

# VILLANOVA UNIVERSITY CATALOG

## UNDERGRADUATE STUDIES Full Version (Includes Course Descriptions)

2002-2003

While this catalog was prepared on the basis of the best information available at the time of publication, all information, including statements of fees, course offerings, admissions, and graduation requirements, is subject to change without notice or obligation. Please consult the electronic catalog at [www.catalog.villanova.edu](http://www.catalog.villanova.edu) for more recent information.

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VILLANOVA UNIVERSITY  
August 1, 2002

An Equal Opportunity Educational Institution

# Villanova University Catalog

Undergraduate Studies

College of Liberal Arts and Sciences  
College of Engineering  
College of Commerce and Finance  
College of Nursing  
Part-time Studies

Full Version  
(includes Course Descriptions)

# General Information

The University campus is situated in Villanova, Pennsylvania, on Lancaster Pike (U.S. Route 30) six miles west of City Line Avenue in Philadelphia, Pennsylvania. The post office address is 800 Lancaster Avenue, Villanova, Pennsylvania 19085-1699. University offices are open Monday through Friday from 9 a.m. to 5 p.m. The telephone number is (610) 519-4500. The World-Wide Web address is [www.villanova.edu](http://www.villanova.edu).

Prospective students may obtain additional information by writing to the Director of Admissions, Villanova University, 800 Lancaster Avenue, Villanova, Pennsylvania 19085-1699.

Villanova University is an affirmative action institution, and it is the continuing policy of Villanova not to discriminate against any person on the basis of race, color, sex, religion, national origin, age, veteran status, non-job-related disability or any other basis prohibited by law.

*NOTE:* In order that programs offered by Villanova University reflect current advances and additions to knowledge and upgraded professional requirements, Villanova University reserves the right to change programs and requirements without prior notice. Students generally are bound to the requirements in effect for, and published on the world wide web in which their class begins its first year of study. Students who enter in fall 2002 should check the world wide web catalog for changes. Special requirements may be in effect for students who have left the University and are being readmitted.

Students are advised to check with the web catalog or with their college offices regarding changes that may affect them. Additional academic information may be obtained from the various college offices.

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# Academic Calendar: 2002-2003

## Fall Semester

Aug. 19-20 (M-T)	Walk-In Registration (Part-Time Studies)
Aug. 22-25 (Th-Sun)	Freshmen Orientation and Registration
Aug. 24 (Sat)	Sat. Classes Begin - Part-Time Studies
Aug. 26 (M)	Classes Begin - Full-Time Studies
Aug. 30 (F)	Last Day for dropping and/or adding classes and last day or requesting Satisfactory/Unsatisfactory
Sept. 2 (M)	Labor Day - No Classes
Sept. 5 (Th)	St. Thomas of Villanova Day*
Oct. 11 (F)	Mid-Term
Oct. 14 (M)	Semester Recess
Oct. 21 (M)	Classes Resume
Nov. 13 (W)	Last Day for Authorized Withdrawal without Academic Penalty (WX)
Nov. 26 (T)	Thanksgiving Recess Begins after last class
Dec. 2 (M)	Classes Resume
Dec. 12 (Th)	Final Day of Classes
Dec. 13 (F)	Reading Day
Dec. 14-20 (Sat-F)	Final Examinations (No exams on Sunday)

\*class schedule to be announced at a later date; evening classes will be held.

Tuesday, December 10 will be deemed a Friday Class Day and follow a Friday schedule for UG Day Classes Only

## Spring Semester

Jan. 9 (Th)	Walk-In Registration (Part-Time Studies)
Jan. 13 (M)	Classes Begin
Jan. 17 (F)	Last Day for dropping and/or adding classes and last day for requesting Satisfactory/Unsatisfactory
Jan. 20 (M)	Martin Luther King Day (no classes)
Feb. 28 (F)	Mid-Term
Mar. 3 (M)	Semester Recess
Mar. 10 (M)	Classes Resume
Apr. 2 (W)	Last Day for Authorized Withdrawal without Penalty Academic Penalty (WX)
Apr. 16 (W)	Easter Recess Begins after last class
Apr. 22 (T)	Classes Resume
May 1 (Th)	Final Day of Classes
May 2 (F)	Reading Day
May 3-10 (Sat-Sat)	Final Examinations (No exams on Sunday, May 4; May 10th Examinations for Saturday Classes only)
May 17-18 (Sat-Sun)	Baccalaureate and Commencement

Tuesday, April 29<sup>th</sup> will be deemed a Friday Class Day and follow a Friday Schedule for UG Day Classes Only Wednesday, April 30<sup>th</sup> will be deemed a Monday Class Day and follow a

Monday Schedule for UG Day Classes Only

# Villanova University

## Background

For a century and a half, Villanova has been directed by the Order of St. Augustine, known as the Augustinians (<http://heritage.villanova.edu/>), one of the oldest religious teaching orders of the Catholic Church. The first American foundation of the order within the present limits of the United States was established in 1796 at old St. Augustine 's Church in Philadelphia. Villanova University traces its lineage from this foundation and from St. Augustine 's Academy, which was opened there in 1811.

In January 1842, the Augustinians resident at St. Augustine 's took possession of Belle Air, the country estate of the Revolutionary officer and merchant John Rudolph. In accordance with the old Catholic custom, the new foundation was placed under the patronage of a saintly hero of the past. For their patron the Augustinians chose, St. Thomas of Villanova, a 16th century Spanish Bishop who was a distinguished Augustinian writer and educator. The school soon became known as Villanova and gave its name to the surrounding countryside. Classes were opened in the old mansion house at Belle Air during the fall of 1843. On March 10, 1848, the Governor of Pennsylvania, Francis R. Shunk, signed the Act of the Legislature incorporating The Augustinian College of Villanova in the State of Pennsylvania and conferring on Villanova College the right to grant degrees in the Arts and Sciences.

The Liberal Arts College took its first step toward university status in 1905 with the establishment of what is now called the College of Engineering. The Science unit, inaugurated in 1915, is now an integral part of the present College of Liberal Arts and Sciences. In 1918, what is presently known as the Part-Time Studies Division came into being. The College of Commerce and Finance was founded in 1922, the College of Nursing in 1953, and the School of Law in 1953.

Villanova 's development over the years into a complex institution of higher education received official sanction when, on November 10, 1953, pursuant to an act of the Legislature of the Commonwealth of Pennsylvania, its charter was amended to permit its being designated Villanova University.

## Mission Statement

Villanova University is an independent coeducational institute of higher learning founded by the Augustinian Order of the Roman Catholic Church. The University is a community of persons of diverse professional, academic, and personal interests who in a spirit of collegiality cooperate to achieve their common goals and objectives in the transmission, the pursuit, and the discovery of knowledge. This community serves society by developing and sustaining an academic environment in which the potentialities of its members may be realized. Villanova is committed to those same high goals and standards of academic integrity and excellence as well as personal and corporate achievement that characterize all worthy institutions of higher learning.

