine the policies that governments pursue.

60010. Federalism and the Constitution (3-3-0)

Beginning in 1995, the Rehnquist Court has sought to restore some of the immunities from federal power that the states enjoyed prior to the late 1930s. Cases decided under the Commerce Clause and the 10th and 11th Amendments reflect the view that "federalism" is a fundamental feature of the American constitutional order, dear to the framers and integral to the values of "limited government" and "liberty." Critics of this "states' rights revolution" contend that the framers' first priority was a strong national government and that advances in personal and civil liberties have historically come at the expense of states' rights. This course asks what American "federalism," as a normative concept, is, whether it is a genuine constitutional principle, and if so for what textual, historical, or moral reasons. The first part of the course will review Supreme Court cases. The second part will review what statesmen and political philosophers have said about the subject. In addition to around 30 cases, readings will include selections from *The Federalist Papers* and writings by Tocqueville, Calhoun, Lincoln, Martin Diamond, Herbert Storing, Charles Taylor, and others. Grades will be based on an objective exam covering the cases, oral reports in class, and a term paper. This is a graduate course, but senior undergraduates may register with the instructor's consent.

60011. International Migration and Human Rights (3-3-0)

This seminar focuses on research reports on U.S. immigration from Mexico and critiques research methods and basic differences in the interpretation of data. A review of the literature is discussed with an emphasis on policymaking on immigration in the U.S. and Mexico. A comparison is made between the

debate concerning migrants' human rights in various parts of the world. A critique of scientific theories focusing on the relationship between international migrations and human rights is also included.

60012. Legislative Studies (3-3-0)

This course will examine both the organizational choices within legislatures and the outside influence on legislator behavior. Topics to be covered include problems of collective choice, the party versus preferences debate, legislative elections, roll call behavior, legislator home style, and the historical development of legislative institutions. Although particular attention will be paid to the U.S. Congress, comparative legislatures will also be considered.

60014. Political Participation (3-3-0)

Many observers wonder why more Americans don't vote. Others wonder why anybody votes at all. This course cuts a swath through a large and methodologically diverse literature that examines these and other questions relating to political engagement. Readings include both some golden oldies and hits right off the political science charts. Some will be normative, others empirical. Students will grapple with questions like how a nation's political institutions facilitate political participation (or not), and whether it matters that some kinds of people are more likely to participate in politics than others. The focus will be on the United States, but perspectives from other nations will be offered as well. Given the topic of the course, it should come as no surprise that the instructor asks for full participation in class discussions as well as a paper. Like the assigned readings, this can be empirical or normative—or even a little of both.

60016. The Presidency: Institution and Performance (3-3-0)

This course develops a two-part perspective on the U.S. presidency, examining its institutional development while assessing the leadership behavior of incumbents within it. Readings will survey conceptual strategies for understanding institutional development and leadership performance. Students will write brief, critical essays on readings that will focus class discussion. Additionally, students will prepare research papers using a case or database to assess the utility of one conceptual approach for understanding presidential leadership.

60017. Protests, Riots, and Movements (3-3-0)

This course is concerned with how people act together to pursue collective political aims via extra-institutional forms of behavior: When and why do people go outside the conventional political structure to address social issues important to them? During the course, we examine political behavior ranging from the relatively mild (like a letter writing campaign) to the severe (like rioting, looting, and killing). We also discuss aspects of collective behavior that are less political in nature (like panics and fads). Some of the social movements we discuss include the civil rights movement, the women's movement, the anti-war movement, the gay and lesbian movement, pro-life and pro-choice movements, and the environmental movement (among many others). In the

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end, we try to explain how grievances, resources, the political environment, repression, individuals, decision making, and movement tactics all contribute to the success and failure of protest movements, their impact on social change, and the future of activism.

60018. Religion and the Constitution
(3-3-0)

Does constitutionalism in America presuppose a supreme being? Does the maintenance of constitutional institutions depend on the prevalence of religious or specifically Christian faith and morals? To what extent can or should constitutional government accommodate religious beliefs, institutions and practices? Is constitutionalism in America on a collision course with the religious commitments of a substantial portion of the American people? This seminar will explore these and related issues. Readings include classical writers like Lock and Jefferson, contemporary scholars and social critics like Stanley Fish and Richard John Neuhaus, and leading decisions of the U.S. Supreme Court. Courses are open to graduate students and law students. Space may be available to a few seniors who have instructors' permission. Course grade will be based on a term paper, class participation and assigned oral reports.

60019. Representation
(3-3-0)

This course will investigate the translation of public preferences into public policies. Among the topics that will be discussed are public opinion and public policy, measuring public opinion, political participation and representation, political parties and representation, representation in legislatures, demographic disparities in representation, the courts as representative institutions, and the presidency and representation.

60022. Race/Ethnicity and American Politics
(3-3-0)

This course introduces students to the dynamics of the social and historical construction of race and ethnicity in American political life. The course explores the following core questions: What are race and ethnicity? What are the best ways to think about the impact of race and ethnicity on American citizens? What is the history of racial and ethnic formation in American political life? How do race and ethnicity link up with other identities animating political actions like gender and class? What role do American political institutions—the Congress, presidency, judiciary, state and local governments, etc.—play in constructing and maintaining these identity categories? Can these institutions ever be used to overcome the points of division in American society?

60200. American Foreign Policy
(3-3-0)

This course examines in detail theories about international relations and American foreign policy ranging from structural, state-level, policy process, to decision-making theories. We will also review the history of American foreign policy, and assess several prominent policy problems currently facing decision-makers. We will work extensively on formulating, critiquing, and testing theories, with a focus on case-study methodology. A major research paper is

required. Students will also lead class and present their research papers. Qualified undergraduates may take the course with permission. Highly motivated juniors anticipating writing a senior honors thesis may find this course useful.

60202. Ethics and International Relations
(3-3-0)

Ethics and International Relations explores diverse international issues through normative political philosophy and case studies. It is suitable for students of political theory and international relations alike. Topics include the justice of war, the problem of killing innocents, terrorism, nuclear weapons, intervention, human rights and pluralism, distributive justice, the status of borders, globalization and development, and women's rights. These will be explored through competing moral frameworks, including duty-based and consequentialist frameworks.

60203. Great Books in Foreign Policy and Security
(3-3-0)

By reading a 'great book' each week, this course examines in detail theories about international relations focusing on security studies and American foreign policy. The books cover a number of topics, and their theoretical focus ranges from structural, state-level, policy process, to decision-making. We may also review the history of American foreign policy, and assess prominent policy problems currently facing decision-makers. We will work extensively on formulating, critiquing, and testing theories, with a focus on case-study methodology. A major research paper is required. Students will also lead class and present their research papers. Qualified undergraduates may take the course with permission. Highly motivated juniors anticipating writing a senior honors thesis will likely find this course useful.

60204. International Organization
(3-3-0)

International organizations (IOs) and institutions are pervasive in international relations. IOs can facilitate cooperation as well as institutionalize competition and conflict, including warfare. This course will examine the origins, roles, and prospects for IOs, with an emphasis on understanding change in intergovernmental organizations such as the UN system and regional organizations. Each student will present a briefing on a selected IO and write a research paper on some aspect of IO politics.

60205. International Political Economy
(3-3-0)

This seminar explores the interaction between politics and economics in the international system, with an emphasis on the theoretical development of the sub-field of international political economy. We will investigate the balance between cooperation and conflict, the effect of international institutions on economic relations, and the mutual impact of domestic and international politics. Substantive topics include the international trade system, the international monetary and financial systems, the role of the global economy in economic development, and the impact of economic globalization on domestic societies. Throughout the course, we will consider how well models developed in other fields of political science or economics can be applied to international political economy. We also

will attempt to identify the "state of the art" in the study of international political economy. This course serves as a basis for future research in the fields of international political economy, international relations, and comparative political economy. It also prepares students for the international political economy component of the international relations comprehensive exam. Students are expected to participate in all class sessions, to write several short papers, and to write and present a research design at the end of the course.

60206. International Conflict Resolution
(3-3-0)

This course focuses on the causes and resolution of violent conflict at the international level, surveying both the theoretical and applied literatures. There will be a heavy reading load for this course. Students will be required to write 2 papers and actively participate in class discussions.

60207. Issues in Arab-Israel Conflict
(3-3-0)

This course tracks the Arab-Israeli conflict from its origins in the late 19th century to the present, making special use of primary sources that express differing perspectives in their full intensity. Current issues of the conflict will be analyzed in depth with the help of current periodical and electronic sources. Classes will include a mixture of lectures, video, and role-playing. There will be a midterm exam and a short policy paper.

60208. International Cooperation
(3-3-0)

This course begins by considering factors that impede cooperation among self-interested states co-existing in the anarchic international system, even when they share common interests such as liberalizing trade or avoiding wars. We then survey a variety of strategies that states and other actors may employ to improve the likelihood of international cooperation, and investigate the ways in which international institutions may lead to greater international cooperation than in their absence. Students will be asked to connect theoretical arguments about cooperation dilemmas in international life to substantive issues of their own choosing in a major research project.

60211. Peace and World Order Studies II
(3-3-0)

This required course examines major global issues and multilateral responses to them in the areas of human rights and war prevention. The course, which emphasizes peace research methods and findings, includes study of the theory and practice of peace-building in its broadest sense of nurturing social integration and promoting justice as the work of peace. Discussion of human rights issues will include the Universal Declaration and Covenants; the rights of women and children; efforts to hold individuals accountable to prohibitions of war crimes and crimes against humanity; and questions of identity as they affect sovereignty and compliance with human rights norms. Discussion of war/peace issues will include debates among peace researchers, feminists, and political realists on causes of violence and conditions of peace; arms control and disarmament; intergroup tension reduction; and efforts by international com-

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missions, the United Nations, and nongovernmental organizations to implement humanitarian norms of peace and human rights and gradually replace the rule of force with the rule of law in international relations.

60212. Political Economy of War and Peace
(3-3-0)

Peace research and international relations have each had on-again, off-again flirtations with the world of economics. The former had for decades as its core queries: Does economic maldevelopment lead to war? What is the cost of the arms race? The latter generated the sub-field of international political economy and now struggles with meanings of institutionalism and globalization as organizing areas of research. This required course engages each of these clusters of questions and hopes to create an investigative atmosphere in which to explore these issues. Four shorter essay papers will be required, OR one short paper and a longer research paper will be permitted.

60213. Global Politics and Peacebuilding
(3-3-0)

This required course examines major global issues and multilateral responses to them in the areas of human rights and war prevention. The course, which emphasizes peace research methods and findings, includes study of the theory and practice of peacebuilding in its broadest sense of nurturing social integration and promoting justice as the work of peace. Discussion of human rights issues will include the Universal Declaration and Covenants; the rights of women and children; efforts to hold individuals accountable to prohibitions of war crimes and crimes against humanity; and questions of identity as they affect sovereignty and compliance with human rights norms. Discussion of war/peace issues will include debates among peace researchers, feminists, and political realists on causes of violence and conditions of peace; arms control and disarmament; intergroup tension reduction; and efforts by international commissions, the United Nations, and nongovernmental organizations to implement humanitarian norms of peace and human rights and gradually replace the rule of force with the rule of law in international relations.

60214. Politics of Reconciliation
(3-3-0)

As countries all across the world have made transitions away from war and authoritarianism over the past couple of decades, reconciliation has emerged as a major approach towards dealing with past injustices. Philosophers, theologians, political scientists and other scholars have embraced the concept, too. But it also remains highly controversial, criticized for betraying victims, inappropriately imposing religion in political orders, imposing forgiveness on victims, and for creating divisions. What is reconciliation? What are the warrants for it? What is its relevance for politics? What criticisms of it are valid? This course will examine reconciliation through political philosophy, theology, and comparative case analysis.

60217. Theories of International Relations
(3-3-0)

This course provides a survey of major theoretical traditions and their applications in the study of international relations. The course explores recent changes in and debates on the key theoretical approaches; especially neorealism, liberal institutionalism, and structural theories. A main objective of the course is to clarify and assess various methodological commitments, ranging from empiricism to constructivism, that are built in these theoretical ideas and their consequences for the design and conduct of research. The course does not dwell upon the practice of international relations, but it makes an effort to link up theories and methods surveyed with the real world. This happens by tracing the long-term developments in security (war, peace, and deterrence) and economic (protectionism, free trade, and globalization) strategies by state and non-state actors. In this context, there will be a special focus on the international political and economic orders and their historical transitions. The students are expected to read carefully the assigned material, participate actively in the class discussions, write a publishable book review, develop a research design, and complete a final examination.

60220. U.N. and Counterterrorism
(3-3-0)

Our attention will be focused on the scope and meaning of the work of the UN Counter-Terrorism Committee (CTC) which was established by the Security Council Resolution 1373 on September 28, 2001. Working under the direction of the project research director, each participant will engage in an intense investigation of one of the numerous topics or queries relevant to the study.

60400. Armies and Politics
(3-3-0)

This course examines the role of the armed forces in politics. The purpose of this course is not just to cover the material traditionally associated with civil-military relations, but also to consider new ways in which the military is important to the study of politics. We will cover a range of topics including coups d-etat, military rule, transitions to democracy, theories of civilian control, the role of the military in state formation, the effects of the cultural gap between civilians and the military, and the role of the military in state failure. Cases will be drawn from both the developed and developing worlds, with special attention paid to examples from the United States, Latin America and Africa. A variety of different approaches to the military will be employed, including sociological, institutional, and political economy perspectives.

60404. Comparative Constitutional Law
(3-3-0)

Studies the laws of the United States and Germany, the world's paradigmatic examples of diffuse and concentrated judicial review. Germany's federal Constitutional Court like the German Constitution (i.e., the Basic Law) has replaced the U.S. Supreme Court and the American constitution as the leading model of constitutional governance around the globe. Contrasts Germany's jurisprudence with

the decisions and opinions of the U.S. Supreme Court. Examines the decisions in depth of the institutional features of the two tribunals, especially the controversial areas of modern governance, namely, abortion, the death penalty, freedom of speech (defamation, hate speech and pornography), church-state relations and free exercise of religion, party finance and political representation, race and sex discrimination, and selected socio-economic rights.

60405. Comparative Parties and Party System
(3-3-0)

This course will focus on comparative parties and party systems. The major purpose is to acquaint students with some of the most important theoretical and comparative literature on one of the major themes in political science. The course has three main units. We will begin with some general reflections on why parties matter. In Part I, we will also examine the literature on the decline of parties and the rise of other vehicles of representation. In Part II, we will discuss three leading theoretical approaches to the analysis of why different party systems emerge in different nations. In particular, we will discuss authors who emphasize social cleavages, voters' preferences (the spatial model), and electoral systems as factors shaping party systems. Part III of the course focuses on parties rather than party systems as the unit of analysis. A fundamental question is the way parties function internally. To what extent can parties be seen as rational actors as opposed to organizations with logics that may not follow the normal dictates of rationality? More broadly, what shapes how parties compete and function?

60406. Comparative Research on Democratization
(3-3-0)

One of the central tasks in the study of politics has long been to explain the birth, survival, and breakdown of democracy. [Note: This course does not cover the consequences of democracy.] Over the years, scholars have offered dozens of hypotheses, focusing on culture, institutions, leadership, religion, ethnic cleavages, diffusion, dependency, social equality, economic development, or various combinations of several of the above. Clearly the problem has not been the difficulty of dreaming up explanations, but the difficulty of demonstrating which one or ones are correct. In their efforts to support some of the possible explanations, political scientists and sociologists have employed nearly every research method imaginable, and in recent years an escalation of methodological sophistication has taken some research on democratization to the cutting edge of comparative politics. A roughly chronological selection of this literature can therefore serve as a springboard for discussions about both practical questions of research design and methods, and the fascinating and timely theoretical question of what causes democracy--which are the twin topics of this course. In addition to reading and discussing selected works on democratization, you are required to (1) carry out 5 small exercises to give you practice in critiquing research, generating theory, and testing hypotheses; and (2) perform original research culminating in a 15-25-page paper on some question of the determinants of democracy. I will offer in-class workshops on the data analysis techniques that you will need to

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do each exercise, and will also meet privately with anyone wishing an individualized tutorial on the technique.

60411. Democratic Theory and Comparative Politics (3-3-0)

This is a graduate seminar. We will read and discuss some of the most relevant and/or interesting contemporary theories about democracy, without fully neglecting some important predecessors. The purpose is to arrive to an enlightened - but not necessarily consensual - understanding of present-day democracy and its main issues and conceptions. For this purpose, several comparative incursions will be apposite.

60415. Historical and Comparative Sociology (3-3-0)

Reviews some of the basic techniques in historical research, discusses comparative research designs in the social sciences, and examines critically major works using comparative analysis. Students are encouraged to write proposals using comparative analysis.