As a Catholic institution Villanova both emphasizes the values of the Judaeo-Christian humanistic tradition and concerns itself with all value systems. The University attempts to develop an environment in which students, faculty, and staff may experience a Christian intellectual and moral perspective, believing that the teachings of the Catholic faith are

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applicable in every area of human activity. Although Villanova functions as an independent institution in the conduct of its own affairs, in matters theological it recognizes its obligations to the Magisterium of the Church. Villanova looks to the Order of St. Augustine to preserve the University's Augustinian character through its presence and influence and by providing personnel and financial support. In turn, the University recognizes its special relationship to the Order of St. Augustine by showing appropriate preference to Augustinians in the initial appointment of faculty and staff.

Given its character and resources, Villanova is committed to offering such undergraduate and graduate programs as will best serve the needs of its constituencies. As a medium-sized comprehensive university, it offers programs in the humanities, in the natural and social sciences, and in professional areas such as business, education, engineering, law, and nursing. The University emphasizes undergraduate instruction and is committed to a liberal arts component in each of its undergraduate programs. In all academic departments, it encourages such research and scholarly work as are compatible with the faculty's other obligations to the University.

Villanova emphasizes the disciplines of philosophy and theology. Moreover, it seeks to add its influence to the search for world peace and justice by means of both its academic programs and the pastoral ministry it provides for the members of the University community. In like manner, the University has always encouraged and supported its faculty, students, and staff in providing public service to the community. Ultimately, all these programs and support are seen as a means of developing the total person: intellectually, emotionally, spiritually, culturally, socially, and physically.

Villanova attempts to enroll students with diverse social, geographic, economic, and educational backgrounds. Furthermore, in utilizing its financial aid resources to help achieve this diverse student body, Villanova recognizes its responsibility to use part of those resources to assist the economically and educationally disadvantaged.

Villanova welcomes students who consider it desirable to study within the philosophical framework of Christian humanism. Similarly, the University seeks to employ on all levels those who are sympathetic to and supportive of its character and identity. Accordingly, Villanova confidently expects that all students, faculty, administration, and staff will so comport themselves as to assure the continuance and enhancement of the University's high purposes and its moral and religious traditions. In accomplishing its purposes, the University fully complies with all the requirements of federal and state legislation with respect to equality of opportunity and non-discrimination.

Villanova encourages communication among all the elements of the academic community and operates on a policy that promotes easy access of students to faculty and of students and faculty to administrators. Furthermore, it seeks to involve students, faculty and administrators in the development of University policy through appropriate structures of governance.

Finally, this community seeks to reflect the spirit of St. Augustine by the cultivation of knowledge, by respect for individual differences, and by adherence to the principle that mutual love and respect should animate every aspect of University life.



## Academic programs

### Degree Programs

Programs of undergraduate study in the various colleges lead to the following degrees:  
College of Liberal Arts and Sciences ([www.artsci.villanova.edu](http://www.artsci.villanova.edu)) Bachelor of Arts, Bachelor of Science, Associate of Arts, Associate of Science in Natural Science.

College of Engineering ([www.engineering.villanova.edu](http://www.engineering.villanova.edu)): Bachelor of Chemical Engineering, Bachelor of Civil Engineering, Bachelor of Computer Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering.

College of Commerce and Finance ([www.cf.villanova.edu](http://www.cf.villanova.edu)): Bachelor of Science in Accountancy, Bachelor of Science in Business Administration, Bachelor of Science in Economics

College of Nursing ([www.nursing.villanova.edu](http://www.nursing.villanova.edu)): Bachelor of Science in Nursing

To qualify for the Bachelor's Degree, the student must have completed successfully one of the four-year courses of study as specified by the University together with other work assigned. The awarding of the degree is conditioned not upon the attainment of any fixed number of credit hours, but upon the satisfactory completion of all the studies prescribed for the degree sought. Details are available in each college's sections of this *Catalog*.

### Accreditation and Recognition

Villanova is approved by the Pennsylvania Department of Education and is accredited by the Middle States Association of Colleges and Secondary Schools. The degree program in computer science is accredited by the Computer Science Accreditation Commission of the Computing Sciences Accreditation Board, a specialized accrediting body recognized by the Council for Higher Education Accreditation. The Chemistry Program is certified by the American Chemical Society. Villanova University is recognized by the United States Navy as a training center for Reserve Officer Training (NROTC). All five degree programs of the College of Engineering have been accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

Degree programs within the College of Commerce and Finance are fully accredited by the American Assembly of Collegiate Schools of Business (AACSB).

The College of Nursing is approved by the State Board of Nursing of the Commonwealth of Pennsylvania. Upon completion of the undergraduate program, graduates are eligible to take the licensing examination (NCLEX) for professional registered nurses. The undergraduate and graduate programs are both fully accredited by the National League for Nursing Accreditation Commission, and have received accreditation from the Commission on Collegiate Nursing Education.

### Part-Time Studies ([www.parttime.villanova.edu](http://www.parttime.villanova.edu))

Villanova offers the opportunity for part-time study to a variety of students who are notable or do not wish to enroll as full-time matriculated students. Students may pursue Bachelor's Degrees on a part-time basis in: Accountancy, Business Administration, Communication, Computing Science, Information Science, Education (secondary), English, History, Human

Services, and Liberal Arts. Details on these programs and requirements are to be found in the Part-Time Studies section of this *Catalog*.

## International Studies and Overseas Programs

([www.internationalstudies.villanova.edu](http://www.internationalstudies.villanova.edu))

The Office of International Studies and Overseas Programs offers all full-time Villanova students the following counseling, planning and administrative services:

Counseling, planning and support in completing the overseas requirements for the area studies programs in Africana Studies, Arab and Islamic Studies, Irish Studies, Latin American Studies, and Russian Area Studies.

Counseling, planning and support in completing overseas learning and studies for the semester and/or year as international university students, interns, service learners, or and international exchange students in Asia, Africa, Latin America, the Middle East or Europe for credit towards graduation degree programs at Villanova.

Assistance in attending the Villanova International Summer Programs in Asia, Latin America, the Middle East or Europe at Al al-Bayt University (Jordan), Bethlehem University (Palestine), Birzeit University (Palestine), Universite de Bourgogne (France), Universita de Luigi Bocconi (Italy), Universidad de Cadiz (Spain), East China Normal University (China), European Business School (Germany), National University of Ireland, Galway (Ireland), John Cabot University (Italy), London School of Economics (UK), University of Nizhni Novgorod (Russia), Queen Margaret University College (Scotland), Sprachinstitut Tuebingen (Germany), Universita degli Studi Urbino (Italy), Universidad Catolica de Valparaiso (Chile), University of Warsaw (Poland), in Athens and Corinth (Greece), and Siena (Italy).

Ordinarily, students study abroad in their sophomore or junior year, maintain a 2.75 or better GPA on a 4.0 scale, have good health, and receive the approval of their Department Chair, their College Dean and the Director of International Studies and Overseas Programs. All transfer students to Villanova are required to stay on campus for three semesters before leaving to study overseas.

Villanova University has special exchange relations with University of Alicante; CIDH Center for Sustainable Human Development; National Universities of Ireland, Cork, Galway, and Dublin; ESPEME, Lille and Nice; European School of Business; INSTEP Cambridge/London; Jordan University of Science and Technology, King's College, London; London School of Economics; University of Maastricht; University of Manchester; University of Nizhni Novgorod; Ministry of Health, Oman; Queen's University, Belfast; University of Queensland; School for Field Studies; Trinity College, Dublin; and Universita degli Studi Urbino. Villanova University is associated with the Council for International Educational Exchange, the Institute for European/Asian Studies, the Institute for International Education, NAFFSA: Association of International Educators, and the Pennsylvania Council for International Education.

In addition, the Office sponsors Fall and Spring Orientation and Welcome Back workshops, Fall Study Abroad Fair, study abroad nights, peer counseling, Overseas Connections, International Week, and the Phi Beta Delta International Scholars Honor Society. Students wishing further information should contact the Director of International Studies and Overseas Programs in Geraghty Hall, Ground Floor (610/519-6412).

## Academic Advancement Program /Act 101

([www.multiculturalaffairs.villanova.edu](http://www.multiculturalaffairs.villanova.edu))

The purpose of the Academic Advancement Program (AAP)/Act 101 is to provide an educational opportunity for students from Pennsylvania who meet the academic and economic criteria established by the Higher Education Opportunity Act of 1971, legislatively designated and publicly known as Act 101.

The AAP admits highly motivated students whose high school credentials suggest that they can, with academic support, successfully matriculate at Villanova University. At Villanova, these students are given support in counseling and tutoring to enable them to demonstrate their potential to succeed in college. The pre-college component now offers a 3-credit freshman English course, math, reading/study skills, and general sciences classes, and critical thinking workshops.

The Program is administered by the Office of Multicultural Affairs, 202 Vasey Hall, (610/519-4075).

## NROTC ([www.nrotc.villanova.edu](http://www.nrotc.villanova.edu))

Villanova University, in a long-standing relationship with the United States Navy, maintains one of approximately 60 Naval Reserve Officer Training Corps units in the United States. The objective of the Unit is to develop the character and educate prospective officers for service in either the Navy or Marine Corps. Commissions as Ensign or 2nd Lieutenant are awarded upon successful completion of prescribed naval science courses and graduation from the University. These commissioned officers will serve on active duty for a period of four to nine years, depending upon choice of warfare specialty.

Participation in the NROTC Unit is through either the Scholarship or College Programs. Students in the NROTC Scholarship Program (national selection competition) receive a substantial subsidy from the Navy, including tuition, books, fees, and a monthly subsistence allowance as follows: Freshman and Sophomores \$250.00, Juniors \$300.00, and Seniors \$350.00. They participate in three summer cruises on board various Navy ships and installations and receive active duty pay while on these cruises.

NROTC College Program students (Non-Scholarship) apply directly to the Villanova NROTC Unit, usually prior to or during the fall semester of their freshman year. Students in the College Program receive no government subsidy until their junior and senior years, during which they receive a monthly subsistence allowance of \$300.00 for Juniors and \$350.00 for Seniors. They participate in one summer cruise and receive active duty pay while on cruise. Scholarships are available each year to those NROTC College Program students who stand at or near the top of their College Program class in terms of overall academic performance and aptitude for commissioned service. The Professor of Naval Science nominates College Program students for these scholarships with the selection being made by the Chief of Naval Education and Training (CNET). Normally 60 to 70% of the freshmen College Program students receive a three year scholarship offer after their first year in the program.

In addition to the four-year programs described above, two-year NROTC Scholarship and NROTC College Programs are available. Students must apply for these programs early in the spring semester of their sophomore year (application packages are normally due to CNET by 31 March each year. Those selected for the two-year programs must successfully complete a

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six-week training course at Newport, RI, during the summer preceding their junior year. Upon enrollment in the NROTC Program at the beginning of their junior year, two-year program students have the same benefits (tuition, books, fees and stipend), and assume the same active duty obligation, as four-year program students.

All Scholarship and College Program students may select any major at the University. Midshipmen at Villanova study in a wide variety of majors in engineering, arts, sciences, business, and nursing. Detailed NROTC information may be obtained from the Naval Science Office, Room 103, John Barry Hall.

NOTE: Applicants for the NROTC Program are not relieved of the necessity for payment of the registration deposit required by their letter of acceptance for admission to Villanova University.

### **Army ROTC** (<http://muse.widener.edu/rotc/>)

Villanova students are eligible to participate in the Army Reserve Officers Training Corps (ROTC) Program through a partnership agreement with the Widener University Department of Military Science. Army ROTC offers students the opportunity to graduate with a college degree and a commission in the United States Army, Army National Guard, or United States Army Reserve. All Army ROTC classes are conducted on the Villanova University campus. The Army ROTC Program involves undergraduate courses taken during the freshman and sophomore years, and advanced courses taken during junior and senior years. Students may enroll in the introductory courses without incurring any military or financial obligation and may withdraw at any time, subject to Villanova University's course withdrawal policy. Students who participated in Junior ROTC in high school or have prior military service may receive placement into the advanced courses as determined by the Army Professor of Military Science. The introductory course requirements may also be satisfied through attendance at a five-week Army ROTC basic camp at the end of the sophomore year. Students in the advanced courses are required to attend a five-week Army ROTC Advanced Camp between their junior and senior years. Students enrolled in the advanced courses receive a stipend of \$135 to \$400 per month and may incur an active duty obligation of up to three to four years. National Guard and Reserve Forces options are also available.

Nursing students who complete the four-year or two-year program, obtain their Nursing Degree, and pass their Nursing Board Examinations are commissioned into the Army Nurse Corps.

Four-year, three-year, and two-year Army ROTC scholarships are available on a competitive basis. Scholarships also include payment of certain university fees, a \$600 book and school supplies subsidy, and a tiered \$250-400 per month stipend.

Applications for the three-year Army ROTC scholarships must be submitted early in the spring semester of the freshman year; applications for the two-year Army ROTC scholarships must be submitted early in the sophomore year. Applications for attendance to the Army ROTC Basic Camp must be submitted early in the spring semester of the sophomore year. Detailed information may be obtained from the Professor of Military Science, Widener University, Chester, PA 19013, (610) 499-4098.

## **Air Force ROTC** ([www.csc.vill.edu/~afrotc/index.htm](http://www.csc.vill.edu/~afrotc/index.htm))

Villanova students are eligible to participate in the Air Force Reserve Officer Training Corps (AFROTC) through a cross-enrollment agreement with Saint Joseph 's University. All Aerospace Studies courses are held on the Saint Joseph 's campus. The AFROTC program enables a college student to earn a commission as a Second Lieutenant in the U. S. Air Force while concurrently satisfying requirements for his/her baccalaureate degree.

The program of Aerospace Studies offers a one to four year curricula leading to a commission as a Second Lieutenant in the Air Force. Students are under no contractual obligation to the Air Force until they accept an Air Force scholarship as sophomores or higher or enter the Professional Officer Corps.

Air Force ROTC offers 1, 2, 3 and 4 year scholarships on a competitive basis to qualified applicants. Four-year scholarships are available to high school seniors in various fields. The scholarships are offered to cadets enrolled in the AFROTC program and to college entrants to AFROTC. All scholarships cover tuition, lab fees, reimbursement for books, plus a \$250-\$400 tax-free monthly stipend, depending on academic year.

Detailed information may be obtained from the Professor of Aerospace Studies, AFROTC Det 750, Saint Joseph 's University, Philadelphia, Pennsylvania 19131, (610) 660-3190.

# Academic Resources

## Advising

Villanova takes seriously the responsibility of academic advising. Students are urged to consult with their academic advisers on a regular basis. Each College has its own advising system. For details, see the college sections that follow in this *Catalog* and consult the various college offices.