60417. Latin American Political Economy and Institutions (3-3-0)

This course examines the political and institutional framework underpinning the transition to an economic order in which market forces play a predominant role in the allocation of resources throughout Latin America. After reviewing the post-war economic model of protected, state-led industrialization and contending theoretical perspectives on economic liberalization, it analyzes the roles of various political and social actors and institutions in shaping first and second generation economic reforms. The focus is on the executive, party, legislative, and sub-national political institutions that shape and constrain state and market-oriented reform and economy policy-making. The latter part of the course examines the impact of economic liberalization on electoral colleges, political representation, and the changing foundations of citizen association and participation.

60424. The Political Economy of Postindustrial Societies (3-3-0)

This course investigates the nexus between politics and economics in the postindustrial societies. After a brief discussion of the theoretical principles of economic liberalism, the course focuses on the impact of economic actors and conditions on politics and the political and economic consequences of the organization of the world economy along free market principles. It concludes by scrutinizing the relationship between domestic politics and the project for deeper economic integration in the case of the European Union.

60426. Theory Approach to Comp Pol (3-3-0)

This course has two objectives. First and foremost, it provides an overview of major theoretical approaches to comparative politics. We will examine structural approaches, contingent action arguments, institutionalism, rational choice, political culture, and eclectic approaches. We will also spend one week

discussing international influences on domestic politics. An important secondary objective is to provide some awareness of comparative methods in political science. Toward this objective, we will begin the semester with some readings on methods in comparative politics, and we will discuss methods of inquiry throughout the semester.

60427. Theories of Identity and Conflict (3-3-0)

This course covers theories of ethnicity, nationality, and religious identity, and their relation to social movements, violence, and civil conflict. The course includes a range of approaches and debates on the sources of identity, causes of identity mobilization, changing identity, the causes of conflict, and strategies for resolving identity-based conflict. We will read rational choice approaches, including Laitin, Fearon, Weingast, Bates, etc., as well as institutionalist theories, such as Horowitz, and culturalist and social theories.

60430. Political Sociology (3-3-0)

A survey of the major theoretical traditions in the field, followed by a special focus on issues such as the process of state formation, sequences and forms of political development, the social bases of parties and their formation, the characteristics of party systems, the origins of democracies, the breakdown of democracies, the characteristics of authoritarian regimes, etc. Examples and case studies will be drawn from Europe and the Americas.

60431. Theoretical Approaches in Comparative Politics (3-3-0)

This course provides an introduction to political institutions in contemporary Latin American politics. A major challenge confronting many Latin American democracies is that of institution-building and reform. The central themes of the course will be to focus on the emergence and functioning of key political institutions in Latin America, including the presidency, the system of electoral rules, political parties, the military, the judiciary, and the bureaucracy. The course will combine a broad range of theoretical and empirical materials to analyze institutional choice and performance. In addition, the course will consider competing definitions of institutions, evaluate the trade-offs imposed by institutional choice, and consider the prospects for reform in the region.

60432. Contemporary Theories of Democracy (3-3-0)

We will have to be very selective because this is, of course, a huge topic. We will read closely some texts, chosen on the basis of two criteria. One, these are attempts to make a general statement (or, maybe, a theory) about democracy (although they may not call it such), not specifically about some of its manifold components. Second, I believe these texts are highly representative and/or influential of the various streams of thought that nowadays deal with democracy.

60433. Labor Processes (3-3-0)

The seminar has the purpose of explaining labor conflict on the basis of the analysis of labor process and worker consciousness. On the basis of the analysis of work organization, working conditions, types of labor organization, ideologies of the labor movement, the seminar will discuss specific types of labor action by miners and industrial workers on the basis of cases from the Latin American region.

60600. Aristotle (3-3-0)

An introduction to Aristotle's "human philosophy" (ta anthropona philosophia) by reading his *Nicomachean Ethics and Politics*. Aim: to obtain a critical understanding of one of the founders and masters of political theory whose work is still relevant today. The seminar will study his theory of excellence in personal and political practice as well as of the method used in developing the theory. The course will be conducted in seminar style: participants will be expected to take turns presenting short, tightly argued introductions to key passages with a view to focusing discussion on the principle interpretive and theoretical questions posed by the particular text under discussion. Each seminar participant is also expected to write a critical research paper adjudicating a disagreement in the relevant scholarly literature (usually two articles) on some issue in Aristotle's ethico-political theory.

60601. Cicero and the Romans (3-3-0)

This course offers the opportunity to study major issues in political theory, moral philosophy, and jurisprudence as they appear in the writings of Cicero and in the teachings of the philosophical schools of ancient Rome. Lucretius is also read. Topics considered include the relation of practice and theory, the virtues and expediency, the basis of right and law, and the natures of republican and mixed constitutions. Above all the course provides an opportunity for reading and discussing some of Cicero's most significant writings. Cicero's skepticism and his metaphysical and theological views come to attention in certain of the readings. Cicero, a leading statesman of the late Roman Republic, endeavored to mediate between the work of Greek theorists and Roman practice; in time, his writings became among the most important sources on ancient moral and political thought for the Christian tradition. His acknowledged influence on key American founders was much greater than that of Plato or Aristotle.

60603. Deliberative Democracy (3-3-0)

Voting and discussion are two essential aspects of democracy. Voting is a mathematical operation and lends itself easily to formalization; thus, the economic theories of democracy prominent in the discipline of political studies during the later 20th Century concentrated exclusively on voting, the aggregation of individuals' preferences. The economic theories tend to find that democracy is a poor substitute for the market, and urge that democracy be minimized. Until the 1990s, political studies neglected the deliberative aspect of democracy, the

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transformation of individuals' preferences in discussion. Scholars seeking a richer descriptive and normative account of democracy were inspired initially by Habermas's theory of communicative action to offer new deliberative theories of democracy. The course will survey the field of deliberative democracy, from a friendly but skeptical perspective. Readings will include selections from Habermas, Rawls (and especially his students Joshua Cohen), Jon Elster, James Bohman, Bernard Manin, Carlos Nino, Henry Richardson, John Dryzek, Iris Marion Young, James Goodin, Nicholas Rescher, Paul Weithman, and others; and the few critical publications on the subject. We will systematically consider some of the major issues within the deliberative conception of democracy: the derivation of modern liberal rights; the clash between the fact of pluralism and the ideal of consensual agreement; whether the content of deliberation is rational argumentation or a wider range of communication; and the confused or sentimental character of some celebrations of the deliberative ideal. Finally, we will consider emerging work on institutional design intended to further deliberation (Fishkin's deliberative opinion polling, deliberation day, and more), and on empirical investigations of deliberative process.

60604. Democratic Theory and Multiculturalism
(3-3-0)

We live increasingly in a multicultural world. But is this trend compatible with democracy? In recent decades, democratic theory has been a battlefield between "liberals" and "communitarians." In both camps, multiculturalism is problematic. Liberals give primacy to autonomous individuals, outside cultural contexts. Communitarians stress community values, neglecting the multiplicity of cultural and religious values. The seminar explores the possibility of a multicultural democracy, beyond liberal detachment and communitarian parochialism. Starting from the liberal-communitarian debate, the seminar proceeds to a discussion of multicultural democracy both on the domestic level and on that of "cosmopolitan democracy." Some of the texts used are Charles Taylor's *Multiculturalism*, Bhikhu Parekh's *Rethinking Multiculturalism*, Iris M. Young's *Inclusion and Democracy*, Seyla Benhabib's *Democracy and Difference*, and David Held and Archibugi's *Cosmopolitan Democracy*.

60606. Federalist/Anti-Federalist
(3-3-0)

This seminar will study the most important texts in the government debate over the Constitution in 1787-88. The focus will not be historical, however, but on the debate as a conflict of two political sciences, or of two versions of democratic theory. To that end, we will begin the course by looking at some current examples of democratic theory to set up some categories for discussing this earlier debate. We will also compare the institutional analysis of The Federalists and the Anti-Federalists some of the main conclusions of current political science.

60607. Gadamer and Charles Taylor
(3-3-0)

Given steadily closer contacts between societies and cultures today, the issues of understanding and interpretation acquire crucial importance. The seminar examines the work of two leading thinkers in the

field of interpretive theory: Hans-Georg Gadamer and Charles Taylor. While Gadamer is recognized as the preeminent philosopher of "hermeneutics", Taylor has underlined the role of understanding/interpretation both in the history of political thought and in the practice of the social and human sciences. The seminar will focus on selected writings of the two thinkers (including Gadamer's *Truth and Method* and Taylor's *Philosophical Papers*). Students are expected to write a research paper on a topic related to the seminar's theme.

60611. Heidegger and Praxis
(3-3-0)

In recent years there has been much debate concerning Heidegger's politics. Although important, the controversy has often had the effect of impeding access to Heidegger's philosophy and its implications. One of the larger issues often obscured is this: What is the relation between philosophy and politics, between theory and praxis? How can philosophy and praxis enter into a relationship which is mutually enriching while preserving their respective integrity? The seminar explores Heidegger's philosophy with an accent on his contributions to "practical philosophy" (including ethics and politics). Following a close reading of some of Heidegger's key texts - from (parts of) *Being and Time* to the *Letter of Humanism* and *On the Way to Language* - the seminar turns to some assessments of the "practical" implications of his thought in our time of globalization, technological dominance, and civilizational conflict.

60612. Hume's Practical Philosophy
(3-3-0)

Hume is not only one of the most revolutionary theoretical philosophers; in his essays he deals with many moral, economical and political questions and defends a peculiar form of liberalism. In the course, we will read the "Treatise of Human Nature" and the "Inquiry concerning the Principles of Morals" and his various essays on political issues. A particular accent of the course is to probe into the connections between Hume's epistemology and anthropology and his concrete political views.

60613. Kant
(3-3-0)

The purpose of the seminar is to become familiar with Kant's practical philosophy and particularly with its implications for political philosophy and the philosophy of history. We will start with Kant's *Groundwork and the Critique of Practical Reason*, which lay the foundation of his enterprise, continue with Kant's materially most important works *Metaphysics of ethics* and *Anthropology* and then deal with the smaller works on the philosophy of history and the relation between theory and practice.

60616. Nature and Modern Democracy
(3-3-0)

From 1951 to 1953, the University of Chicago Press published three sets of the Walgreen Lectures dealing with the intellectual basis of various 20th-century challenges to democracy. These three books-Yves Simon's *Philosophy of Democratic Government*, Leo Strauss's *Natural Right and History*, and Eric Voegelin's *The New Science of Politics*-have functioned to outline three highly influential and overlapping

approaches to defining the crises of modern democracy and to restoring viable democratic foundations. This seminar-style course focuses on the reading and discussion of these books. Special attention is given to the concepts of history, science, nature, modernity, and democracy itself as they appear in the three works and in related writings.

60617. Nature, Grace, and History
(3-3-0)

This seminar will explore several interrelated themes concerning the relationship between religious belief and politics. It will critically compare several authors on a variety of questions including the status of politics, its natural versus conventional status, whether religion is understood as natural theology or divine particular providence, whether reason and revelation can conflict, toleration of other religions, and what claims are made about the role of revealed religion in establishing political obligation. Readings will include parts of Plato "Laws," Augustine's "City of God," Aquinas' "Summa Theologica," Maimonides "Guide of the Perplexed," Alfarabi's "Plato's Laws," John Calvin's "Institutes of the Christian Religion," and selections from Martin Luther. Requirements will include two five-page seminar papers, four one-page commentaries, and a 20-page term paper due at the end of the semester.

60618. Plato's Laws
(3-3-0)

In this seminar we will explore the significance of the differences in the philosophical positions, political teachings, and pedagogical styles Plato presents in Socrates (especially the *Theaetetus*) and the Eleatic Stranger" (in the *Sophist and Statesman*). Students will be asked to write a major interpretive study as well as a critique of a recent critical work.

60621. Rousseau
(3-3-0)

In this graduate political theory seminar, we will read three of Jean-Jacques Rousseau's works that he composed and published almost simultaneously — *Julie* (1761), *Emile* (1762) and *On the Social Contract* (1762) — and ask whether or not they can be understood as substantively interrelated works of political theory. Students will write a 25-page research paper on Rousseau, a five-page book review of a major work of Rousseau scholarship, and give an in-class presentation based on the book review.

60622. Social Contract: Hobbes
(3-3-0)

The seminar reads one or more works by a major social contract theorist. (In recent years the seminar has treated one of the following: Hobbes, Locke, Rousseau, and Rawls). The aim is to achieve a critical understanding of the theorist's teaching on the relationships of individual, social, and political life. Participants are expected to take turns presenting short, tightly argued introductions to key passages with a view to focusing discussion on the principle interpretive and theoretical questions posed by the particular text under discussion. Each seminar participant is also expected to write a critical research paper adjudicating a disagreement in the relevant scholarly literature (usually two articles) on some issue.

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60623. Socrates
(3-3-0)

Who was Socrates, and what effect did he have on later history and thought? According to Cicero, Socrates was the first political philosopher; according to Nietzsche, he was a logical monster, a pessimist disguised as an optimist; according to Kierkegaard, he was a moral teacher, second only to Jesus. We will examine several of the Platonic dialogues leading up to Socrates' trial and death in an attempt to discover which of these or other later interpretations is correct.

60624. Theories of Law
(3-3-0)

What is law? What constitutes a just law? Is there any universally valid, moral foundation for law: human rights, natural law, a categorical imperative, etc.? Or is law purely 'positive,' a product of the will of those possessing political power, its justice merely a matter of following the established procedures? These questions constitute the core of this seminar. We will focus on the contemporary debates on these issues among legal theorists, in particular H.L.A. Hart (*The Concept of Law*) and John Finnis (*Natural Law and Natural Rights*), preparing to understand them better through careful study of Thomas Aquinas's writings on law and justice. There will be additional short readings from early modern theorists and American jurists as well.

60625. Theories of Modernity
(3-3-0)

"Modernity" today is a contested concept, embroiled in multiple and often conflicting interpretations. For some, modernity is the highway to social progress, the advancement of knowledge, and human liberation. For others, modernity is an aberration, a deviation from the path charted in ancient and medieval times—an aberration manifest in the "crisis of modernity." Still others view modernity as deficient but salvageable, or else as exhausted and obsolete (to be replaced by postmodernity). In our age of globalization, modernity also plays a crucial role in debates about Western colonialism and hegemony. The seminar seeks to chart a course through these debates. Beginning with a survey of some social science literature on modernity and modernization, the seminar turns to Jurgen Habermas's defense of modernity (as an "unfinished project") and to Charles Taylor's qualified defense. Discussion then shifts to critics of modernity, from Strauss, Voegelin, and MacIntyre to Adorno and Derrida. Some attention will also be given to non-Western critics of "Western" modernity. Some texts for the seminar are: Jurgen Habermas, *The Philosophical Discourse of Modernity*; M. Passerin d'Entreves and Seyla Benhabib, *Habermas And The Unfinished Project Of Modernity*; Charles Taylor, *A Catholic Modernity?*; Anthony Giddens, *The Consequences Of Modernity*; and Gary Gutting, *Pragmatic Liberalism And The Critique Of Modernity*. Selective reference will also be made to Agnes Heller, *A Theory Of Modernity*; Eric Voegelin, *Modernity Without Restraint*; Alasdair MacIntyre, *After Virtue*; Hans Blumenberg, *The Legitimacy Of The Modern Age*; and Scott Lasch, *Another Modernity*.

60810. Introduction to Quantitative Methods
(3-3-0)

This course is an introduction to the use of statistical methodology in the social sciences; it is not a course on statistics. The class emphasizes the role of statistics as a tool, rather than an end in itself. While we learn a variety of statistical techniques, the focus is upon the logic of these techniques rather than their mathematical intricacies. There will be a series of exercises and exams, coupled with a major project in which students will be required to gather and analyze data on an empirical problem of their choice.

60820. Advanced Quantitative Methods
(3-3-0)

Prerequisites: POLS 60810
Quantitative methods are often used to understand the behavior and interactions of individuals, governments, and nations. This course is designed to provide students with an understanding of the quantitative tools that are useful for doing quantitative political research. We will begin by reviewing the basics of statistical inference and the linear regression model, with a thorough discussion of the problems that arise in regression analysis and the solutions to those problems. The bulk of the course will be devoted to the following topics: Extensions to the basic regression model: simultaneous equations and time-series/cross-sectional models; maximum-likelihood techniques for modeling categorical dependent variables: logit/probit, ordered logit/probit, multinomial logit/probit, and count models; models for dealing with sample selection bias: tobit and Heckman models; techniques for modeling time-series data. Throughout, we will focus on understanding the theoretical underpinnings of the model and developing and evaluating applications of the models to substantive problems in political science. Students will be asked to do data-analysis exercises, to evaluate published research relying on quantitative techniques, and to do a research project on a topic of their own choosing.

60830. Qualitative Research Methods
(3-3-0)

This course seeks to expose students to current trends related to the use of qualitative methods in political science. It explores both the similarities and differences between idiographic research (or "Small-N" studies) and research based on statistical analyses. It also examines the myriad ways in which qualitative techniques like process-tracing, comparative case studies, content analysis, discourse analysis, and archival research can be successfully wedded to both statistical and formal approaches within one research design.