## Augustinian Historical Institute

The Augustinian Historical Institute promotes the research and publication of studies in the history of the Augustinian Order and in the allied fields of theology, philosophy, missiology, and biography. Located in the Augustinian Room, 301 Old Falvey, the Institute maintains an exceptional collection of books, manuscripts, reviews and micro-copies pertinent to these studies. The collection of the Institute is open for use between the hours of 9:00 a.m. -Noon, and 1-4 p.m. Monday through Friday.

## Dean's Lists

Each year the Dean of each college at Villanova honors those students who are deemed to have established an outstanding academic record as determined by the College and its Dean. To qualify for the Dean 's List, a student must be a full-time student with a semester average of 3.25 in the College of Engineering, 3.5 in the College of Nursing, 3.5 (for both semesters) in the College of Liberal Arts and Sciences, and 3.5 in the College of Commerce and Finance with no non-passing or missing grades on the semester report.

## Honor Societies

In addition to the many honor societies appropriate to individual colleges and academic disciplines and departments, Villanova has chapters of these national honor societies:

Phi Beta Kappa ([www.pbk.villanova.edu](http://www.pbk.villanova.edu))/ The Sigma Chapter of Phi Beta Kappa was established at Villanova in 1986. Membership in Phi Beta Kappa is an honor conferred primarily in recognition of outstanding scholarly achievement in the liberal arts and sciences.

Details may be found under "Phi Beta Kappa" in the Liberal Arts and Sciences section of this *Catalog*.

Phi Kappa Phi. Phi Kappa Phi is an honor society whose objective is the recognition and encouragement of superior scholarship in all academic disciplines. Qualified part-time juniors and seniors are eligible for election to membership. Admission is by invitation only and requires the nomination and approval by a chapter. Superior scholarship and good character are the criteria for membership.

Alpha Sigma Lambda. The Mu Chapter of Alpha Sigma Lambda was established at Villanova University in 1958. The society honors those dedicated part-time and evening students who have completed at least 24 Villanova credits and who are from the highest ten per cent of their class with a minimum quality point average of 3.2

## Information Technologies ([www.unit.villanova.edu](http://www.unit.villanova.edu))

The Office for University Information Technologies (UNIT) provides computing, information, and networks services to the entire campus community.

A campus-wide network for data, voice, and video communication provides phones and data connectivity for students, faculty, and staff. A state-of-the-art digital phone system offers students, faculty, and staff direct dial lines, voice messaging, mail boxes, and call transfer. The data network facilitates access to all on campus computing resources as well as access to remote computing resources via the INTERNET. Broadband cable facilitates video transmission to and from more than 100 classrooms for implementation of multi-media teaching technology into the curriculum.

UNIT maintains the University wide computing infrastructure for academic and administrative use, utilizing SUN Microsystem platform running the SUN Solaris operating system and 60+ servers running NOVELL and MS-NT throughout campus. All central and distributed computers and about 3000+ workstations and other devices are connected to the campus network providing each user with access to any computing resource. Every faculty and staff member has a PC or laptop connected to the campus network. Phone, cable and high-speed data connectivity is extended to all residence hall rooms. Citrix and Remote Access Service facilitate access to network and World Wide Web resources from off-campus locations. In addition UNIT operates videoconferencing and multi media facilities in Tolentine.

In addition to many college and department-specific student computing labs, UNIT manages two public student labs located, in Mendel and Tolentine, equipment in Falvey Library, Connelly Center and Mendel lounges and Donahue Hall totaling of over 170 workstations. The labs are open 18-24 hours a day with consultants on duty to assist students. All computers support general-purpose applications such as word processing, spreadsheets, graphics and data base management systems (Microsoft XP suite) plus course-specific software.

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User-ids are assigned to students prior to their arrival on campus that provides access to email, the WEB and other student designated computing resources. All students have a default Web page created for them and a personalized portal gives them access to their course schedules and course related materials and allows them to perform most administrative functions, such as registration or grade lookup on the Web.

The Student Computer Support Center (SCSC) located in Vasey Hall assists students with University promoted laptop computers and other PCs. Technical support is complemented by Web based documentation. The use of the University owned/managed computing, information, and network resources are governed by policies included in the Student Handbook and accessible on the University's Web site. In addition to the SCSC, UNIT operates the University Help Desk located in Mendel Hall and provides technical support and service from 8am to 8pm daily and extended hours support for critical systems until 2am.

Throughout the semester, UNIT offers a wide range of non-credit seminars that cover popular software packages as well as general computing and technology topics issues. The UNIT section of the University's publication Blueprints keeps the user community informed about new developments, upcoming seminars and other general computing and network topics.

The University Card Office provides students with a smart card (WildCard) that functions as a meal plan card, library card, access card to dorms, classrooms and labs, debit card for purchases on campus and selected off campus merchants and through the University's affiliation with a bank as an ATM card.

## Library Resources and Services ([www.library.villanova.edu](http://www.library.villanova.edu))

Falvey Memorial Library is the gateway to information resources and services for students, faculty and staff. Information is available through more than 700,000 volumes, 6,000 current serial subscriptions, approximately two hundred electronic databases, several thousand full-text electronic journals, and extensive microfilm and audiovisual collections. In addition, materials can be requested from libraries world-wide through interlibrary loan. With Pulling Law Library, Falvey shares in a selective depository status for federal government documents.

A wide range of services are offered including reference, interlibrary loan, circulation, reserve, database management and acquisitions. Reference librarians answer questions, recommend resources, assist with formulation of search strategies, and instruct in the use of electronic and print resources. Every librarian serves as a liaison with an academic department to facilitate library and departmental communication. The Falvey Student Advisory Council (FSAC) and the Faculty Library Committee advise the University Librarian of the changing information needs of the Villanova student and faculty. Display areas provide information on campus activities and programs as well as highlight Falvey's Special Collections. The historical record of Villanova University is available in University Archives on the fourth floor. Special Collections, located on the second floor, has examples of early printed books, the Joseph McGarrity Irish Studies Collection, Early Catholic Americana, and the Augustiniana Collection.

Collaboration between the library and academic departments to integrate information literacy into the academic programs, will ensure that students have the necessary skills for lifelong learning. Quest, a formal information literacy program, developed collaboratively with the

Core Humanities Program, instructs first year students on the basic steps necessary to locate and retrieve the correct print and electronic resources in support of their research. Instructional Media Services provides a wide variety of educational technology services to the university community, including individual and group viewing (and listening) facilities for its collection of videotapes, CDs, audiotapes, & laser discs. Other services are available for faculty or students working with faculty members, such as presentation rooms, graphic design, and video editing.

The Library homepage ([www.library.villanova.edu/](http://www.library.villanova.edu/)) provides access to the resources and services available through the library, and to information about policies, procedures and hours of operation. FLASH (Falvey Library Academic SearchH), available on the homepage, offers access on and off campus to VuCat (the online catalog), selected free databases, and to many subscription databases. Approximately fifty public workstations are available to access FLASH, search the Web, send and read email, and conduct word-processing operations. In addition, network ports are available around the building to connect personal notebook computers.

Unique study opportunities are also available at Falvey Library, including comfortable couches and chairs which complement the tables and carrels for individual study. The Kolmer Group Study Rooms are available on the third and fourth floors. Study space is also available in the coffee shop, Holy Grounds at Falvey, on the ground floor. The Falvey Mug, available for purchase at Holy Grounds, enables students to take beverages throughout the building.

## Mathematics Learning and Resource Center

([www.villanova.edu/mlrc](http://www.villanova.edu/mlrc))

The Mathematics Learning and Resource Center (MLRC) provides an environment where students can work on group projects, study independently, use computer lab facilities and obtain help with freshman and sophomore level math classes. During its hours of operation (Monday - Thursday: 1:00 - 5:00 p.m. and Sunday -Thursday 6:30 - 9:00 p.m.), the MLRC is staffed by undergraduate and graduate Villanova students. The MLRC computer lab has 15 computers, capable of running the mathematical software currently being used in math courses offered at Villanova. There is also a comprehensive collection of tutorial software and a modest video library and three TV/VCR stations, which students may use for independent learning. The Center is located on the second floor of Old Falvey, tel. (610)519-MLRC or (610)/519-5193 for voice mail messages.

## National Scholarships ([www.honorsprogram.villanova.edu](http://www.honorsprogram.villanova.edu))

Villanova University provides comprehensive advisement for students who pursue prestigious national scholarship and fellowship opportunities, including the Truman, Goldwater, Udall, Fulbright, Marshall, Rhodes, Gates Cambridge, National Science Foundation, Hughes, Mellon and Ford Foundation. A mentoring program is administered by the Office of Undergraduate Grants and Awards, a, and begins as early as an undergraduate student's first year. In recent years, over sixty students have received formal recognition from these various national scholarship programs.



## Writing Center ([www.writingcenter.villanova.edu](http://www.writingcenter.villanova.edu))

Writing Center tutors offer assistance to undergraduates, graduate students, faculty, and staff who are engaged in every kind of writing. Students are welcome to come to the Writing Center at any stage of their composing process. Walk-in appointments are welcomed, but scheduled appointments are strongly encouraged. An individual session takes approximately 45 minutes in length, and clients may request a specific tutor. The Center is located in the Dalton Room (202 Old Falvey Library) and is open Sunday through Thursday, from 11:30 a.m. to 7:30 p.m., and Friday, from 11:30 a.m. to 3:30 p.m. Phone: 610/519-4604.

## Campus Life

### Campus Ministry ([www.campusministry.villanova.edu](http://www.campusministry.villanova.edu))

Reflecting the traditions of Roman Catholic and Augustinian spirituality, the Villanova Campus Ministry engages every aspect of University life through prayer, liturgy, community service, leadership development, and pastoral care. More specifically, Campus Ministry: Offers programs centered on Christian living, social justice, liturgy, and preparation for the sacraments with an emphasis towards creating and eliciting Christian community on campus; Works with all members of the Villanova community to build spiritual awareness and growth, initiates programs in response to the gospel values of the Catholic Christian tradition; and Encourages the development of student leadership as a priority reflecting the student's significant role both now and for the future of the Church and society.

Campus Ministry is located on the lower level of St. Rita's Hall. Regular weekday office hours are 9 a.m. to 5 p.m. Appointments can be made in person or by phoning 610/519-4080. A recorded message giving the schedule of Liturgies is available at 610/519 4080. Detailed information on Campus Ministry activities, including programs for community service and leadership and for student involvement in liturgical celebrations, and information concerning other religious denominations' services and locations, can be found in on the website and in *The Blue Book: The Villanova University Student Handbook*.

### Career Services ([careers.villanova.edu](http://careers.villanova.edu))

The Career Services Office assists individuals with assessing career interests, planning careers, and developing the skills to successfully pursue career plans. Individual counseling is supplemented by workshops and career programs. Interest tests are administered and interpreted. The credentialing service allows students to develop a file of recommendations to be used for graduate school and job applications. Employment services are coordinated through the office website at [www.careers.villanova.edu](http://www.careers.villanova.edu). These services include a campus interview program with over 350 employers, a resume referral system, and a job listing service. The Career Library provides extensive information on careers, materials for distribution on various job search topics, and registration materials for graduate school admission tests. The office is located in Corr Hall.

## **Counseling Center** ([www.studentlife.villanova.edu/counselingcenter](http://www.studentlife.villanova.edu/counselingcenter))

The University Counseling Center, located on the Main Floor of the Student Health and Counseling Building, offers psychological counseling, groups, consultation, referral, and study skills counseling. Except for emergencies, appointments are required and can be scheduled either by phone (610/519-4050) or by visiting the Center. Some examples of services are:

**Personal and Psychological Counseling.** Students can discuss personal concerns in a private, confidential setting. Individual counseling sessions are available, as are counseling groups. Doctoral psychologists help students deal with normal developmental adjustments common during the college years, and can also help students with issues such as: depression; anxiety; relationship concerns; eating disorders; self-defeating behaviors; family issues; and other problems that affect academic functioning. All contacts are completely confidential and are not recorded on the student's university records.

**Consultation regarding other individuals.** Students who are concerned about a family member, friend, or fellow student, may also consult the Counseling Center staff about how best to support that person.

**Referrals.** Referrals are provided for students who prefer to obtain off-campus counseling, or whose counseling needs exceed the capacity of the Counseling Center.

**Study Skills Counseling.** The study skills counselor helps students enhance their ability in the areas of: note taking; class preparation; test preparation; test taking; and time management. The goal of these services is to help students take better advantage of the academic offerings of the University. Individual appointments are available, as are group workshops on topics of common interest.

## **Diversity Initiatives**

(<http://www.studentlife.villanova.edu/diversityinitiatives>)

The Office for Student Life Diversity Initiatives seeks to ensure that each student's educational experience at Villanova University takes place in the context of a welcoming, caring, just, and educationally purposeful community. The office pursues its primary goals through the promotion and facilitation of cross-cultural awareness by offering learning resources and structured learning experiences, and providing support to students and student organizations. The Office also engages in collaborate planning and research with all areas of the University, to assist the Villanova community in meeting its commitment to influencing the search for world peace and justice.

Students are encouraged to contact the office if they encounter any form of bias or discrimination at the University. Once reported, students will meet privately with office staff to develop strategies for remedying problems encountered with bias or discrimination. The office also offers opportunities for students to assist the office in achieving its goals by participating in student organizations to promote diversity. The office is located in Dougherty 108, tel. 610/519 7316.

## **Student Health Center**

The Villanova Student Health Center (519-4070) is staffed by registered nurses 24 hours daily

during the undergraduate academic year to meet the needs of all Villanova students. Physicians and Nurse Practitioners are available weekdays by appointment. Registered nurses provide 24 hour care to students who require outpatient evaluation or inpatient treatment. Other medical services include gynecologic care, diagnostic laboratory testing, administration of allergy injections and immunizations. In the event that a student requires emergency care, transportation is provided to a local hospital. Though students are not billed for physician or nurse practitioner visits, they are financially responsible for medication and laboratory fees, as well as consultation with specialists.

## Identification Cards

The official University identification card for students, staff, and faculty, is called the *Wildcard*. It is a photo ID with a magnetic stripe on the back. Photos are taken at the *Wildcard* Office on the first floor of Dougherty Hall (610/519-6202). Requirements for obtaining a *Wildcard* include a picture ID and proof of enrollment at Villanova. The *Wildcard* is necessary for student verification, student discounts, library borrowing, and for entrance into the library on weekends and weekday evenings.