60860. Designing Research Projects: Practical Problems and Theoretical Issues
(3-3-0)

The course is intended to familiarize students with practical problems and options—as well as some underlying theoretical issues—encountered by social scientists in the course of qualitative or field research. Themes covered include consideration of the relationship between broad interpretive categories and specific empirical observations as well as the delineation of a research problem. Research strategies dis-

cussed include comparative historical work, historical case studies, observation, survey research, and qualitative interviewing. Students are asked to formulate a research proposal and to carry out practical exercises involving the use of several research strategies.

60870. Grant Writing for Social Sciences
(3-3-0)

This course will provide an overview of the grant writing process in the social sciences focusing on the deadlines and regulations of the funding institutions.

60880. Game Theory, Politics and Institutional Analysis
(3-3-0)

This course will focus on game theory as employed in empirical analyses of politics and institutions. It will cover some fundamental concepts of game theory: basic elements of games; several equilibrium concepts and different types of game. Selected applications include: explanations of political party competition, legislative decision making, the maintenance of democracy and constitutionalism, interethnic cooperation and conflict, differences in social norms, transitions from socialist to market economies, the political economy of reforms and the economics of sovereign debt.

63800. Proseminar
(3-3-0)

This is a required course for all first-year graduate students in the Department of Political Science. It is what is commonly called a "scope and methods" course; that is, a course designed to survey the great variety of themes and approaches in political science and to guide you through the fundamental debates about what political science is or should be. This course is also about democracy because the best way to teach about methods is to apply them to an interesting topic, and democracy is a topic of central interest to almost all of us these days. There is abundant literature that demonstrates the relevance of our course themes to democracy. Therefore, in the process of learning about the scope and methods of political science, this course will also familiarize you with some key ideas about what democracy is, what it could be, how it is changing, what causes it, and how we measure it.

66900. Directed Readings
(3-3-0)

Reading and research on specialized topics that are immediately relevant to the student's interests and not routinely covered in the regular curriculum. Letter grade given.

66903. Directed Readings
(0-0-0)

Reading and research on specialized topics that are immediately relevant to the student's interests and not routinely covered in the regular curriculum. Satisfactory/Unsatisfactory grade given.

67950. Examination Preparation
(0-0-0)

Preparation for comprehensive examination.

POLITICAL SCIENCE

78599. Thesis Direction
(0-0-0)

Research and writing on an approved subject under the direction of a faculty member for resident graduate students.

78600. Nonresident Thesis Research
(1-0-0)

Required of nonresident graduate students who are completing their theses in absentia and who wish to retain their degree status.

98699. Research and Dissertation
(0-0-0)

Independent research and writing on an approved subject under the direction of the director of graduate studies for resident graduate students.

98700. Nonresident Dissertation Research
(1-0-0)

Independent research and writing on an approved subject under the direction of the director of graduate studies for non-resident graduate students.

Faculty

Peri E. Arnold, *Professor and Director of the Hesburgh Program in Public Service*. B.A., Roosevelt Univ., 1964; M.A., Univ. of Chicago, 1967; Ph.D., *ibid.*, 1972. (1971)

Louis J. Ayala, *Assistant Professor*. B.A., Princeton Univ., 1995; Ph.D., Stanford Univ., 2001. (2001)

Sotirios A. Barber, *Professor*. B.A., Univ. of Illinois, 1964; M.A., Univ. of Chicago, 1966; Ph.D., *ibid.*, 1973. (1986)

Eileen Botting, *Assistant Professor*. B.A., Bowdoin College, 1993; B.A., Cambridge Univ., 1995; M.A., Yale Univ., 1997; M. Phil., *ibid.*, 1998; M.A., Cambridge Univ., 1999; Ph.D., Yale Univ., 2001. (2001)

David Campbell, *Assistant Professor*. B.A., Brigham Young Univ., 1996; M.A., Harvard Univ., 2001. (2002)

Barbara Connolly, *Assistant Professor and Fellow in the Nanovic Institute for European Studies*. B.A., Brown Univ., 1988; M.A., Univ. of California, Berkeley, 1990; Ph.D., *ibid.*, 1997. (2001)

Michael Coppedge, *Associate Professor, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Nanovic Institute for European Studies*. B.S., Randolph-Macon College, 1979; M.A., Yale Univ., 1982; Ph.D., *ibid.*, 1988. (1995)

Fred R. Dallmayr, *Professor Emeritus, the Packey J. Dee Professor of Political Science, Professor of Philosophy, Fellow in the Helen Kellogg Institute for International Studies, Fellow in the Joan B. Kroc Institute for International Peace Studies, and Fellow in the Nanovic Institute for European Studies*. LL.B., Univ. of Munich, 1955; M.A., Southern Illinois Univ., 1956; Ph.D., Duke Univ., 1960. (1978)

Ref. Robert Dowd, C.S.C., *Assistant Professor*. Ph.D., UCLA, 2003. (2004)

Alan K. Dowty, *Professor Emeritus and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Shimer College, 1959; M.A., Univ. of Chicago, 1960; Ph.D., *ibid.*, 1963. (1975)

Michael J. Francis, *Professor Emeritus, Director of the Latin America Area Studies Program, Professor, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Fort Hays State Univ., 1960; Ph.D., Univ. of Virginia, 1963. (1966)

Andrew C. Gould, *Associate Professor, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Nanovic Institute for European Studies*. A.B., Harvard Univ., 1985; M.A., Univ. of California, Berkeley, 1986; Ph.D., *ibid.*, 1992. (1993)

John Griffin, *Assistant Professor*. B.A., Boston College, 1990; J.D., Univ. of Colorado School of Law, 1995; M.A., Duke Univ., 2000. (2002)

Alexandra Guisinger, *Assistant Professor*. A.B., Harvard Univ., 1994; Ph.D., expected 2004. (2004)

Frances Hagopian, *the Michael Grace III Associate Professor of Latin American Studies*. B.A., Brandeis Univ., 1975; Ph.D., Massachusetts Institute of Technology, 1986. (1999)

Rodney E. Hero, *Chair of Political Science and the Packey J. Dee Professor of American Democracy*. B.S., Florida State Univ., 1975; M.A., Purdue Univ., 1976; Ph.D., *ibid.*, 1980. (2000)

Vittorio Hösle, *Paul Kimball Professor of Arts and Letters, and concurrent Professor of Philosophy and Political Science*. Ph.D., Tübingen, 1982. (1999)

Debra Javeline, *Assistant Professor*. B.A., Brown Univ., 1989; Ph.D., Harvard Univ., 1997. (2005)

Robert C. Johansen, *Professor, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Manchester College, 1962; M.A., Columbia Univ., 1963; Ph.D., *ibid.*, 1968. (1986)

Mary M. Keys, *Assistant Professor*. B.A., Boston College, 1988; M.A., Univ. of Toronto, 1989; Ph.D., *ibid.*, 1998. (1996)

Donald P. Kommers, *the Joseph and Elizabeth Robbie Professor of Political Science, Concurrent Professor of Law, and Fellow in the Nanovic Institute for European Studies*. B.A., Catholic Univ. of America, 1954; M.A., Univ. of Wisconsin, 1957; Ph.D., *ibid.*, 1962. (1963)

Keir Lieber, *Assistant Professor and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Univ. of Wisconsin-Madison, 1992; M.A., Univ. of Chicago, 1996; Ph.D., *ibid.*, 2000. (2001)

Daniel A. Lindley III, *Assistant Professor and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Tufts Univ., 1983; Ph.D., Massachusetts Institute of Technology, 1998. (1999)

George Lopez, *Professor of Political Science, Director of Policy Studies and Senior Fellow in the Joan B. Kroc Institute for International Peace Studies, and Fellow in*

the Helen Kellogg Institute for International Studies. B.A., Saint John Fisher College, 1972; Ph.D., Syracuse Univ., 1975. (1986)

Scott P. Mainwaring, *the Eugene and Helen Conley Professor of Political Science, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Yale Univ., 1976; M.A., *ibid.*, 1976; Ph.D., Stanford Univ., 1983. (1983)

A. James McAdams, *Director of the Nanovic Institute for European Studies, the William M. Scholl Professor of International Affairs, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Earlham College, 1976; M.A., Univ. of California, Berkeley, 1977; Ph.D., *ibid.*, 1983. (1992)

Anthony M. Messina, *Associate Professor, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Nanovic Institute for European Studies*. B.A., Assumption College, 1975; M.A., Drew Univ., 1977; Ph.D., Massachusetts Institute of Technology, 1984. (1999)

Peter R. Moody Jr., *Professor*. A.B., Vanderbilt Univ., 1965; M.A., Yale Univ., 1967; Ph.D., *ibid.*, 1971. (1971)

Walter J. Nicgorski, *Professor in the Program of Liberal Studies and Concurrent Professor of Political Science*. A.B., Georgetown Univ., 1960; M.A., Univ. of Chicago, 1962; Ph.D., *ibid.*, 1966. (1964)

David Nickerson, *Assistant Professor*. B.A., Williams College, 1997; Ph.D., Yale, 2005. (2005)

Guillermo O'Donnell, *the Helen Kellogg Professor of Political Science and Fellow in the Helen Kellogg Institute for International Studies*. LL.B., National Univ. of Buenos Aires, 1957; M.Phil., Yale Univ., 1971; Ph.D., *ibid.*, 1986. (1982)

Daniel Philpott, *Assistant Professor, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Univ. of Virginia, 1989; Ph.D., Harvard Univ., 1996. (2001)

Benjamin F. Radcliff, *Director of Graduate Studies and Professor*. B.A., Univ. of Illinois, 1984; M.A., *ibid.*, 1986; Ph.D., *ibid.*, 1991 (1991)

L. John Roos, *Professor*. B.A., Univ. of Notre Dame, 1965; M.A., Univ. of Chicago, 1968; Ph.D., *ibid.*, 1971. (1969)

Rev. Timothy R. Scully, C.S.C., *Professor, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Nanovic Institute for European Studies*. B.A., Univ. of Notre Dame, 1976; M.Div., *ibid.*, 1979; M.A., Univ. of California, Berkeley, 1985; Ph.D., *ibid.*, 1989. (1990)

David Singer, *Assistant Professor*. Ph.D., Harvard Univ., 2004. (2004)

Naunihal Singh, *Assistant Professor*. B.A., Yale Univ., Ph.D., Harvard Univ., 2004. (2004)

Alvin R. Tillery Jr., *Assistant Professor*. B.A., Morehouse College, 1993; Ph.D., Harvard Univ., 2000. (2000)

A. Peter Walshe, *Director of the African Studies Program, Professor, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Wadham College, Oxford Univ., 1956; M.A., Oxford Univ., 1959; D.Phil., *ibid.*, 1968. (1966)

Christopher J. Welna, *Director of Latin American Studies, Acting Director of the Kellogg Institute for International Studies, and Concurrent Assistant Professor*. B.A., Carleton College, 1978; M.A., Princeton Univ., 1982; Ph.D., Duke Univ., 1997. (1998)

Christina Wolbrecht, *the Packey J. Dee Associate Professor of Political Science*. B.A., Pacific Lutheran Univ., 1992; M.A., Washington Univ., 1994; Ph.D., *ibid.*, 1997 (1997).

Catherine Zuckert, *the Nancy Reeves Dreux Professor of Political Science*. B.A., Cornell Univ., 1964; M.A., Univ. of Chicago, 1967; Ph.D., *ibid.*, 1970. (1998)

Michael Zuckert, *the Nancy Reeves Dreux Professor of Political Science*. B.A., Cornell Univ., 1964; M.A., Univ. of Chicago, 1967; Ph.D., *ibid.*, 1974. (1998)

Psychology

Chair:

Cindy S. Bergeman

Director of Graduate Studies:

Dawn M. Gondoli

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The Program of Studies

The graduate program seeks a balance between training in basic research and the learning of skills in applied behavioral science, reflecting the underlying assumption that there is a common core of knowledge required for effective action within either sphere. The program consists of mastery in the general areas in psychology (such as cognition, perception, and social) and in basic methods (such as inferential statistics, research design, and the skills of scientific writing). Solid training in this core prepares the student to make an active contribution to scholarly research as academics or to solve problems in various community, clinical, or other nonacademic settings.

Graduate programs exist at the doctoral level in cognitive, counseling, developmental, and quantitative psychology.

I. Cognitive

Doctoral candidates in cognitive psychology can acquire knowledge in several areas of cognition, including human memory, attention, psycho-linguistics, perception, sensation, neuroscience, and higher order processes, as well as expertise in experimental methods and quantitative analysis.

II. Counseling

The Notre Dame doctoral program in counseling psychology is built upon a scientist-practitioner model of training, with an emphasis on using quantitative methods to understand psychological processes. It capitalizes on the traditional strengths of both counseling and clinical psychology in understanding developmental problems. The program trains academically oriented psychologists who appreciate how science and practice inform one another and how both are indispensable in the advancement of our discipline. The University Counseling Center and local community mental health agencies provide the settings for practicum experiences.

III. Developmental

Doctoral candidates in the developmental program study development of individuals and contexts (e.g., family, schools, and community) and how the two interrelate. A life-span perspective is emphasized. Typical as well as atypical development, normative transitions, and the impact of nonnormative events are examined. The methodology of developmental research is stressed and effort is made to generate knowledge and theory that have potential for application to social issues related to the development of individuals across the life span. The emphasis is on developing substantive knowledge bases necessary for careers in research and scholarship, in teaching, and in intervention. Concentrations in developmental psychology vary according to the specific interests of students and fit into three categories: cognitive development, socio-emotional development, and developmental disabilities and psychopathology.

IV. Quantitative

Doctoral candidates in the quantitative program receive advanced training in statistical methods and quantitative models applicable to psychology. The quantitative area emphasizes a wide range of topics, including traditional analysis of variance and regression, longitudinal analysis, structural equation modeling, dynamical systems modeling, and categorical data analysis. Quantitative students will typically apply these methods to a topic in a substantive area of psychology, such as cognitive, counseling, or developmental.

The psychology department places great emphasis on quantitative and methodological skills throughout all of its various programs and in the training of all of our graduate students. The quantitative student will receive advanced training in one or more areas of statistical or mathematical modeling and is encouraged to actively collaborate with faculty from other areas of the department on substantive research in order to develop a practical as well as theoretical understanding of methodology.

Curriculum

The graduate program in psychology is primarily oriented toward the doctoral degree and consists of two stages. The first requires a minimum of 24 hours of course work and completing and defending a research-based master's thesis. Course work includes enrollment in PSY 60100 and 60101 during the first year, and other courses as specified by departmental and program requirements. Upon completion of first-stage requirements, a student is eligible to receive a master's degree by completing the additional requirements of the Graduate School, department, and their particular program.

The second stage of the program ordinarily involves additional course work, research activity, practicum (where appropriate), and preparation for the doctoral preliminary examinations, followed by work on the dissertation and internship (in the counseling program). To fulfill the doctoral degree requirements, students must take Advanced Research Methods (PSY 60161) or Psychological Measurement (PSY 60121), one additional statistics course, and at least four graduate-level seminars and achieve a total of 72 or more credit hours. The written preliminary examinations and the oral dissertation proposal defense are ordinarily completed during the third or fourth year. The awarding of the doctor of philosophy degree requires: (1) satisfactory performance on the departmental preliminary examinations; (2) completion of course requirements with a B average; and (3) submission of an approved dissertation to the Graduate School. Additional requirements by the Graduate School, the department and the program may apply.

Special Facilities

Haggard Hall contains faculty offices, a variety of research laboratories, a faculty-student lounge, and classrooms. In addition, the University Counseling Center is available as a training facility for doctoral students in the counseling psychology program. Finally, the Center for Children and Families provides a dynamic context for the study of research and applied topics related to the welfare of children and families.

Application

In order to be considered for admission in August, applications and supporting materials must be received by January 2 of that year (the University's deadline is February 1). No applicants are considered for January admission. The program is oriented to students who plan to attend on a full-time basis. Applicants will be expected to have completed undergraduate courses in general and experimental psychology and statistics. Applicants must take the Graduate Record Examination. Advanced subject test in psychology is preferred, but not required.