## International Students ([www.students.villanova.edu/iss](http://www.students.villanova.edu/iss))

The International Student Adviser's Office is a service provided by the university to aid foreign students in becoming oriented to the university and the community and assists them with U.S. immigration requirements. The office sponsors a variety of social and cultural programs in conjunction with the International Student Association. The office offers a comprehensive orientation program at the beginning of the Fall Semester.

The International Students Office offers a comprehensive ESL program in conjunction with the office of Continuing Studies. Classes are offered in the fall, spring, and summer terms. All foreign students must register with the International Students Office each semester. Any change of address must be reported immediately. The office is located in Corr Hall, Ground Floor (610/519-4095). *NOTE:* Villanova University requires that all full-time students have health insurance. The International Student Office has information and policy forms available for students who do not have health coverage from their home countries.

## Learning Disabilities ([learningsupportservices.villanova.edu](http://learningsupportservices.villanova.edu))

The Office of Learning Support Services, in conjunction with faculty, is committed to providing "reasonable academic accommodations" for students with learning disabilities, other neurologically based disorders, and those disabled by chronic illnesses. Villanova students may request support services in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA). Our goal is to ensure that students with disabilities have an opportunity to grow independently to their full potential at Villanova.

It is the responsibility of the student to identify themselves to the Coordinator of Learning Support Services and submit for review current documentation of their disability. Reasonable academic accommodations and support services are based on the assessment of the current impact of the disability on academic performance; therefore it is in the student's best interest to provide current and complete documentation. Given the specific nature of the disability,

“reasonable academic accommodations” will be determined on an individual basis. Students must obtain a new accommodation request form for each term at Villanova in order to receive accommodations during the term.

The Office of Learning Support Services is located on the first floor of Geraghty Hall. For additional information about our services or assessment of learning disabilities, contact 610-519-5636.

## **Multicultural Affairs** ([www.multiculturalaffairs.villanova.edu](http://www.multiculturalaffairs.villanova.edu))

Through its multi-faceted programs and dimensions (Academic Advancement Program/Act 101, Affirmative Action Program, Volunteer/Outreach Programs, Coordinated Services for the Disabled, Mentoring Programs, Committee on Cultural Diversity, and Multicultural collaborative endeavors), the Office of Multicultural Affairs assists and supports the University in its mission of being a community of people who share common values and whose culture reflects the Augustinian spirit. The Office of Multicultural Affairs is located in Vasey Hall, Room 202, (610) 519-4075. The main programs are:

**Affirmative Action.** A major component of the Multicultural Affairs Office is Affirmative Action. Designated the Affirmative Action/Equal Employment Office, the Multicultural Affairs Office is responsible for insuring that the University complies with local, state, and federal government mandates and remains committed to equal employment and educational opportunities. This office provides training, workshops and guidance on issues relating to affirmative action/equal opportunity, diversity, and sexual harassment.

**Human Services.** The Office of Multicultural Affairs coordinates volunteers to provide assistance to those in need. The University, with the active involvement of student volunteers, cooperates with agencies and programs that offer aid to the elderly, the disabled, and the underprivileged in Philadelphia and the suburbs. Student volunteers obtain practical experience in various areas of social justice and responsibility. The Project Sunshine Volunteer commitments provide an average of 31,200 volunteer hours per academic year. The annual Sunshine Day mini-carnival for disadvantaged children and the Saturday Kids-on-Campus' monthly program add further hours of outreach and opportunities for students to volunteer. The annual Christmas Giving Program for elderly people or others who are disadvantaged extends the outreach opportunity to the entire Villanova community.

The Office also works with those among Villanova's population who are faced with physical or learning challenges. The Office assists the University community in responding to the individual needs of these students, faculty, and staff members with regard to classroom environment, educational needs, accessibility arrangements, and basic support services. Students with learning disabilities also receive support from the Learning Support Services Office (<http://learningsupportservices.villanova.edu>).

## **Music Activities** ([www.music.villanova.edu](http://www.music.villanova.edu))

The Music Activities Office promotes, maintains, and supervises the efforts of student performing groups on the Villanova campus. These groups include the University Bands (Concert, Marching, Pep and Jazz), Band Front, Chamber Voices, Chamber Winds, Villanova Singers, Villanova Voices, Gospel Ensemble, Dance Ensemble, String Ensemble, Student

## Villanova University

Musical Theater, and Student Theater. Each organization is student-run under the musical direction of a staff professional. Information about musical opportunities can be obtained by contacting the Music Activities Office on the lower level of St. Mary ' s Hall (610/519-7214).

### **Residential Facilities** ([www.reslife.villanova.edu](http://www.reslife.villanova.edu))

The University maintains a variety of living facilities which are intended to serve as extensions of Villanova's learning environment. Approximately 4300 men and women are housed in 22 residence halls which vary in capacity from home-type buildings for 30 students to modern multi-level structures housing over 500 students. An additional 1200 students reside in on-campus, fully -furnished apartments.

Dining facilities for resident students are conveniently located in Dougherty Hall on the main campus, St. Mary's Hall on the west campus, and in Donahue Hall on the south campus. Lounge areas and laundry facilities are available to students in most residence halls.

Admission to the University as a resident and payment of admission deposit guarantees placement in residential facilities for the freshman, sophomore, and junior years. Commuters and transfers are eligible for on-campus residency only on a space-available basis.

All housing contracts are for a full academic year. Students who terminate their housing contracts prior to the end of the academic year, but who remain enrolled at the University will be assessed a Cancellation Fee of \$300. The fee is not applicable in the case of official withdrawal or removal by way of formal judicial action by the University.

More information on residential facilities may be obtained by contacting Residence Life, Kennedy Hall (610/519-4154).

### **Student Development** ([www.villanova.edu/studentdevelopment](http://www.villanova.edu/studentdevelopment) )

The Office of Student Development oversees the administration of over 100 student organizations at Villanova. Its aim is to provide a co-curricular program emphasizing leadership skills in order to help co-ordinate students ' free time with their study and education. These organizations foster common interests among students and assist students in gaining leadership skills that complement the skills learned in the University academic programs. The interest areas represented at Villanova include: governance, programming, publications, politics, fraternities and sororities, academics, cultural activities, honor societies and special interest groups (yearbook, radio station, tech crew, etc.) A complete listing of organizations and information on how to join can be found in the Office of Student Development, 214 Dougherty Hall (610/519-4210).

### **University Senate**

The University Senate is an advisory group to the University President and the Board of Trustees on policy. Representation includes faculty, administration, and students. The Senate meets at least three times each semester.

### **Veterans** ([www.registrar.villanova.edu](http://www.registrar.villanova.edu))

The Registrar ' s Office (Room 202, Tolentine Hall) serves as a liaison between the University and the Veterans Administration, except in the case of Law students who deal with the Law School Registrar.

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Students (veterans) who will be enrolling in the college for the first time must contact the Office of the Registrar to file their application with the Veterans Administration. After the student has registered for the appropriate courses, the enrollment certification will be forwarded to the Veterans Administration to secure payment of benefits to the veteran.

Veterans who transfer from another institution must complete the form "Request for Change of Program or Place of Training," available from the Office of the Registrar. The veteran must submit the completed form together with the course information to the Office of the Registrar.

The enrollment certification will then be forwarded to the Veterans Administration to secure payment of benefits to the veteran.

# Admission

([www.admission.villanova.edu](http://www.admission.villanova.edu))

## General Policy on Admissions

Villanova seeks to enroll students who excel academically and possess wide interests and positive qualities of character. In selecting members of the freshman class from the large number of candidates who meet the minimum quantitative and qualitative requirements, the University undertakes to admit those who appear best prepared to profit from the programs of study currently offered.

The criteria used to assess academic potential are: the scholastic record as reflected by courses chosen in high school and the quality of performance; rank in class (where rank is reported); scores earned on such nationally standardized tests as the SAT I and ACT; participation in extracurricular and community service activities; and the student essay.

Students are selected wholly on the basis of individual merit. The University does not discriminate against applicants seeking admission because of their race, color, national or ethnic origin, religion, sex, age, physical disability, or family financial status. There are no quotas for any of the groups mentioned, but in selecting candidates whose academic qualifications are approximately equal, some preference may be given to children of alumni or faculty members, athletes, and to residents of geographical areas not strongly represented in the student body.

In conjunction with the State of Pennsylvania, Villanova University considers applicants from Pennsylvania for admission under its Act 101 (Academic Advancement Program). The purpose of the act is to provide an educational opportunity for students from Pennsylvania who meet the academic and economic criteria established by the Higher Education Opportunity Act of 1971, legislatively designated and publicly known as ACT 101. Interested and eligible applicants should note their desire to be considered for the Program on their application for admission.

## Required and Elective Units for Admission

Although individual consideration is given to each applicant, it is expected that all applicants, except in most unusual circumstances, will minimally satisfy the unit requirements listed below for the college to which they make application. As used here, a unit represents a year's work in any subject.

## Villanova University

### College of Liberal Arts and Sciences

For Arts and Education Curricula:

English	4	Mathematics	3
Foreign Language	2	Science	1
History or Social Science	2	Electives	3

### For Science and Mathematical Sciences Curricula:

English	4	Foreign Language	2
Chemistry	1	Physics	1
Mathematics	4	Electives	4

### College of Commerce and Finance

English	4	Science	1
History	2	Electives	5
Mathematics	4		

### College of Engineering

English	4	Physics	1
Chemistry	1	Electives	6
Mathematics	4		

### College of Nursing

English	4	Mathematics	3
History	2	Electives	2
Biology	1	Other Science	1
Chemistry	1	Foreign Language	2

### Elective units acceptable in all colleges

Latin	2	Social Studies	2
Foreign Language	2	Mathematics	2
History	2	Laboratory Science	2
Chemistry	1	Botany	1
Biology	1	Zoology	1
Physics	1		

## Health Affiliation Program ([www.healthprofessions.villanova.edu](http://www.healthprofessions.villanova.edu))

Villanova University has Health Science Affiliation programs with a number of institutions including the MCP/Hahnemann School of Medicine, Thomas Jefferson University College of Health Professions, the University of Pennsylvania School of Dental Medicine, and the Pennsylvania College of Optometry. Applications to these programs must be received by the Office of University Admission no later than November 1. SAT I or ACT must be taken no later than October of the senior year. These programs are not available to transfer students.

## Early Action

Early Action admission is awarded to those exceptional students who have outstanding high school records and correspondingly high SAT I or ACT scores as judged by the Committee on Admission. Applicants will be evaluated on the basis of their three-year record and scores on the SAT I or ACT scores taken prior to October of the senior year.

For Early Action, the completed application must be received by the Office of University Admission no later than November 1 of the senior year. Early Action selectees will be notified by January 1. These applicants need not apply only to Villanova. Unsuccessful applicants will also be notified, and will be included in the Regular Decision applicant pool. The Committee on Admission reserves the right to admit or defer any candidate for Early Action.

## Regular Decision

Applicants for Regular Decision may file their credentials any time after the start of the senior year. The completed application must be received by the Office of University Admission no later than January 7. Applicants for Regular Decision will be judged on the basis of their three-year high school record (to include senior mid-year grades) and their scores on the College Board SAT I or ACT taken by December of their senior year. All information in support of an applicant's candidacy for admission should be on file by January 7. Every effort will be made to notify all applicants by April 1 of the following appropriate action: acceptance, waiting list, denial, scholarship award, loan assistance, and/or grant-in-aid. Accepted students who have applied for on-campus residency must return a non-refundable \$400 deposit postmarked no later than May 1. Commuting students must return a non-refundable \$250 deposit postmarked no later than May 1. Notification of acceptance is made to commuting students and applicants to the College of Nursing on a rolling admission basis after January 15.

Students who are admitted and pay the \$400 deposit by May 1st are guaranteed three consecutive years (freshman, sophomore and junior) of on-campus housing.

## Application Procedure

To ensure proper processing of applications for admission, all candidates should follow the procedure outlined below:

Obtain applications from the Office of University Admission, Villanova University, Villanova, PA 19085 (1-610/519-4000) or on-line at [www.admission.villanova.edu](http://www.admission.villanova.edu).

Upon receiving the application, the candidate must complete it, enclose a non-refundable \$60 application fee, and forward it to the high school guidance counselor. *The completed application must be received by Villanova no later than January 7 for Regular Decision consideration.*

Take the SAT I or ACT no later than December of the senior year (for regular decision) and have the results sent to Villanova University (CEEB Code 2959).

Students accepting the University's offer of admission, including ROTC candidates, are advised to send their registration deposits by check, credit card, or money order payable to "Villanova University" as soon as possible. *All deposits must be postmarked no later than*



## Villanova University

*May 1.* The deposit is non-refundable and is applied toward the student's first semester account. Incoming freshmen designated with residency status who accept an offer of admission by submitting deposits postmarked no later than May 1 are guaranteed on-campus housing for three consecutive years (freshman, sophomore and junior).

Candidates for Early Action follow application procedures as given above, except that:

The completed application must be received by Villanova on or before November 1.

SAT I or ACT must be taken no later than October of the senior year and the results sent to Villanova University.

Information on admission requirements and procedures for Part-Time Studies can be found in the Part-Time Studies section of this *Catalog*.

### Transfer Students

Candidates for admission who have attended other colleges and universities should submit applications for transfer to the Office of University Admission of Villanova University no later than July 15 for the fall and November 15 for the spring semesters.

The transfer applicant must submit complete transcripts of secondary school and college records, a list of courses in progress, a catalog describing courses completed at the college-level institution, evidence of honorable withdrawal (Transfer Applicant Evaluation), and any other information the Admission Committee may require. Transfer students are required to choose a major at the time they apply. Admission criteria vary slightly contingent upon the college or academic program to which a candidate applies. A cumulative grade point average of 3.0 is recommended for students interested in transferring into the College of Liberal Arts and Sciences. Students interested in transferring into the College of Nursing must have maintained at least a 2.5 cumulative grade point average.

Transfer credit towards undergraduate degrees will, in general, be granted for appropriate academic work completed with a grade "C" (2.0) or better at an accredited institution. Credit may be granted for courses without direct Villanova equivalents when such courses are of clear academic merit. In the College of Liberal Arts and Sciences a cumulative average of 3.00 and two semesters at the previous institution are prerequisites for acceptance. Quality-grade points for work taken elsewhere are not included in the calculation of the student's cumulative average used to determine advancement at Villanova and eligibility for graduation. The final thirty credits (senior year) of a degree program and at least half of all major courses must be taken at Villanova.