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Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

60100. Quantitative Methods in Psychology I

61100. Quantitative Methods in Psychology I (Lab) (3-3-0)

Prerequisite: Elementary Statistics or its equivalent. All first-year psychology graduate students at Notre Dame are required to take a two-semester statistics sequence. The first semester begins with an introduction to descriptive statistics, probability theory, and statistical inference. Well-known one- and two-sample tests will be presented. In addition the course introduces students to regression analysis for analyzing the dependence of a continuous variable onto one or more other variables. Emphasis is given to an adequate specification of the regression model by including polynomial and interaction terms in the regression functions and to the evaluation of the regression model by means of model comparison and residual analysis. Students enrolled in 60100 must also enroll in the lab section 61100. (Fall)

60101. Quantitative Methods in Psychology II

61101. Quantitative Methods in Psychology II (Lab) (3-3-0)

The second semester of the required sequence focuses on experimental design and analysis of variance as a method for investigating mean differences among groups, whether or not the groups are formed experimentally. The course begins by developing principles for assessing the validity of various types of experimental and non-experimental approaches for investigating psychological phenomena. This semester continues the model comparison theme developed in the first semester by showing how questions of mean differences can be conceptualized in terms of various statistical models. Special emphasis is placed on repeated measures designs, including the multivariate approach to data analysis. Students enrolled in 60101 must also enroll in the lab section 61101. (Spring)

60105. Exploratory and Graphical Data Analysis (3-3-0)

The process by which Psychological knowledge advances involves a cycle of theory development, experimental design and hypothesis testing. But after the hypothesis test either does or doesn't reject a null hypothesis, where does the idea for the next experiment come from? Exploratory data analysis completes this research cycle by helping to form and change new theories. After the planned hypothesis testing for an experiment has finished, exploratory data analysis can look for patterns in these data that may have been missed by the original hypothesis tests. A second use of exploratory data analysis is in diagnostics for hypothesis tests. There are many reasons why a hypothesis test might fail. There are even times when a hypothesis test will reject the null for an unexpected reason. By becoming familiar

with data through exploratory methods, the informed researcher can understand what went wrong (or what went right for the wrong reason). This class is recommended for advanced students who are interested in getting the most from their data.

63110. Quantitative Minor (3-3-0)

This course is focused on methods and techniques for research in quantitative psychology. It is expected that a student in this class is planning to become actively involved in quantitative research as a supplement to their main substantive research goals. The goal of the class is to prepare the student to successfully complete a Quantitative Minor by: Reviewing the categories of methodological articles; Reading a variety of classic quantitative articles to give a sense of the scope of the field; Dissecting how a project leading to a methodological article is conceived, planned and performed; Introducing tools of use to the performance of a quantitative project; Introducing tools of use in writing a methodological article; Helping the student to conceive a project and get partnered with a faculty sponsor; and Providing editorial advice during the write-up of the project and preparation of the presentation for Quantitative Studies Group.

60121. Psychological Measurement (3-3-0)

Prerequisite: PSY 60100. This course introduces concepts from classical test theory, generalizability theory, and item response theory. Students review the foundations of test instruments construction from these three perspectives in creating self-report, standardized, and observation/interview measures. The course also highlights issues of equality across groups, assessing change versus measurement error, criterion-referenced tests, and clinical versus statistical prediction. (Every other spring)

60122. Measurement and Scaling (3-3-0)

This course studies methods for constructing scales for the measurement of psychological attributes. Subject-centered, stimulus-centered, and response approaches are considered.

60125. Multivariate Analysis (3-3-0)

This course is focused on methods and techniques for analyzing multivariate data. Emphases include both conceptual and computational aspects of the most commonly used analytic tools when one has multiple measures on the same experimental units. Derivations and advanced mathematical and statistical concepts will not be featured parts of the course but students will be expected to master the rationales behind the methods that will be covered to the extent that they can generalize the applications to novel problems and contexts. This course hopes to avoid the extremes of "cookbook analyses" on one hand and theorems and proofs on the other to provide generalizable working knowledge of multivariate statistics. The initial part of the course is committed to the essential operations of matrix algebra, a key language of multivariate analysis. Subsequently, a close look will be taken at the nature of linear combinations of variables. The remainder of the course will feature the application of techniques including Principal Components Analysis, Exploratory

Factor Analysis, Canonical Correlation, Logistic Regression, Linear Discriminant Analysis, and Multivariate Regression.

60130. Structural Equation Models (3-3-0)

The course provides an introduction to structural equation modeling. Participants are assumed to be familiar with basic statistics, the linear regression model, and multivariate analyses. Some background in matrix algebra is helpful but not necessary. The course aims at showing the flexibility of the general structural equation model, and covers path analysis, exploratory and confirmatory factor models, multi-group analysis, and longitudinal models. The emphasis is on translating conceptual hypotheses into structural equation models. The course aims at showing how to specify models using matrix algebra in order to provide the link between model specification and model estimation.

60135. Introduction to Categorical Data Analysis (3-3-0)

Categorical response variables are frequently encountered in the social sciences. Categorical data analysis is discussed using generalized linear modeling as a theoretical framework. The course starts with a brief review of the linear regression model, and an introduction to the generalized linear model. The different models for categorical data covered in this course include logit and probit models for binary data, log-linear models for contingency tables, models for ordered and unordered categorical responses with more than 2 categories, and simple models used in event history analysis (i.e. survival analysis). Throughout the course, theoretical lectures are complemented with illustrations of data analyses using Splus.

60142. Computational Statistics (3-3-0)

The objective is to develop skills in using computational intensive methods for research. This includes: (1) the ability to recognize situations where traditional statistical procedures such as the F-test in ANOVA or regression may not provide accurate or correct conclusions; (2) understanding of the value of the computational intensive methods such as bootstrap and jackknife; (3) being aware of limitations of different methods; (4) being able to use a program language to make your own "software". The topics covered are: Introduction (simulation and statistical inference); Bootstrap to standard errors and confidence interval (mean, regression, correlation); Estimating bias and bias-correction; Jackknife; Prediction error and cross-validation; Simulation-based testing; Newton-type algorithm; Iteratively reweighted least squares (IRLS); Missing data and EM-algorithm; Robust procedures.

60145. Dynamical Systems Data Analysis (3-3-0)

This course intends to give the student a practical working understanding of techniques for analysis of dynamical systems. The course begins with an overview of the concepts and theory behind dynamical systems. A variety of examples of dynamical systems from Developmental, Cognitive, and Clinical Psychology are presented. The class covers techniques for time series analysis including recurrence analysis,

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phase space reconstruction, Fourier transforms, and methods for testing for stationarity and ergodicity. Practical methods for determining optimal sampling lag, embedding dimension, fractal dimension and nonlinear dependency from a sampled time series are presented. The remainder of the course is devoted to the linear analyses of behavioral data by estimating parameters of differential equations models. Software used includes R, Mathematics, TISEAN, and Mx, as well as software developed by Dr. Boker.

60147. Introduction to Artificial Neural Networks (3-3-0)

This course is designed to provide an introduction to the broad field of Artificial Neural Networks (ANNs). This field involves models based on parallel networks of simple computing elements. There are three main branches to this field based on the specific goals for developing a computational model. (1) Cognitive Modeling. An ANN could be designed to illuminate properties of higher level cognitive processes such as memory, decision making, vision and language. In this case, an ANN is used to emulate a theory about a cognitive process in order that the behavior of the model can be compared with human behavior. This technique is best used in hopes of illuminating the consequences of competing theories about cognition. (2) Biologically Plausible Modeling. An ANN could be designed to model the actions of neurons as closely as possible in order to better understand neurophysiological functions. In this case, the actions of the model while it computes is of as much if not more interest than the outcome of the computation. These models are constructed so as to gain understanding of the consequences of changes to the parameters of models in larger aggregations of neurons than can be simultaneously recorded in vivo. There are some biologically plausible models that attempt to reproduce full, albeit simple behaviors of known neural circuits. (3) Nonlinear Statistical Modeling. An ANN could be designed to test statistical properties of a data set. One use for these ANNs is the analysis of statistical data from psychological experiments when distributional assumptions are not met.

60151. Factor Mixture Modeling (3-3-0)

Factor mixture models are advanced latent variable models which receive increasing attention in the literature. Knowledge in structural equation modeling, categorical data analysis, and classic multivariate techniques is a prerequisite. This course is designed as a workshop. Participants summarize and discuss recent articles and book chapters, which provide introductions to different types of factor mixture models, and which cover the strength and potential weaknesses of mixture models as well as applications to empirical data.

60155. Longitudinal Data Analysis (3-3-0)

The first reading in this course is a book chapter by John Nesselrode describing two fundamentally different ways of conceptualizing change: change in individual differences or individual differences in change. The former can be studied by such techniques as multiple regression and standard longitudinal applications of structural equation modeling, but

the latter requires a different approach. In particular, this course focuses on multilevel models (i.e., hierarchical linear modeling, or HLM) as a methodology for studying individual growth and individual differences in change.

60156. Longitudinal Data Analysis II (3-3-0)

This course is designed as an extension to Longitudinal Data Analysis I and it serves to cover a broad range of practical issues often encountered in fitting longitudinal models, including incomplete data, measurement invariance and how these issues are dealt with from a methodological standpoint. Beginning with models with a relatively long history in psychology (e.g., Markov models and cross-lag panel models), the class will then proceed to more recent modeling work pertinent to fitting (1) multivariate and nonlinear mixed effects models (2) equivalent growth curve models (3) differential and difference equations models and (4) time series models, including Kalman filter and related smoothing techniques.

60159. Advanced Issues in Statistics and Research Design (3-3-0)

This course focuses on special topics in statistics beyond the standard courses in the department's curriculum.

60160. Research Methods (3-3-0)

This course covers issues central to the conduct of research by counseling and clinical psychologists. Topics include research ethics and professional issues, measurement, design, and data analysis. Readings, assignments, class discussion, and lectures focus on the mastery of research skills, the development of research ideas, critical thinking, and collegiality. Evaluation includes exams, assignments, and the completion of a research proposal.

60161. Advanced Research Methods (3-3-0)

This course offers students an overview of philosophy of science, study design, threats to internal and external validity, measurement, qualitative research methods, and research ethics. Techniques of scientific writing and journal editing are described and practiced.

60181. Advanced Qualitative Research (3-3-0)

This course is about theory construction using ethnographic methods, especially to analyze instruction and student development.

60195. Grant Writing for Social Sciences (3-3-0)

This course will provide an overview of the grant writing process in the social sciences focusing on the deadlines and regulations of the funding institutions.

60196. Scientific Writing for Social Sciences (3-3-0)

Being able to compose a scholarly journal article, the most demanding of all professional writing tasks, is as important as research design and implementation.

Mastering journal article composition translates to other types of professional writing (e.g., proposal, grants). Becoming a professional in a discipline requires scholarship in research (i.e., developing the insight into how a research project advances knowledge in a discipline) and rhetorical skill (i.e., conveying the nuances acceptable by established scientific standards). This course is designed toward the objectives of developing critical thinking and perfecting the writing skill prerequisite to successful journal article writing.

60200. Theories of Development Across the Life Span (3-3-0)

A survey of the issues, theories, and research relevant to human psychological change across the life span.

60240. Theories of Moral Development and Identity (3-3-0)

Readings will cover diverse perspectives on the nature of moral development and identity, with a special emphasis on Catholic moral identity. Theories include perspectives within psychology, major religious traditions, classic and modern theories. Students will compare and contrast theories, formulate a personal theory, design a research study, and implement a spiritual practice to their own identity development.

60241. Moral Development and Character Education (3-3-0)

We review research and theory on moral identity development and its implications for character development and education. Students will select an aspect of moral character to study, reporting on their findings and designing a research study.

60243. Moral Psychology (3-3-0)

Moral development and education as an introductory course to the field of moral psychology, we examine major research traditions. We study the theoretical underpinnings, goals, and practices of major approaches to moral education.

60250. Cognitive Development (3-3-0)

Major theories in cognitive development and data relevant to those theories are reviewed. Mechanisms that might account for observed developmental changes across the life span (e.g., processing speed) are discussed.

60261. Socioemotional Development II (3-3-0)

In this course we will examine selected aspects of socioemotional development during adolescence and adulthood. Within these broad age outlines, the course will also have a lifespan emphasis. Common foci from adolescence to late adulthood will include attachment, social support, autonomy and interdependence, family and friend relationships, romantic and marital relationships, affect regulation, and gender differences and similarities in socioemotional development. We will read and discuss theoretical, empirical, and methodological chapters and articles.

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The major goals of the course are to cover areas that are relevant to Developmental Psychology and to your own research areas.

60270. Research and Theory in Mental Retardation (1-1-0)

Current research literature in mental retardation with emphasis devoted to the types of theories and methodologies being employed.

60280. Children and Families in Conflict (3-3-0)

Current trends and findings pertaining to constructive and destructive conflict within families, and the effects of conflicts within families on children, will be considered. A focus will be on interrelations between family systems (marital, parent-child and sibling), and methodologies for studying these questions. A particular concern will be how positive and negative conflict processes in the marital relationship affects families, marriages and children. The role of interparental conflict in various family contexts (divorce, parental depression, violence and abuse, custody, physical illness or disability), and relations between family and community conflict and violence, will be examined. The positive side of family conflict will be considered, including the elements of constructive marital and family conflict, and psycho-educational strategies for promoting for constructive conflict processes within families. Theories and models for conceptualizing the effects from a family-wide perspective will also be considered. Including consideration of a family-wide perspective on emotional security. Requirements: Class attendance, active participation in class discussions and activities, including leading discussions on articles in small groups, participation and report of the results of small-scale field studies in small groups, completion of a review paper on a topic in this area, and completion of midterm and final in-class exams.

60281. Developmental Psychopathology and Families (3-3-0)

This course articulates principles for a life-span perspective on the origins and development of individual patterns of adaptation and maladaptation. (Spring)

60290. Socio-Emotional Development I (3-3-0)

Current research and theory in social and emotional development in infancy and early childhood are reviewed. Some of the topics covered include: attachment, temperament, emotion regulation, parenting and family issues, and peer relationships.

60299. Supervising Teaching (1-1-0)

For the professional development of graduate students.

60310. Adult Psychopathology (3-3-0)

This course covers classic and contemporary theories and research about DSM-IV forms of adult psychopathology. (Spring)

60311. Theories of Psychotherapy (3-3-0)

Students will be introduced to the key research methods, empirical findings, and theories from the clinical/counseling psychology literature. Prospects for developing and testing new theories of psychotherapy will be discussed. Students will be encouraged to begin forming concepts for research projects and developing their own integrated theoretical approaches to treating clients. (Fall)

60320. Individual Personality Assessment (3-3-0)

This course focuses on the science and practice of psychological assessment. Students become familiar with current theoretical and empirical issues in assessment, learn about assessment methods for intellectual and personality assessment, and practice the application of a variety of approaches to assessment.

60323. Adult Personality Assessment (3-3-0)

This course is a continuation of PSY 60320 and focuses on more complex issues in psychological assessment of adults. Topics include projective testing, neuropsychological screening, learning disabilities, assessment responses to specific questions (i.e., potential for violence, dementia vs. depression), and an introduction to forensic assessment issues (i.e., parenting, competency). This course assumes prior understanding of basic assessment techniques such as intelligence and achievement testing, self-report personality inventories, and basic report writing skills.

60329. Neuropsychological Assessment (3-3-0)

This course covers brain physiology and normal and abnormal neuropsychological functioning. In addition, procedures for assessing the integrity of neuropsychological functioning are described.

60331. Clinical Skills and Interventions (1-3-0)

This course focuses on the empirical foundations of counseling, with emphasis on the skills important to the various phases of counseling – from rapport-building, through exploration, insight, and action, to termination. This course also informs the student of the roles and meaning of clinical dynamics and the therapeutic process. As such, there are three primary purposes of this course: 1) to facilitate understanding of the therapeutic premises and research bases of the fundamental skills used by professional psychologists, 2) to increase the student's facility with each skill through structured practice and feedback, and 3) to enhance the student's ability to assess, manage, and work effectively with clinical dynamics and the therapeutic process. Additionally, in preparation for the subsequent practicum experience, a number of professional training seminars presented by practicing psychologists are integrated into the course. (Spring)

60335. Group Dynamics (3-3-0)

Group Dynamics will review interpersonal theories of personality, human interaction, and theories of group development and group dynamics. Research on group dynamics and approaches to the assessment of group development will also be covered. In addition, these theories and research data will be viewed in applied settings such as group therapy, family therapy, and consultation in organizations. Students will present research in a relevant area of interest, write a paper on that topic, participate in class exercises in which roles are played, and write short reaction papers based on those exercises.

63339. Marital Therapy Seminar (3-3-0)

This didactic course covering the principles and practice of couples therapy prepares trainees for the companion practicum (61394), through which they will subsequently carry cases at the Marital Therapy and Research Clinic. Sample topics include communication, problem-solving, domestic violence, parenting, and sex/intimacy.

60340. Diversity Issues: Gender, Race, Sexuality (3-3-0)

This course provides students with theory, knowledge, and skills in diversity issues pertaining to clinical and counseling psychology. (Spring)

60341. Multicultural Issues in Psy (3-3-0)

This course provides students with theory, knowledge, and skills in diversity issues pertaining to clinical and counseling psychology

60350. History and Systems of Ethics (3-3-0)

This course has two sections. The first covers historical trends and influential theorists in psychology. The second covers ethical and professional issues involved in psychological research and practice. In the latter section issues of ethics, ethnicity, and culture are reviewed. (even years, Fall)

60365. Sport and Exercise Psychology (3-3-0)

This course will cover the foundations of sport and exercise psychology, which examines people and their behaviors within sport and physical activity contexts from a group and individual perspectives. This class will be taught using a variety of lecture methodologies (75%), group discussion & activities, as well as utilizing an occasional guest speaker. Students will be expected to attend and participate in class and complete writing, applied projects, and exams.

This course will cover the foundations of sport and exercise psychology, which examines people and their behaviors within sport and physical activity contexts from a group and individual perspectives. This class will be taught using a variety of lecture methodologies (75%), group discussion & activities, as well as utilizing an occasional guest speaker. Students will be expected to attend and participate in class and complete writing, applied projects, and exams.

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60520. Cognitive and Affective Neuropsychology (3-3-0)
This course will survey the biological bases of cognition and emotion. The primary objective of this course will be to understand how human cognitive and affective behaviors are mediated in cortical and subcortical foci in the brain. Particular attention will be paid to cognitive and affective deficits that result from brain trauma and disease.

61385. Practicum I (3-0-0)
Supervised clinical practicum for second-year doctoral students in counseling psychology. (Fall)

61386. Practicum II (0-0-3)
Supervised clinical practicum for second-year doctoral students in counseling psychology. (Spring)

61387. Practicum III (3-0-0)
Supervised clinical practicum for third-year doctoral students in counseling psychology. (Fall)

61388. Practicum IV (3-0-0)
Supervised clinical practicum for third-year doctoral students in counseling psychology. (Spring)

61389. Practicum V (3-0-0)
Supervised clinical practicum for fourth-year doctoral students in counseling psychology. (Fall)

61390. Practicum VI (3-0-0)
Supervised clinical practicum for fourth-year doctoral students in counseling psychology. (Spring)

61394. Marital Therapy Practicum (3-0-0)
Trainees who have successfully completed the Marital Therapy Seminar (61339) register for this supervised practicum every semester. They carry cases at the Marital Therapy and Research Clinic.

62199. Quantitative Studies Group (1-1-0)
Quantitative Studies Group is a weekly seminar in which original quantitative work of students and faculty are presented, at which quantitative articles are read and discussed, and to which guest speakers are invited.

63161. Personality (3-3-0)
This course considers the history and background of the study of personality as well as the influence that heredity, culture, learning, and motivation have on the development of personality throughout the life span. It also deals with personality abnormality, perceptual-cognitive influences on personality, creativity, and other topics. (Spring)

63292. Seminar in Positive Psychology (3-3-0)
This seminar examines current research and theory in the emerging field of Positive Psychology. Topics include eudaimonic and hedonic theories of well-being. These theories provide conceptual starting points for understanding the multidimensional nature of well-being, which include having positive self regard, good-quality relationships with others, a sense that life is purposeful, the capacity to effectively manage one's environment, the ability to follow inner convictions, a sense of continuing growth, the experience of frequent pleasant emotions and infrequent unpleasant emotions, and a general sense of life satisfaction. These topics are examined with respect to their underlying biological, cognitive, social, economic, existential, and cultural processes and their potential importance in understanding adaptation and health.

63311. Science and Practice Seminar (1-2-0)
Classic and contemporary topics in the science and practice of counseling psychology. Topics rating by semester. Typical topics include idiographic versus nomothetic research, clinical versus actuarial prediction, evidence based practice, and manualized treatment.

63410. Seminar in Spatial Cognition (3-3-0)
Have you ever gotten lost trying to navigate through a new environment or had difficulty in following directions? Can you easily give directions when someone asks you how to get somewhere? If you are following a map, do you turn it as you turn, or hold it in a fixed orientation? All of these processes involve relating your own spatial location to objects and landmarks in the external world. This seminar in spatial cognition will examine how we accomplish this, focusing on such issues as following directions, giving directions, using maps, mentally representing environments, and wayfinding.

63430. Graduate Seminar: Attention (1-1-0)
This course will examine the cognitive, neural, and computational basis of executive control processes. The course will cover readings from basic cognitive science and cognitive neuroscience as well as reports of the effect of neurological disorders on executive control. Class time will be split between discussion of readings and presentations of research ideas by students. The course will require weekly writing assignments and a longer term paper.

63440. Grad Seminar: Perception (1-1-0)
Advanced graduate seminar.

63450. Cognitive Core Seminar (3-3-0)
Advanced graduate seminar.

63455. Psycholinguistics (3-3-0)
This course will provide students with knowledge of current theories and research in psycholinguistics. Five core areas will be examined: the recognition of spoken and written words, language comprehension and production, and language acquisition. Each area will explore the use of both empirical techniques and computational (mathematical) models to test and inform theories.

63460. Concepts in Visual Neuroscience (3-3-0)
This seminar will provide an overview of contemporary theories, concepts and models in neuroscience, with an emphasis on vision. It will outline the different approaches that are used to understand neural information processing in the visual system. Some time will be spent discussing contemporary trends in neuroscience, along with the contributions from and influences of multiple relevant disciplines, including psychology, biology, and artificial intelligence. A central argument will be that there is still no coherent framework or single concept of neural processing, and the seminar will use this argument as a motivation to ask new questions, model an innovative network structure, or maybe just follow one of the existing approaches. We will occasionally examine studies that have successfully implemented some of the models into analog electronic circuits, allowing so for their real-time emulation.

63510. Behavioral Genetics (3-3-0)
An introduction to the principles necessary to understand genetic and environmental influences on development, with an overview of the methods and research.

63641. Motivation and Academic Learning (3-3-0)
Traditional studies of learning have focused almost exclusively on cognitive, or "cold," processes. Recent research on learning illustrates how "hot" processes also influence thinking and academic learning. In this course, we focus on how social, motivational, and emotional influences interact with cognitive processes to affect academic learning. Social influences will include students' social goals in school, friendships, and family dynamics. Motivational influences are explored through the study of major theories of achievement motivation, including attribution, self-efficacy, intrinsic motivation, "possible selves," and goal theories. Emotional factors such as coping mechanisms, test anxiety, and well-being also are discussed. In addition, we explore how development affects students' social, motivational, and emotional responses to learning. Child, adolescent, and adult models are discussed, and applications to educational child settings will be an integral part of the course.

63650. Graduate Seminar: Introduction to Teaching (1-1-0)
Designed to be taken concurrently with the first two semesters of a student's teaching assistantship, ordinarily in years one, two, or three. It will meet five times (approximately every third week) per semester for 1-1/2 hours. The primary goals of the course are to orient students to the profession of teaching, assist

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them in their assigned tasks as TAs, and practice the skills of observing and reflecting on their experiences in the classroom setting. An additional five hours of observing/interviewing in other departments of the University and in local schools/colleges/universities will be required. The courses will be graded Satisfactory or Unsatisfactory. N.B. Those who are assigned teaching assistantships, but who do not plan to take the above course for credit, would be welcome to participate as fully as they wish in the meetings, especially the processing of their experience as TAs, but they would not be responsible for any materials or activities outside these meetings.

63651. Graduate Practicum: Course Planning
(3-3-0)

Students will meet on a regular basis as they prepare to be the instructor of record in an Intro or Stats/Methods or 30000-level content course (e.g., abnormal, developmental, cognitive, etc.). Ordinarily, students will have their teaching assignment for the following year by this point and can focus on a specific preparation. They will write objective, create syllabi, critique planned assignments, design tests, discuss grading, etc. In conjunction with the current instructor of record, they may be responsible for giving a lecture/presenting a unit in the instructor's class. Grading is S/U. (Offered every spring for students in their second year or beyond.)

65275. Sign Language
(3-3-0)

The American Sign Language class is designed to introduce basic vocabulary and simple sentence structure for conversational use. A cultural view is presented to examine traditions and values. A linguistic view is presented to introduce structure, syntax and manual alphabet. Experiential activities, receptive and expressive exercises and fluency opportunities are incorporated into the format. This is an introductory class for students with no prior knowledge of American sign language.

65335. Supervision of Counseling
(3-3-0)

An examination of strategies for supervising counseling as well as practice at being a supervisor of counseling activities. (odd-years, Fall)

65395. Non-Resident Internship in Counseling Psychology
(0-0-1)

Full-time pre-doctoral internship in counseling psychology for students interning away from campus. (Every year)

65396. Resident Internship in Counseling Psychology
(0-0-1)

Full-time pre-doctoral internship in counseling psychology for students interning on-campus. (Every year)

78820. Thesis Direction
(0-0-0)

For students doing work for a research master's degree, maximum of six hours allowed.

78821. Nonresident Thesis Research
(1-1-0)

For master's degree students.

78840. Seminar: Special Topics
(0-0-0)

Topics and prerequisites to be specified by the instructor.

78841. Research/Special Topics
(0-0-0)

Topics and prerequisites to be specified by instructor.

78842. Reading/Special Topics
(0-0-0)

Topics and prerequisites to be specified by instructor.

98825. Research and Dissertation
(0-0-0)

For resident graduate students who have completed all course requirements for the Ph.D.; maximum of 12 hours allowed.

98826. Nonresident Dissertation Research
(1-1-0)

For doctoral students.

Faculty

Cognitive Area

Laura A. Carlson, *Associate Professor*. B.A., Dartmouth College, 1987; M.A., Michigan State Univ., 1991; Ph.D., Univ. of Illinois, 1994. (1994)

Charles R. Crowell, *Associate Professor and Director of the Computer Applications Program*. B.A., Univ. of Notre Dame, 1969; M.A., Univ. of Iowa, 1972; Ph.D., *ibid.*, 1973. (1974)

William E. Dawson, *Associate Professor*. B.S., Wayne State Univ., 1961; M.A., *ibid.*, 1963; Ph.D., Harvard Univ., 1968. (1969)

Kathleen M. Eberhard, *Assistant Professor*. B.A., Univ. of Rochester, 1987; M.A., Michigan State Univ., 1991; Ph.D., *ibid.*, 1993. (1996)

Bradley S. Gibson, *Associate Professor*. B.S., Colorado State Univ., 1982; Ph.D., Univ. of Arizona, 1992. (1994)

Gabriel A. Radvansky, *Associate Professor*. B.A., Cleveland State Univ., 1987; M.A., Michigan State Univ., 1989; Ph.D., *ibid.*, 1992. (1993)

Robert L. West, *Assistant Professor*. B.A., Western Kentucky Univ., 1991; M.A., *ibid.*, 1993; Ph.D., Univ. of South Carolina, 1996. (1999)

Counseling Area

Willis E. Bartlett, *Associate Professor Emeritus*. B.S., Ohio State Univ., 1960; M.A., *ibid.*, 1962; Ph.D., *ibid.*, 1967. (1968)

Alexandra Corning, *Assistant Professor*. B.S., Univ. of Florida, 1988; M.S., Loyola Univ., 1990; Ph.D., Ohio State Univ., 1994. (2000)

Kathleen C. Gibney, *Assistant Professional Specialist*. B.A., Notre Dame College, 1982; M.A., Rivier College, 1983; Ph.D., Northeastern College, 1993. (2005).

George S. Howard, *Professor, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Marist College, 1970; M.A., Southern Illinois Univ., 1972; Ph.D., *ibid.*, 1975. (1981)

Anita E. Kelly, *Professor*. B.S., Northwestern Univ., 1986; M.S., Univ. of Florida, 1988; Ph.D., *ibid.*, 1991. (1994).

Irene J. Kim, *Assistant Professor*. B.A., Wesleyan Univ., 1993; M.A., UC Santa Barbara, 1998; Ph.D., *ibid.*, 2001. (2003)

Sheridan P. McCabe, *Associate Professor Emeritus*. A.B., St. Mary's Seminary, 1952; S.T.B., *ibid.*, 1954; M.A., Catholic Univ. of America, 1956; Ph.D., *ibid.*, 1958. (1967)

Naomi M. Meara, *the Nancy Reeves Dreux Professor of Psychology Emerita*. B.A., Ohio State Univ., 1958; B.Sc., *ibid.*, 1960; M.A., Syracuse Univ., 1962; Ph.D., Ohio State Univ., 1967. (1986)

Thomas V. Merluzzi, *Professor*. A.A., St. Thomas Seminary, 1966; M.A., Ohio State Univ., 1971; Ph.D., *ibid.*, 1975. (1974)

Donald Pope-Davis, *Associate Vice President for Graduate Studies and Associate Dean of the Graduate School, Professor of Psychology, Director of McNair Program, Fellow in the Center for Social Concerns, and Fellow in the Institute for Educational Initiatives*. B.A., Illinois Benedictine College, 1976; M.Sc., Indiana Univ., 1978; Ph.D., Stanford Univ., 1989. (2000)

David A. Smith, *Associate Professor, Director, Marital Therapy and Research Clinic*. B.A., Univ. of Minnesota, 1983; M.A., *ibid.*, 1986; Ph.D., State Univ. of New York, Stony Brook, 1991. (1997)

William F. Tageson, *Associate Professor Emeritus*. B.A., San Luis Rey College, 1948; M.A., Catholic Univ. of America, 1955; Ph.D., *ibid.*, 1960. (1969)

Developmental Area

Cindy S. Bergeman, *Chair and Professor*. B.S., Univ. of Idaho, 1979; M.S., Pennsylvania State Univ., 1987; Ph.D., *ibid.*, 1989. (1990)

John G. Borkowski, *the McKenna Family Professor of Psychology and Fellow in the Institute for Educational Initiatives*. A.B., St. Benedict's College, 1960; M.A., Ohio Univ., 1962; Ph.D., Univ. of Iowa, 1964. (1967)

Julia M. Braungart-Rieker, *Associate Professor, and Associate Dean of Research, Graduate Studies and Centers*. B.S., Syracuse Univ., 1987; M.S., Pennsylvania State Univ., 1990; Ph.D., *ibid.*, 1992. (1992)

E. Mark Cummings, *Professor and the Notre Dame Endowed Chair in Psychology, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Johns Hopkins Univ., 1972; M.A., Univ. of California, Los Angeles, 1973; Ph.D., *ibid.*, 1977. (1996)

Jeanne D. Day, *Professor*. B.A., UC San Diego, 1974; M.A., Univ. of Illinois, 1977; Ph.D., *ibid.*, 1980. (1980)

Dawn M. Gondoli, *Director of Graduate Studies and Associate Professor*. B.A., State Univ. of New York at Buffalo, 1986; M.S., Univ. of Arizona, 1991; Ph.D., *ibid.*, 1994. (1996)

Darcia Narváez, *Associate Professor and Director of Center for Ethical Education*. B.A., Univ. of Northern Colorado, 1976; M.Div., Luther Northwestern Seminary, 1984; Ph.D., Univ. of Minnesota, 1993. (2000)

John Francisco Dos Santos, *Professor Emeritus*. B.S., Tulane Univ., 1948; M.S., *ibid.*, 1952; Ph.D., *ibid.*, 1958. (1965)

Julianne C. Turner, *Associate Professor and Concurrent Associate Professor in the Institute for Educational Initiatives*. B.A., College of New Rochelle, 1968; M.Ed., Boston College, 1975; Ph.D., Univ. of Michigan, 1992. (1995)

Thomas L. Whitman, *Professor*. B.S., St. Norbert College, 1962; M.A., Univ. of Illinois, 1965; Ph.D., *ibid.*, 1967. (1967)

Quantitative Area

Steven M. Boker, *Associate Professor*. B.S., Univ. of Denver, 1972; M.A., Univ. of Virginia, 1994; Ph.D., *ibid.*, 1996. (1996)

Rev. William A. Botzum, C.S.C., *Professor Emeritus*. B.A., Univ. of Notre Dame, 1938; Ph.D., Univ. of Chicago, 1950. (1948–51, 1966)

Chow, Sy-Miin, *Assistant Professor*. B.S., Drexel University, 1998; M.A., University of Virginia, 2002; Ph.D., *ibid.*, 2004. (2005)

Gitta H. Lubke, *Assistant Professor*. B.S. Johann Wolfgang Goethe University, 1979; M.A., University of Amsterdam, The Netherlands, 1997; Ph.D., *ibid.*, 2002. (2004)

Scott E. Maxwell, *the Matthew A. Fitzsimons Professor of Psychology*. B.S., Duke Univ., 1972; M.A., Univ. of North Carolina, 1974; Ph.D., *ibid.*, 1977. (1982)

Anre Venter, *Associate Professional Specialist*. B.A., Univ. of Cape Town, 1980; M.A., Univ. of Notre Dame, 1994; Ph.D., *ibid.*, 1996. (1996)

Ke-Hai Yuan, *Associate Professor*. B.S., Beijing Inst. of Technology, 1985; M.A., *ibid.*, 1988; Ph.D., UCLA, 1995. (2001)

Sociology

Chair:

Daniel J. Myers

Director of Graduate Studies:

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The Program of Studies

The Department of Sociology offers training leading to the conferral of two graduate degrees: the master of arts (M.A.) and the doctor of philosophy (Ph.D.). Although the M.A. degree is available to graduate students, admission is given to applicants whose goal is the doctorate.

The principal aims of this graduate training are to educate students in the theory and methods of social science, and to develop in them a competence as professionals in specific fields of sociology. A mastery of sociology in general and a strong background in the techniques that are used in scholarship and teaching in the discipline will enhance the potential of graduates for employment as academic and applied researchers, as instructors in colleges and universities, and as practitioners in government and the private sector.

Preference for admission to the graduate program in sociology is given to students who have taken social science at the undergraduate level. A course in elementary statistics is also preferred. If a student does not have this course, it may be made up while in graduate school.

The M.A. degree requires 30 hours of credit, of which six credit hours may be earned for the master's thesis. All students must complete and defend a research thesis for the master's degree.

The doctoral program normally occupies four years of full-time work for students with the bachelor's degree. Core requirements must be fulfilled in the first two years according to scheduled sequencing. Intensive independent study in the student's field of specialization is generally initiated in the second year. It is expected that the student will have completed all but the dissertation requirement by the conclusion of the third or fourth year of graduate study.

Several basic courses are required of all students who enter with only a bachelor's degree; in addition, they are required of other students who cannot demonstrate previous equivalent work at the graduate level. These courses include: one semester of classical sociological theory, for three credit hours; a one-semester overview of sociological methods, for three credit hours; one semester of advanced social statistics (SOC 63993), for three credit hours (the student must have taken a more elementary statistics course as a prerequisite, or have received the permission of the instructor); a proseminar, extending across two

semesters for a total of three credit hours (includes an introduction to faculty and facilities at the University and sessions on professional skills such as computing); and one semester of participation in a research practicum for a total of three credit hours.

Students are required to take at least four seminars, including at least one from each of the following two divisions: (1) advanced seminars in sociological theory and (2) advanced seminars in sociological methods or social statistics.

Beyond these, students may choose their areas of specialization in sociology, but the department is particularly strong in methodology and statistics, theory, organizations, social psychology, family, sociology of religion, comparative historical, political sociology, sociology of education, and sociology of culture.

If the emphasis and needs of the student's interests require course work in other departments, the student may undertake such courses with the approval of his or her adviser and the director of graduate studies. It is also possible for the student to construct specialty areas provided faculty specialization is available.

To fulfill the training and research requirements, each candidate must select two specialty areas and pass a comprehensive examination in each. Dissertation research must be undertaken in at least one of the specialty areas.

Faculty members in sociology are affiliated with various institutes and centers providing additional opportunities for graduate studies: the Center for Research on Educational Opportunity, the Helen Kellogg Institute for International Studies, the Erasmus Institute, the Institute for Latino Studies, and the Nanovic Institute for European Studies.

Teaching and research assistantships, fellowships for applicants from minority groups, dissertation-year fellowships, and tuition scholarships are available.

For a more detailed description of the graduate program requirements, the student is urged to send for a copy of the department's special bulletin.

Course Descriptions

Each course listing includes:

- Course number
- Title
- (Credits per semester—lecture hours per week—laboratory or tutorial hours per week)
- Course description

63020. Organizations (3-3-0)

This seminar is an in-depth introduction to theories of and research on organization. Theoretical perspectives on social organization examined include functionalism, systems theory, contingency models, action frameworks, and both Marxian and Weberian approaches. The utility of theoretical perspectives is assessed by examining organizational dynamics. Among the topics investigated are goals and strate-

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gies, technologies, decision making, conflict, power, legitimation processes, forms of control, and organization-environment relations.

63035. Armies and Politics
(3-3-0)

This course provides students with theory, knowledge, and skills in diversity issues pertaining to clinical and counseling psychology. (Spring)

63037. Latin American Political Economy and Institutions
(3-3-0)

This course examines the political and institutional framework underpinning the transition to an economic order in which market forces play a predominant role in the allocation of resources throughout Latin America. After reviewing the post-war economic model of protected, state-led industrialization and contending theoretical perspectives on economic liberalization, it analyzes the roles of various political and social actors and institutions in shaping first and second generation economic reforms. The focus is on the executive, party, legislative, and sub-national political institutions that shape and constrain state and market-oriented reform and economy policy-making. The latter part of the course examines the impact of economic liberalization on electoral colleges, political representation, and the changing foundations of citizen association and participation.

63038. Armies and Politics
(3-3-0)

This course examines the role of the armed forces in politics. The purpose of this course is not just to cover the material traditionally associated with civil-military relations, but also to consider new ways in which the military is important to the study of politics. We will cover a range of topics including coups d'etat, military rule, transitions to democracy, theories of civilian control, the role of the military in state formation, the effects of the cultural gap between civilians and the military, and the role of the military in state failure. Cases will be drawn from both the developed and developing worlds, with special attention paid to examples from the United States, Latin America and Africa. A variety of different approaches to the military will be employed, including sociological, institutional, and political economy perspectives.

63056. Democratic Theory & Comparative Politics
(3-3-0)

This is a graduate seminar. We will read and discuss some of the most relevant and/or interesting contemporary theories about democracy, without fully neglecting some important predecessors. The purpose is to arrive to an enlightened - but not necessarily consensual - understanding of present-day democracy and its main issues and conceptions. For this purpose, several comparative incursions will be apposite.

63065. Comparative Research on Democratization
(3-3-0)

One of the central tasks in the study of politics has long been to explain the birth, survival, and breakdown of democracy. [Note: This course does not cover the consequences of democracy.] Over the

years, scholars have offered dozens of hypotheses, focusing on culture, institutions, leadership, religion, ethnic cleavages, diffusion, dependency, social equality, economic development, or various combinations of several of the above. Clearly the problem has not been the difficulty of dreaming up explanations, but the difficulty of demonstrating which one or ones are correct. In their efforts to support some of the possible explanations, political scientists and sociologists have employed nearly every research method imaginable, and in recent years an escalation of methodological sophistication has taken some research on democratization to the cutting edge of comparative politics. A roughly chronological selection of this literature can therefore serve as a springboard for discussions about both practical questions of research design and methods, and the fascinating and timely theoretical question of what causes democracy--which are the twin topics of this course. In addition to reading and discussing selected works on democratization, you are required to (1) carry out 5 small exercises to give you practice in critiquing research, generating theory, and testing hypotheses; and (2) perform original research culminating in a 15 to 25-page paper on some question of the determinants of democracy. I will offer in-class workshops on the data analysis techniques that you will need to do each exercise, and will also meet privately with anyone wishing an individualized tutorial on the technique.

63081. Politics and Economics in Postindustrial Societies
(3-3-0)

This course investigates the nexus between politics and economics in the postindustrial societies. After a brief discussion of the theoretical principles of economic liberalism, the course focuses on the impact of economic actors and conditions on politics and the political and economic consequences of the organization of the world economy along free market principles. It concludes by scrutinizing the relationship between domestic politics and the project for deeper economic integration in the case of the European Union.

63091. Proseminar
(2-2-0)

Designed to acquaint first-year graduate students with the resources available in the department and at the University to assist them with their research. The key component of the seminar is a series of presentations by faculty on their current research.

63125. Sociology of Culture
(3-3-0)

Do cultures reflect societies? Do social institutions reflect culture? Or are social institutions themselves culture? What part does culture play in consensus formation, in domination, and in resistance? How has the relation between culture and social institutions changed?

We will survey some of the central issues in the sociology of culture, and their implications for sociological analysis and understanding more generally. We will review classic statements of the relation between culture and institutions, and exemplars in the renaissance of sociological work on culture. Case studies

will illustrate different approaches. According to student interest, these may be selected from work on specialized cultural institution like art and the mass media, or from more broadly based studies of meaning and value.

63137. Materialism, Consumption, and Meaning in Modern Life.
(3-3-0)

In the twentieth-century the twin problems of meaning and materialism have come to the forefront of modern civilization, forming the basis of a variety of philosophies and social theories, animating revolutionary movements in art, looming as the silent specter behind mass society and its dramas of consumption. It is by no means clear that the massive technological advances and materials gains in advanced industrial societies have contributed to a better way of life -- many would say increased meaninglessness is the actual result.

By exploring the rise of the modernist world view, key expressions of twentieth-century modern culture, recent criticism of modernity, "post" -- culture, and consumption culture, we will attempt to achieve a new understanding of the problem of meaning and the possibilities of a transformed civilization. Some topics to be taken up in the course include: the rise of modern materialism, the modern metropolis, consumption culture and its effects on domestic and civic life.

63234. The Schooled Society: How Schools Shape Who We Are and How Society Works
(3-3-0)

This seminar focuses on the structure and organization of schooling in American society, and the societal forces that influence decisions about schools and student learning. These forces include legislation governing schooling, and cultural and religious norms that impact schools. The course will cover the role of schools in society, the political, economic and social dimensions of schooling, education reform and its underpinnings, and the transformation of higher education.

63239. Sociology of Education
(3-3-0)

Sociologists have identified the school as a fundamentally important social institution that both shapes, and is shaped by, the larger society. In this course, we will examine where schools "came from," how schools "work," and focus on how they "fit" with society's main social, economic, and political institutions. Topics covered in the course will include school expansion, the school as an agent of socialization, schools and social inequality, school organization, and school reform.

63250. Sociology of Development: Theories and Issues
(3-3-0)

As we now embark into a new millennium and compete on a global scale, it is important that we understand how our educational system works, the ways it combats and perpetuates the existing social hierarchy, and the ways that we can improve it. This course is designed to address these three important issues. The first half of the course is devoted to learn-

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ing and critiquing existing theories of social stratification in general and educational stratification, more specifically. The second half of the course analyzes actual educational practices and their relationship with stratification.

63268. Schools in Society
(3-3-0)

This seminar will examine and discuss major contemporary issues about schools and the schooling process. Topics will include the role of schools in society, the political, economic and social dimensions of schooling, educational reform and its underpinnings, the social and organizational structure of schools, and the transformation of higher education. Invited speakers from off and on campus will lead or participate in the discussions. Selected readings will be required.

63278. CREO Seminar

63279. CREO Seminar
(1-1-0), (2-2-0)

Most sessions of the CREO Seminar feature a presentation of educational research by an invited speaker from off campus or by a Notre Dame faculty member or graduate student. The content of the presentation is discussed and students write a brief reaction. Other sessions are devoted to a discussion of chapters in the Handbook on the Sociology of Education. The seminar runs for both semesters during the academic year and students receive three credits for the entire year.

63345. Family I

(3-3-0)

Covers current theoretical and substantive developments in the area of family as well as applicable research methods. Family research findings relevant to family policy will also be discussed.

63402. Population Dynamics

(3-3-0)

Demography, the science of population, is concerned with virtually everything that influences, or can be influenced by, population size, distribution, processes, structure or characteristics. This course pays particular attention to the causes and consequences of population change. Changes in fertility, mortality, migration, technology, lifestyle and culture have dramatically affected the United States and the other nations of the world. These changes have implications for a number of areas: hunger, the spread of illness and disease, environmental degradation, health services, household formation, the labor force, marriage and divorce, care for the elderly, birth control, poverty, urbanization, business marketing strategies and political power. An understanding of these is important as business, government and individuals attempt to deal with the demands of the changing population.

63410. The Legacy of Exile: Cubans in the U.S.

(3-3-0)

This class deals with one of the most visible and political of all U.S. immigrant groups: Cubans. The theme of the class is that the Cuban presence has been shaped by the experience of exile. In understanding the case of the Cuban immigration to the

United States, the students will gain insight into the dynamics of U.S. immigration policy, the differences between immigrants and exiles, inter-ethnic relations among newcomers and established residents, and the economic development of immigrant communities. The class will explore the long tradition of Cuban immigration to the United States, the elements of Cuban culture which have emerged and reinforced this tradition of migration, the impact that Cubans have had on the Miami area as well as the changes within the community as it develops into a well-established minority group within the United States. The class will juxtapose elements of Cuban culture which are well known in the United States—anti-Castro sentiments, economic success and political conservatism—with a fresh analysis of the diversity among Cuban-Americans, including the second generation. In addition to exploring rich ethnography, fascinating vignettes and case studies, this class provides an opportunity to examine issues of current importance within sociology and anthropology, such as social change, transnationalism, displacement, and regional impact of immigration in an easy to understand manner.

63417. International Migrations and Human Rights
(3-3-0)

This seminar focuses on research reports on U.S. immigration from Mexico and critiques research methods and basic differences in the interpretation of data. A review of the literature is discussed with an emphasis on policymaking on immigration in the U.S. and Mexico. A comparison is made between the debate concerning migrants' human rights in various parts of the world. A critique of scientific theories focusing on the relationship between international migrations and human rights is also included.

63441. Family Policy Seminar

(3-3-0)

The seminar covers family policy in the United States and in other countries with a concentration in the United States. There is comparison of the background, content and consequences of policies in the various countries. Such provocative topics as welfare policy, parental leave and child care are discussed. The relation between families and the work setting or families and government will also be addressed. A discussion format is used. Students write a term paper on some aspect of family policy. It is directed especially for juniors, seniors, and graduates.

63515. Political Sociology

(3-3-0)

A survey of the major theoretical traditions in the field, followed by a special focus on issues such as the process of state formation, sequences and forms of political development, the social bases of parties and their formation, the characteristics of party systems, the origins of democracies, the breakdown of democracies, the characteristics of authoritarian regimes, etc. Examples and case studies will be drawn from Europe and the Americas.

63532. Strategic Communications in Latin America
(3-3-0)

The course prepares students to conduct a strategic communication in a Latin American scenario. It

reviews the culture, social, economic and political changes that explain the emergence of the discipline of strategic communications. Among these are transformations in the mass media industry as well as the rise of a public opinion that is oriented a never before by a consumer logic. The course reviews the main concepts and tools of strategic communications: identity, images, brands, communications crisis, and community, organizational, and political communications, among others. The course employs a case study approach, and will require an active participation by the students.

63553. Building Democratic Institutions in Latin America and European First Wave Democracies

(3-3-0)

Elements of democratic regimes emerged long before the regimes as such can be identified as being minimally in place. Beginning with a brief discussion of the essential features of democracies, the course examines how and why such institutions emerged, and the critical moments in which the actual transitions to the new democratic regimes occurred. The course focuses on democratizations that took place before the Second World War, and will examine key European and Latin American cases.

63558. Comparing European Societies

(3-3-0)

This course offers students a review of major patterns of difference, along with some similarities, among the 15 member states of the European Union. Despite the larger contrasts with the United States, and the pressures toward convergence generated by the process of European integration, European societies remain remarkably different from one another on a number of dimensions including: the overall level and form taken by employment and unemployment, systems of social protection and welfare state organization, demographic trends ranging from extremely low birth rates in most of southern Europe to significantly higher birth rates further north, the connections between urban and rural life, and the impact of education on inequalities. The role of institutions, cultures, national histories and policies in accounting for this pattern of difference will be reviewed. The course will also examine the combinations of identities—national, regional, and European—found among citizens of Europe. Students will be encouraged to develop their expertise on at least one country while also doing comparative reading.

63571. Protests, Riots, and Movements

(3-3-0)

This course is concerned with how people act together to pursue collective political aims via extra-institutional forms of behavior: When and why do people go outside the conventional political structure to address social issues important to them? During the course, we examine political behavior ranging from the relatively mild (like a letter writing campaign) to the severe (like rioting, looting, and killing). We also discuss aspects of collective behavior that are less political in nature (like panics and fads). Some of the social movements we discuss include the civil rights movement, the women's movement, the anti-war movement, the gay and lesbian movement, pro-life and pro-choice movements, and the environmental movement (among many others). In the

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end, we try to explain how grievances, resources, the political environment, repression, individuals, decision making, and movement tactics all contribute to the success and failure of protest movements, their impact on social change, and the future of activism.

63576. Social Breakdown in American Society
(3-3-0)

This course examines the apparent weakening of the fabric of social life in America that has occurred within the past half-century. It investigates the past influences of both the market economy and the political welfare state on several central societal problems, such as the deterioration of interpersonal trust, the erosion of social obligations and informal social control, and the lessening of altruistic concern for others. Students will discuss the significance of these problems, as well as potential solutions.

63589. Sociology of Economic Life
(3-3-0)

Economic actions like working, buying, selling, saving, and giving are a fundamental part of everyday life, and all spheres of society, from family to religion to politics, are interrelated with economy. Sociologists examine how social relationships from small networks to transnational linkages affect economic actions and their outcomes, and the ways cultural meanings and political strategies shape those social relationships. The goal of this class is to provide students with new perspectives on economic actions by reading recent sociological studies of topics like money, markets, work, businesses, industries, and consumer society.

63651. Sociology of Religion I
(3-3-0)

Classical and contemporary theories in the sociology of religion. Culture, stratification, ideology, and determinations of experience are some of the key issues related to societal and personal formulations of religion. Classical authors such as Durkheim, Marx, and Weber are considered.

63665. Religion in Postwar America
(3-3-0)

This course surveys the major developments in religious life in the United States since the 1950s through an in-depth examination of several of the most important recent books on the subject, such as: Wade Clark Roof's *Spiritual Marketplace*, Tom Beaudoin's, *Virtual Faith*, Christian Smith's *American Evangelicalism*, and Helen Berger's *A Community of Witches*. With these works as the backdrop, each student will research and write her family's religious history across three generations.

63730. Crime and Deviance in Ideological Perspective
(3-3-0)

This seminar course will examine selected issues (e.g., white collar crime, gang violence, pornography, etc.) in the study of crime and deviance (issues will change each time the course is offered) and compare responses made by those representing the left and right in American society. We will critique the adequacy of these responses from a sociological viewpoint.

63731. Social Interaction
(3-3-0)

This course develops a symbolic interactionist perspective within social psychology. Readings focus on theoretical and empirical aspects of the interactional dimensions of the way we live as selves in relationship to others and social organizations. Students are responsible for discussions and a term paper.

63774. Society and Identity
(3-3-0)

This course looks at sources, dynamics, and consequences of identity in contemporary society. Identity is conceived as definitions of an individual that self and others use as a basis for interacting with one another. Significant outcomes of the way we are defined are the life chances, evaluations and emotional meanings we experience. The course format is a discussion. Seminar.

63803. The Information Society
(3-3-0)

This seminar explores the social, political, economic, cultural, and organizational impacts of the information technology revolution. Among the topics examined are globalization, networked enterprises, transformation of work and employment, mass communication, conceptions of time and space, new social movements, the role of the nation state, and the crisis of democracy. Attention is also given to assessing the adequacy of existing sociological theories for understanding the changes that are occurring as the result of the information technology revolution.

63804. Exploring Identities
(3-3-0)

How do we define ourselves? What are the various components of one's identity and how do we begin to understand these issues sociologically? These themes form the outlines of this course. We will explore identities, their formation, and their consequences, in post-colonial and in Western societies, in peaceful, and in societies experiencing ethnic/racial conflict, among women and men, and in developed and in developing countries. Drawing on novels, films, autobiographies, and sociological arguments we will piece together a framework for understanding the identity landscapes of which we are a part.

63819. Social Stratification in American Society
(3-3-0)

This course is designed to give students an overview of the major theories and empirical research that describe and explain social and economic inequality in American society. In the course, we will cover the following topics: social mobility across generations; gender and racial inequalities in status and income; the role of labor markets in creating inequality; studies of the "underclass" (or urban poor); and the role of social policy in ameliorating the social problem of poverty. Special attention will be given to the role of education as a mechanism of stratification in each of the topics covered.

63821. Labor Markets and Social Class
(3-3-0)

In alternating years, focuses on social class and labor markets. The seminar on social class examines theories of and research on class structure, class for-

mation, and social inequalities. Special attention is given to issues concerning the nature of the "middle class," historical changes in class structures, the relation between class and income, intergenerational mobility, and debates about the emergence of new social classes. The seminar on labor markets focuses on economic and sociological approaches to understanding labor market processes and structures. After examining economic analyses of supply and demand in labor markets, various sociological perspectives are discussed, including segmentation theories, discussions of internal labor markets, research on job mobility, and models of employment relations. Historical, case study, quantitative, and comparative research is surveyed.

63826. Social Classes and Stratification
(3-3-0)

This seminar is an in-depth introduction to theories of and research on social classes and inequalities. The focus of the seminar is on important socio-economic processes (mobility, income and status attainment, discrimination and segregation) and controversial issues (the existence of social classes, the character of the middle class, the relationships between class, race and gender, the emergence of new social classes). We will examine how various theoretical perspectives (Marxist, Weberian, functionalist, elite, gradational, and the "new structuralism") are being used to understand these processes and issues.

63848. Labor Processes
(3-3-0)

The seminar has the purpose of explaining labor conflict on the basis of the analysis of labor process and worker consciousness. On the basis of the analysis of work organization, working conditions, types of labor organization, ideologies of the labor movement, the seminar will discuss specific types of labor action by miners and industrial workers on the basis of cases from the Latin American region.

63911. Classical Social Theory
(3-3-0)

This course is intended to thoroughly familiarize graduate students with the content and the method of great written works by sociology's founding theorists. Theorists to be discussed include Durkheim, Weber, Marx, and Simmel. An examination of their writings serves as a basis to analyze the theoretical ambitions and controversies that provided the foundation for the development of sociology and which continue to influence contemporary social science. Through a focus on classic texts the course will address two main themes: the methodological arguments concerning the most appropriate strategies for fulfilling sociology's scientific ambitions and substantive debates over the nature of a changing society. Attention will also be devoted to the enduring implications of classical theory for contemporary theory and research.

63913. Research Methods
(3-3-0)

Sociology 513 is designed to provide an in-depth view of quantitative and qualitative research methods in the social sciences. Topics covered include (1) hypothesis formulation and theory construction (2) the measurement of sociological variables (3) data

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collection techniques - experimental, survey, and observational. At the end of the course, students should appreciate both the strengths and the limitations of sociological research techniques, and will hopefully have a solid foundation for beginning to conduct research on their own.

63947. Designing Research Projects: Practical Problems and Theoretical Issues
(3-3-0)

The course is intended to familiarize students with practical problems and options-as well as some underlying theoretical issues-encountered by social scientists in the course of qualitative or field research. Themes covered include consideration of the relationship between broad interpretive categories and specific empirical observations as well as the delineation of a research problem. Research strategies discussed include comparative historical work, historical case studies, observation, survey research, and qualitative interviewing. Students are asked to formulate a research proposal and to carry out practical exercises involving the use of several research strategies.

63957. Historical and Comparative Sociology
(3-3-0)

Reviews some of the basic techniques in historical research, discusses comparative research designs in the social sciences, and examines critically major works using comparative analysis. Students are encouraged to write proposals using comparative analysis.

63959. Sociology of the Life Course
(3-3-0)

This course seeks to understand how and why people change or remain the same throughout their lives. Through seminar-style discussion of major works in life course studies, it will explore how lives are shaped by specific historical contexts, how individuals actively construct their life course within historical and social constraints, how life domains are intertwined (and how this shapes human actions), and how the impact of life transitions on life trajectories is contingent on the timing of a particular change in a person's life. Substantively, the course will focus on change within and the relationship over the life course between the domains of religion, education, and politics. The course will have a strong methodological orientation, focusing on data collection issues and measurement strategies for capturing religious formation and change over the life of the course, and for understanding the perhaps reciprocal relation between religious development and educational and political attitudes and behavior.

63975. Research Practicum (M.A.)
(2-2-0)

The aim of this research practicum is to assist second-year graduate students in writing their master's theses. When the practicum is taught in two semesters, this course is taught Fall semester.

63976. Research Practicum (M.A.)
(1-1-0)

The aim of this research practicum is to assist second-year graduate students in writing their master's theses. When taught as a two-semester course, this is always taught in spring semester.

63980. Qualitative Methodology
(3-3-0)

How does one conceive and execute a qualitative research project? In this seminar we will learn this process through developing and carrying out independent research projects. We will cover: using the literature to identify interesting and important qualitative questions, grounded theory and theory reconstruction approaches to building research projects, interview and ethnographic methods, and preliminary aspects of qualitative data management and analysis.

63983. Archival Research Techniques
(3-3-0)

This course will introduce students to a variety of archival research techniques such as archive access, research responsibilities, interviews with archivists, managing reading rooms, organizing archival data, and documenting sources. The course will also explore some of the organizing archival data, and documenting sources. The course will also explore some of the history of sociology using based on research conducted with archival methods.

63986. Primary Data Collection and Survey Methodology
(3-3-0)

This course is offered to graduate students in sociology and other social sciences who have an interest in the design, implementation, and use of social surveys and databases in social science research. The course examines all practical aspects of survey design including sample design and selection, questionnaire design, measurement, mode of administration, field methods, data editing, and database development. We also cover theoretical developments in survey methodology, including research on cognitive process and questionnaire response, the role of social theory in questionnaire design, and other specialized topics. This course will prove useful for both conducting primary data collection and interpreting data from secondary sources.

63990. Computing for Social Science Research
(1-1-0)

This is a laboratory course designed to introduce first-year graduate students to the basic computational and statistical techniques used in social science quantitative research. The main goal of the course is to show students how to build and access a data set for analysis. As such, it is complementary to the core statistical and econometrics course offered in the social sciences. Students will be exposed to the different operating systems available at Notre Dame, and to a variety of statistical software applications. Topics treated include reading data in different formats and checking it for errors, carrying out exploratory analyses, recoding and creation of new variables, merging data sets, performing extracts, and moving a data set between different operating environments.

63992. Statistics I
61992. Statistics I Lab
(3-3-1)

Prerequisite: Prior course in statistics. This course reviews basic descriptive statistics and probability, then concentrates on inferential hypothesis testing (analysis of variance, linear regression, dummy vari-

ables, standardized coefficients, chi-square tests and basic contingency table analysis).

63993. Statistics II
61993. Statistics II Lab
(3-3-1)

The second course in the graduate sequence focuses on the general linear model in all its forms: special topics in multiple regression (multicollinearity, autocorrelation, heteroscedasticity), nonlinear models, causal modeling (recursive and nonrecursive systems), structural equations, logit equations, and probit models.

73080. Writing for Academic Journals
(3-3-0)

This seminar is intended for advanced (post-M.A.) graduate students in sociology. It requires students to develop and submit a paper to an appropriate academic journal. The course takes students through the following steps: (1) final preparation of a manuscript, (2) pre-submission review, (3) selecting an appropriate journal, (4) submitting the paper, (5) reviewing process, (6) interpreting reviewers' and editors' comments, (7) revising the paper, and (8) re-submission.

73081. Graduate Teaching Seminar
(3-3-0)

The purpose of this course is to prepare graduate students in sociology for a career in teaching at colleges and universities. Course content includes treatment of practical concerns of teachers such as construction of a syllabus, selection of readings, composition of lectures, and grading of student performance. In addition, seminar time is devoted to discussion of larger issues, including the role of sociology in the liberal arts curriculum, the mission of teachers in the American professoriate, and the state of the academic labor market. A term project is required of all participants.

73082. Graduate Teaching Practicum
(3-3-0)

Supervised experience for graduate students in the teaching of undergraduate sociology. Enrollment normally is limited to those students who have taught one course on their own or who will be teaching such a course. The purpose is to contribute to the professional development of students.

76097. Directed Readings in Sociology
(0-0-0)

Reading and research on highly specialized topics that are immediately relevant to the student's interests and that are not routinely covered in the regular curriculum.

76098. Directed Readings
(0-0-0)

Prerequisite: Departmental permission. Reading and research on highly specialized topics that are immediately relevant to the student's interests and that are not routinely covered in the regular curriculum.

78599. Thesis Direction
(0-0-0)

Reserved for the six-credit-hour thesis requirement of the master's degree.

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78600. Nonresident Thesis Research (1-1-0)
For master's degree students.

73652. Sociology of Religion II (3-3-0)

Contemporary empirical studies in the sociology of religion are examined. Current developments and movements of religious behavior are related to such issues as political action, family structure, economic actions, and leisure.

73905. Grant Writing for Social Sciences (3-3-0)

This is an introductory graduate course in grant writing. The course will focus on fundamental aspects of grant writing: searching for funding, writing a proposal narrative, generating an effective budget, reviewing proposals, and managing your awarded grant. The course will examine the criteria for fundable projects in the social sciences and provide students with knowledge and tools for producing a successful grant application. Students will learn how to develop and market fundable project ideas, think about what funding agencies and reviewers are looking for, and write a fundable proposal. The ultimate course objective is to have students identify, write, and review (among their peers) grant proposals appropriate for the social sciences.

73910. Seminar in Theory and Social Psychology (3-3-0)

A discussion of current theoretical approaches in sociological social psychology. Attention is paid to the interrelationship between macrosociological processes and the formation of self-identity. Application is made to contemporary interpretations of American culture.

73915. Advanced Theory Construction (3-3-0)

Techniques of formalized theory building are covered, including axiomatic systems, causal models, and cybernetic systems. The course is based on principles in the philosophy of science and gives students experience in shaping the structural and linguistic features of the theories to be used in their dissertation research.

73917. Advanced Theory Seminar: Interpretation (3-3-0)

Social theory, formerly more the province of sociologists, has come to the forefront of contemporary intellectual life for philosophers, literary critics, and others in the humanities. This seminar will be geared toward coming to terms with some of the principal issues and controversies animating contemporary theory, particularly the nature of signification and interpretation, and will reveal how much in the sociological tradition figures into these contemporary debates. We will explore the traditions of interpretation that form the basis for much contemporary social theory, including semiotics and semiology, phenomenology, pragmatism, and interpretive sociology. Topics will include: What is the place of the act and of action/practice as a basis for interpretation? Are there natural bases for signification and social construction? What are the varieties of ways

in which the self can be seen as a complex of signs, relativism, and objective interpretation?

73922. Event History Analysis (3-3-0)

This course provides an in-depth introduction to event history analysis methods for analyzing change in discrete dependent variables. The course draws on methodological and empirical research from the social sciences. Special attention is given to the relationship between theories of social change, life-cycle processes, and dynamic models. The course begins by examining nonparametric discrete-time life table models and then turns to continuous-time discrete-state models for the analysis of hazard rates. Parametric and partially parametric models that allow for dependency of rates both on explanatory factors and time are introduced. Problems concerning censored data and competing risks are also addressed.

73975. Research Practicum (Ph.D.) (2-2-0)

The aim of this research practicum is to assist second-year graduate students in writing their master's theses. When practicum is taught as two-semester course, this number is for Fall semester.

73976. Research Practicum (Ph.D.) (1-1-0)

The aim of the research practicum is to assist graduate students in writing their dissertation proposals. When taught as a two-semester course, this course is taught in the spring semester.

98699. Research and Dissertation (1-0-0)

For resident graduate students who have completed all course requirements for the Ph.D.

98700. Nonresident Dissertation Research (1-1-0)

For non-resident graduate students who have completed all course requirements for the Ph.D.

Faculty

Joan Aldous, *the William R. Kenan Jr. Professor of Sociology*. B.S., Kansas State Univ., 1948; M.A., Univ. of Texas, 1949; Ph.D., Univ. of Minnesota, 1963. (1976)

Jorge A. Bustamante, *the Eugene and Helen Conley Professor of Arts and Letters and Fellow in the Helen Kellogg Institute for International Studies*. LL.B., Centro Univ. Mexico, 1954; M.A., Univ. of Notre Dame, 1970; Ph.D., *ibid.*, 1975. (1986)

William Carbonaro, *Assistant Professor and Fellow in the Institute for Educational Initiatives*. B.A., Washington Univ. in St. Louis, 1990; M.A., *ibid.*, 1991; M.A., Univ. of Wisconsin-Madison, 1996; Ph.D., *ibid.*, 2000. (2000)

Gilberto Cárdenas, *Director of Center for Latino Studies, the Julian Samora Professor in Latino Studies, Assistant Provost for Institutional Relations and Diversity, and Fellow in the Helen Kellogg Institute for International Studies*. A.A., East Los Angeles College, 1967; B.A., California State Univ., Los Angeles,

1969; M.A., Univ. of Notre Dame, 1972; Ph.D., *ibid.*, 1977. (1999)

Kevin J. Christiano, *Associate Professor*. B.A., College of William and Mary, 1977; M.A., Princeton Univ., 1980; Ph.D., *ibid.*, 1983. (1983)

Leonard F. Chrobot, *Adjunct Professor, Concurrent Professor of History, and Coordinator of American Polish Research*. B.A., St. Mary's College, Orchard Lake, Mich., 1960; M.Div., SS. Cyril and Methodius Seminary, 1964; M.A., Purdue Univ., 1967; Ph.D., Wayne State Univ., 1975. (1989)

Fabio B. DaSilva, *Professor Emeritus*. B.A., Univ. of Sao Paulo, 1957; M.A., *ibid.*, 1960; Ph.D., Univ. of Florida, 1963. (1967)

Robert M. Fishman, *Professor, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Nanovic Institute for European Studies*. B.A., Yale College, 1977; M.A., Yale Univ., 1979; M. Phil., *ibid.*, 1980; Ph.D., *ibid.*, 1985. (1992)

David S. Hachen Jr., *Associate Professor*. B.A., Lake Forest College, 1974; M.A., Univ. of Wisconsin, 1978; Ph.D., *ibid.*, 1983. (1987)

Maureen T. Hallinan, *Director of the Center for Research on Educational Opportunities, Chair of Graduate Admissions, and the William P. and Hazel B. White Professor of Arts and Letters*. B.A., Marymount College, 1961; M.S., Univ. of Notre Dame, 1968; Ph.D., Univ. of Chicago, 1972. (1984)

Eugene W. Halton, *Professor*. A.B., Princeton Univ., 1972; Ph.D., Univ. of Chicago, 1979. (1982)

Rev. C. Lincoln Johnson, *Associate Professor Emeritus*. B.A., Univ. of Arkansas, 1963; B.D., Southern Methodist Univ., 1966; M.A., New School for Social Research, 1968; Ph.D., Univ. of Kansas, 1973. (1971)

Sean Kelly, *Assistant Professor, Fellow in the Institute for Educational Initiatives*. B.A. with Honors, Univ. of North Carolina-Chapel Hill, 1998; M.A., Univ. of Wisconsin-Madison, 2001; Ph.D., *ibid.*, 2005. (2005)

David M. Klein, *Associate Professor*. B.A., Univ. of Washington, 1967; Ph.D., Univ. of Minnesota, 1978. (1976)

Richard A. Lamanna, *Associate Professor Emeritus*. B.S., Fordham Univ., 1954; M.A., *ibid.*, 1961; Ph.D., Univ. of North Carolina, 1964. (1964)

Rory M. McVeigh, *Director of Graduate Studies and Associate Professor*. B.A., Univ. of Arizona, 1991; M.A., Univ. of North Carolina-Chapel Hill, 1993; Ph.D., *ibid.*, 1996. (2002)

Daniel J. Myers, *Chair and Associate Professor, and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., Ohio State Univ., 1988; M.A., *ibid.*, 1991; M.S., Univ. of Wisconsin, 1995; Ph.D., *ibid.*, 1997. (1998)

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Ann Marie Power, *Assistant Professional Specialist*. B.A., Westchester Univ., 1974; M.Ed., Boston Univ., 1977; M.A., Univ. of Notre Dame, 1993; Ph.D., *ibid.*, 1999. (2000)

David Sikkink, *Assistant Professor and Director of DuBois Center*. B.A., Bethel College, 1985; M.A., Univ. of North Carolina, 1994; Ph.D., *ibid.*, 1998. (1999)

Juliana M. Sobolewski, *Assistant Professor*. B.A., Arizona State Univ., Tempe, 1998; M.A., *ibid.*, 2000; Ph.D., Pennsylvania State Univ., University Park, 2003. (2004)

Jackie Smith, *Associate Professor and Fellow in the KROC Institute*. B.A., Catholic Univ. of America, 1990; M.A., International Peace Studies UND, 1995; Univ. of Notre Dame, 1996. (2005)

Lynette P. Spillman, *Associate Professor and Fellow in the Helen Kellogg Institute for International Studies*. B.A., Australian National Univ., 1982; M.A., Univ. of California, Berkeley, 1984; Ph.D., *ibid.*, 1991. (1992)

Erika Summers-Effler, *Assistant Professor*, B.A., Univ. of Notre Dame, 1995; M.A., Univ. of Pennsylvania, 1998; Ph.D., *ibid.*, 2004. (2004)

J. Samuel Valenzuela, *Professor, Fellow in the Helen Kellogg Institute for International Studies, and Fellow in the Nanovic Institute for European Studies*. Lic., Univ. de Concepcion, 1970; Ph.D., Columbia Univ., 1979. (1986)

Robert H. Vasoli, *Associate Professor Emeritus*. A.B., La-Salle College, 1952; M.A., Univ. of Notre Dame, 1953; Ph.D., *ibid.*, 1964. (1957)

Andrew J. Weigert, *Professor and Fellow in the Joan B. Kroc Institute for International Peace Studies*. B.A., St. Louis Univ., 1958; M.A., *ibid.*, 1960; B.A., Woodstock College, 1964; Ph.D., Univ. of Minnesota, 1968. (1968)

Michael R. Welch, *Associate Professor*. B.A., LeMoyne College, 1972; M.A., Univ. of North Carolina, 1975; Ph.D., *ibid.*, 1980. (1981)

Richard A. Williams, *Associate Professor*. B.A., Creighton Univ., 1977; M.S., Univ. of Wisconsin, 1981; Ph.D., *ibid.*, 1986. (1986)

Teaching and Research Faculty

The following list does not include regular faculty, only Teaching and Research Faculty for the academic year 2006–2007.

- John H. Adams, *Associate Professor of Biological Sciences*
- Asma Afsaruddin, *Associate Professor of Classics and Fellow in the Joan B. Kroc Institute for International Peace Studies*
- Sudhir Aki, *Assistant Research Professor of Chemical and Biomolecular Engineering*
- Mark S. Alber, *Professor of Mathematics*
- Joan Aldous, *the William R. Kenan Jr. Professor of Sociology*
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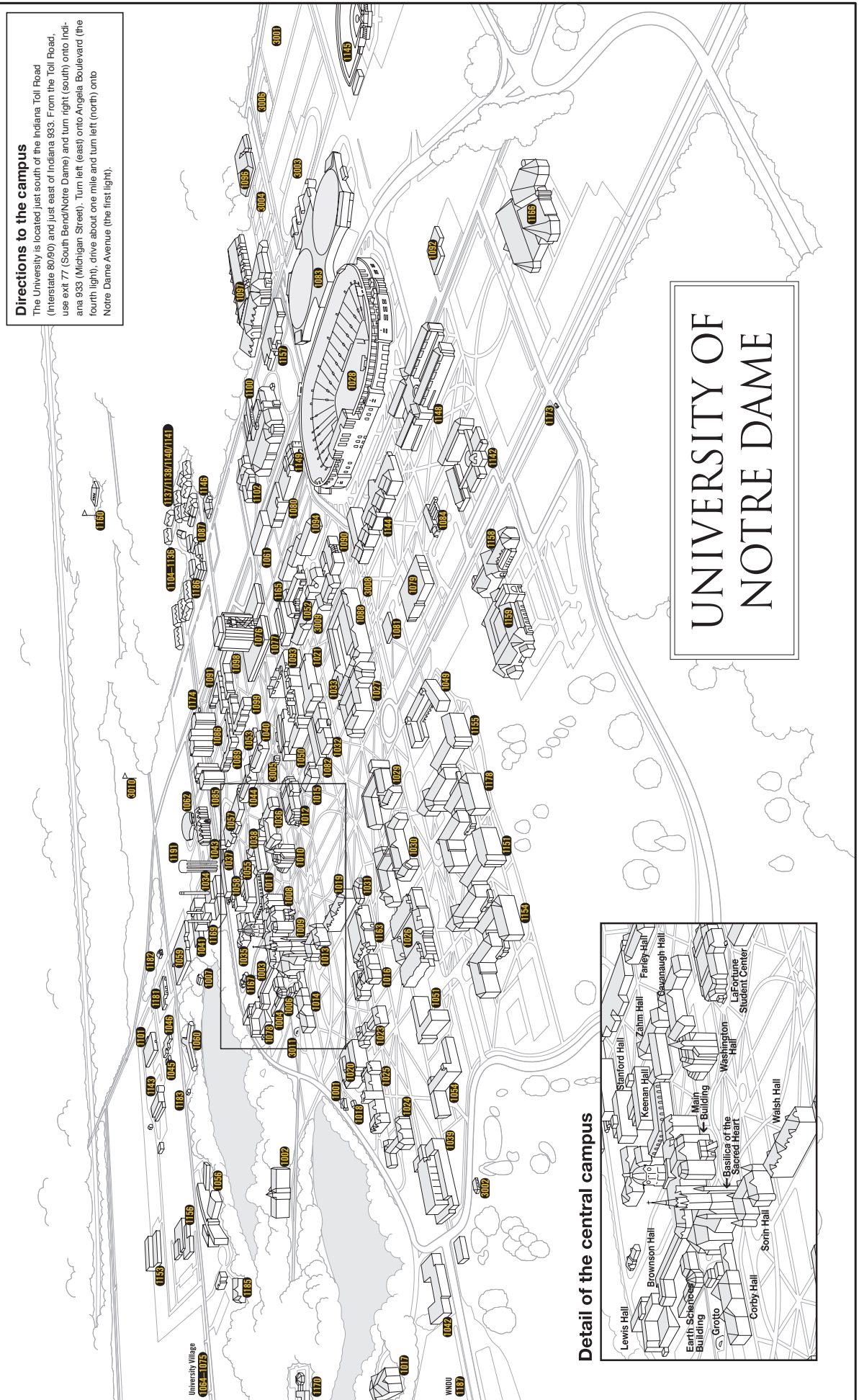
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Campus Map

Directions to the campus

The University is located just south of the Indiana Toll Road (Interstate 80/90) and just east of Indiana 933. From the Toll Road, use exit 77 (South Bend/Notre Dame) and turn right (south) onto Indiana 933 (Michigan Street). Turn left (east) onto Angela Boulevard (the fourth light), drive about one mile and turn left (north) onto Notre Dame Avenue (the first light).



GRE Subject Test Requirements

The following is a list of the graduate programs at the University and the graduate degrees conferred. Please note that the University requires *all* applicants to take the GRE General Test. Many programs also require an additional examination, the GRE Subject Test.

Program	Degrees Offered	Subject Test Required	Subject Test Not Required	Subject Test Not Required but Strongly Recommended
Aerospace and Mechanical Engineering	M.E.M.E., M.S.Aero.E., M.S.M.E., Ph.D.		■	
Architecture	M.Arch., M.ADU		■	
Art, Art History, and Design	M.A., M.F.A.		■	
Biochemistry	Ph.D.			■
Biological Sciences	M.S., Ph.D.			■
Chemical and Biomolecular Engineering	M.S.Ch.E., Ph.D.		■	
Chemistry	Ph.D.			■
Civil Engineering and Geological Sciences [†]	M.S., M.S.C.E., M.S.Env.E., M.S.G.S., Ph.D.		■	
Computer Science and Engineering	M.S.C.S.E., Ph.D.		■	
Creative Writing	M.F.A.		■	
Early Christian Studies	M.A.		■	
Economics	M.A., Ph.D.		■	
Education (ACE participants only)	M.Ed.		■	
Electrical Engineering	M.S.E.E., Ph.D.		■	
English	M.A., Ph.D.			■
History	Ph.D.		■	
History and Philosophy of Science	Ph.D.		■	
Literature	Ph.D.		■	
Mathematics	M.S.A.M., Ph.D.	■		
Medieval Studies	M.M.S., Ph.D.		■	
Peace Studies ^{† †}	M.A.		■	
Philosophy	Ph.D.		■	
Physics	Ph.D.	■		
Political Science	Ph.D.		■	
Psychology	Ph.D.			■
Romance Languages and Literatures	M.A.		■	
Sociology	M.A., Ph.D.		■	
Theology	M.A., M.Div., M.S.M., M.T.S., Ph.D.		■	

Notes:

[†] Includes Bioengineering and Environmental Engineering

^{††} Separate application required. Contact the Graduate Admissions Office, University of Notre Dame, 502 Main Bldg., Notre Dame, IN 46556-5602 requesting the peace studies application. E-mail contact is Grad.Ad.1@nd.edu or for specific questions, kroc-admissions.1@nd.edu.

Where to write for GRE and TOEFL information:

GRE•ETS
P.O. Box 6000
Princeton, NJ 08541-6000
U.S.A.

Web: <http://www.gre.org>

TOEFL
P.O. Box 6151
Princeton, NJ 08541-6151
U.S.A.

Web: <http://www.toefl.org>

GRE and TOEFL application booklets generally are available at U.S. colleges and universities and at U.S. consulates and U.S. Information Services offices abroad. Check with these sources before writing to Princeton.

Correspondence

The University's address is University of Notre Dame, Notre Dame IN 46556.

The area code for all telephone calls is 574. The University's main number is 631-5000. The Graduate School's fax number is 631-4183 and e-mail is gradsch@nd.edu.

Admissions (Graduate): 502 Main Building (631-7706) gradad@nd.edu

Graduate Studies and Research, Office of:
Dean of the Graduate School, 416 Main Building (631-6291) research@nd.edu

Campus Ministry: 103 Hesburgh Library (631-7800) ministry@nd.edu

Career Development: 248 Flanner Hall (631-5200) ndcps@nd.edu

Center for Social Concerns: Center for Social Concerns (631-5293) ndcntrsc@nd.edu

Counseling Center: University Health Center (631-7336)

Financial Aid: 115 Main Building (631-6436) finaaid@nd.edu

Graduate School Office: 502 Main Building (631-6291) gradsch@nd.edu

Graduate Student Union:
LaFortune Student Center (631-6963) gsu@nd.edu

Health Services: University Health Center (631-7497 or 7567)

Housing: 305 Main Building
on-campus housing (631-5878)
off-campus housing (631-5583)
University Village (631-9145)
orlh@nd.edu

Insurance: Accounts and Insurance,
University Health Center
(631-6114)

International Student Services and Activities (ISSA): 204 LaFortune Student Center (631-3825) issa@nd.edu

Library: Director, 221 Hesburgh Library (631-5252)

Registrar: 105 Main Building (631-7043) registrar.1@nd.edu

Security: Security Office (631-5555) ndspd@nd.edu

Student Accounts: 100 Main Building (631-7113) stdacct@nd.edu

Student Activities: 315 LaFortune Student Center (631-9314) sao@nd.edu

Student Affairs: 316 Main Building (631-5550)

Summer Session: 111 Earth Sciences Building (631-7282) sumsess@nd.edu

Departments

The following represent the telephone numbers (Prefix: 631) and e-mail addresses of the departments, centers, and institutes affiliated with the Graduate School.

4379 **Aerospace and Mechanical Engineering**
amedept@nd.edu

8630 **Applied Mathematics, Center for**
cam@nd.edu

3096 **Architecture** arch@nd.edu

7602 **Art, Art History, and Design**
art@nd.edu

6552 **Biological Sciences** biosadm@nd.edu

8045 **Center for Global Health and Infectious Diseases** ctdrt.1@nd.edu

5580 **Chemical Engineering**
chegdept@nd.edu

7058 **Chemistry and Biochemistry**
chemistry@nd.edu

5510 **Church Life, Institute for** icl@nd.edu

5381 **Civil Engineering and Geological Sciences** dash.1@nd.edu

8802 **Computer Science and Engineering** csewww@nd.edu

5441 **Cushwa Center for the Study of American Catholics** cushwa@nd.edu

7090 **Early Christian Studies** ecs.1@nd.edu

8873 **East Asian Languages and Literatures** eall@nd.edu

7698 **Economics** jtate@nd.edu

5482 **Electrical Engineering** eegrad@nd.edu

6618 **English** english@nd.edu

5572 **German and Russian Languages and Literatures** grl@nd.edu

9017 **Government and International Studies** govtgrad@nd.edu

7266 **History** history@nd.edu

5015 **History and Philosophy of Science** nd.reilly.31@nd.edu

5574 **Indiana University School of Medicine — South Bend** sbcme@nd.edu

8294 **Institute for Educational Initiatives** hallinan@nd.edu

6580 **Kellogg Institute for International Studies** kellogg@nd.edu

3555 **Keough-Naughton Institute for Irish Studies** irishstu@nd.edu

6970 **Kroc Institute for International Peace Studies** peaceins@nd.edu

5825 **Maritain Center, Jacques** maritain@nd.edu

7245 **Mathematics** math@nd.edu

6603 **Medieval Institute** medinst@nd.edu

CORRESPONDENCE

- 6093 **Molecular Biosciences Program**
biosadm@nd.edu
- 5600 **Office of Information Technologies**
info.1@nd.edu, <http://oit.nd.edu>
- 6841 **Office of Multicultural Student Programs and Services** omsa@nd.edu
- 7157 **Disability Services** osd@nd.edu
- 5435 **Pastoral Liturgy, Notre Dame Center for**
ndcpl@nd.edu
- 0481 **Ph.D. Program in Literature**
litprog@nd.edu
- 4278 **Philosophy** ndphil@nd.edu
- 7339 **Philosophy of Religion, Center for**
cprelig@nd.edu
- 7182 **Physics** physics@nd.edu
- 6650 **Psychology** psych@nd.edu
- 6163 **Radiation Laboratory** ndrircdc@nd.edu
- 6886 **Romance Languages and Literatures** romlang@nd.edu
- 5293 **Social Concerns, Center for**
ndcntrsc@nd.edu
- 6585 **Sociology** kipker.1@nd.edu
- 4254 **Theology—M.A. and M.T.S. Program** theo@nd.edu
- 5682 **Theology—M.Div. Program**
mdiv.1@nd.edu
- 4254 **Theology—M.S.M. Program**
driscoll.7@nd.edu
- 5732 **Theology—Ph.D. Program**
theodgs@nd.edu

WWW ND Home Page

More information on Notre Dame's graduate programs is available online through the individual program Web sites and the Graduate School's site at: <http://graduateschool.nd.edu>.

To request a paper application, submit the online inquiry form or send an e-mail message to gradad@nd.edu.

For More Information

For further admissions information, contact:

University of Notre Dame
Office of Graduate Admissions
502 Main Building
Notre Dame, IN 46556-5602
631-7706

Business and Law

Information concerning business and law degrees is obtained by writing or calling:

Mendoza College of Business
Graduate Division,
631-8488

Notre Dame Law School
Office of Admissions,
631-6627

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