Candidates for admission from junior colleges, community colleges, or institutes are judged by the same regulations pertaining to applicants from four-year institutions. Credits will be granted, as above, for appropriate courses completed in a two-year program, provided that the institution is regionally accredited or a candidate for such accreditation. Transfer students from two-year programs should note that graduation after two years of study at Villanova cannot be guaranteed because of the complexities of scheduling and the fulfillment of the requirements of Villanova's program.

Applications for transfer of credit from non-accredited institutions are considered on an individual basis. Credit is granted for those courses that are of clear academic merit and in which the transfer applicant has earned grades. In all cases the University reserves the right to require a written examination in the course or courses in question before transfer credit will

be granted.

## **Pre-Matriculated College Credit Statement**

College-level work done prior to high school graduation may be awarded transfer credits upon receipt of the following: (1) an official letter from the high school principal or guidance counselor describing the college-level program of study; (2) an official letter from the college/university stating that the courses were taught by members of the regular faculty, open to enrollment by and graded in competition with regularly matriculated

undergraduates at the college, and a regular part of the normal curriculum published in the college catalog; and (3) an official, seal-bearing transcript from the college/university. Each supporting document is to be sent to the Dean of the College in which the student is enrolling.

## International Students

Villanova University admits to its undergraduate program citizens from other countries who meet the appropriate criteria. International students are accepted to begin their studies in the Fall semester only. The final date for receipt of the application for undergraduate students is January 7.

To be considered for acceptance, international students must fulfill all the requirements of immigration, and achieve a minimum score of 213 on the Test of English as a Foreign Language (TOEFL).

All undergraduate international students should note that they must pay a non-refundable tuition deposit determined by the Office of University Admission after acceptance and submit a certification of finances form prior to the issuance of the I-20 form. No need-based financial aid is available to international students from University sources. Also see the section above on International Students and Human Services.

## Advanced Placement Programs

Villanova recognizes advanced placement from The College Board advanced placement program (AP) and from the International Baccalaureate Program (IB). Students who have taken these courses should report to their College Dean 's office to verify Villanova 's receipt of the scores, and to ensure that proper adjustments have been made to their academic records. The courses will be entered into the student 's record with Villanova credit but without a grade. In some cases, the advanced placement course will allow the student to place out of a lower level course but will not be counted as credit.

*The following AP courses will receive Villanova credit if a student receives a score of 4 or 5:* American History (07); Art (14 or 15); Art /Art History (13); Biology (20); Calculus (66 or 68); Chemistry (25); Computer Science (31 or 33); Economics (34 or 35); English (36 or 37); Environmental Science (40); European History (43); French (48 or 51); German (55); Latin (60 or 61); Physics (80 or 82); Political Science (57 or 58); Psychology (85); Spanish (87 or 89); Statistics (90). A grade of 3 or higher is awarded credit as follows: Arts and Sciences and Engineering, tests 31, 66, 68; Commerce and Finance test 68, Nursing, tests 07, 25, 31, 43, 66, 68, 80, 82. Chemistry majors only receive credit for a score of 5 in test 25.

*The following IB courses will receive Villanova credit if a student receives a score of 6 or 7:* Anthropology; Biology; Chemistry; Computer Science H L; Computer Science Information Technology; French A; English; Economics; Geography; German A; History: Americas; History: Europe; Latin; Mathematics; Mathematics Further; Music; Philosophy; Physics; Psychology; Spanish A. Students also receive credit for a score of 5 in Computer Science H L, Computer Science Information Technology, English, Economics, Geography, and Mathematics Further.

## Credit by Examination

Qualified matriculated students may test out of selected courses and receive full credit for them. Such courses are graded on a "Satisfactory/Unsatisfactory" basis; however, a failing grade will not appear on the student's transcript. Applications and information are available in room 450, St. Augustine Center.

## Transfer within the University

When a student transfers from one college to another within the University, the Dean may delete from the computation of the Grade Point Average courses which are not applicable to the new program. However, if such a student returns to her or his previous college, the Dean of that College will notify the Registrar to reinstate those courses. The grades and any credits earned will again be computed in the Grade Point Average.

# Tuition and Fees, 2002-2003<sup>1</sup>

## Undergraduate Colleges and Programs

### TUITION (Per Year)

College	First, Second, Third Year Students	Fourth Year Students
Arts	\$23,540	\$22,460
Commerce and Finance (includes laptop)	\$24,710	\$23,630
Science and Nursing	\$24,140	\$23,0600
Engineering	\$24,600	\$23,520

### FEES

Application Fee (Non-refundable)	\$55 (\$50 for transfer students)
Tuition Deposit (Non-refundable) (Deposit due upon acceptance; credited to account upon registration)	\$400 (\$250 for commuters)
Orientation Fee (New Students only)	\$115
Student Health and Wellness Fee	\$125/semester
General University Fees	\$150/semester
Room (Depending on Accommodations)	\$1,945-2,835/semester
Board (Depending on Meal Plan)	\$1,050-2,175/semester
Late Registration Fee	\$25
Late Payment Fee <sup>2</sup>	Determined by balance due

## Villanova University

Returned Check Charge	\$25
Monthly Service fee for Past-due Accounts	\$5/month
Parking Fee (Annually for students using University parking lots)	\$75

<sup>1</sup>Subject to change at the discretion of the University Administration.

<sup>2</sup>A Late Payment fee is charged to any account which is not paid in full by the official first day of class.

Students may be billed for tuition and related costs up to the week before in-person registration. However, payments are due no later than the first day of class. This requirement applies to all students, including those who register too late to receive a bill. *Registration or the release of academic records cannot be completed until all financial obligations have been settled with the Bursar's Office.* In addition to the above expenses, students should include expenses for textbooks, laundry, clothing, personal effects, and travel between the University and their homes in their educational costs.

### Tuition for International Studies

Villanova will charge current students full tuition for all Fall and Spring term international studies programs. Villanova students will be eligible to use Villanova University financial aid (i.e. grants and scholarships) to assist with study abroad tuition costs as long as those funds do not carry policy constraints or conditions which would restrict their use for this purpose. If a recipient institution's tuition exceeds Villanova's, the University is obligated to pay a maximum amount equal to that of the normal Villanova tuition for that academic term's undergraduate tuition. Villanova will not pay for room, board, travel, books, brokerage or associated non-academic fees of an international studies experience.

All tuition remission programs are excluded from eligibility to apply to any study abroad programs. A complete copy of this policy can be requested through the office of Vice President for Academic Affairs. This policy is effective in Fall 2002 with the class of 2004. The University reserves the right to change this policy at any time without prior notice.

### Part-Time Studies, Tuition and Fees, 2002-2003

Application Fee (Non-refundable)	\$25
Tuition (Evening Courses Only):	
Liberal Arts, Education	\$335 (per credit)
Science, Nursing, Non-matriculated, Visitors, Post graduates	\$350 (per credit)
Commerce and Finance <sup>1</sup>	\$380 (per credit)
Engineering	\$485 (per credit)

## Villanova University

Tuition (Day Courses Only 1-11 Credits) <sup>2</sup>	
Liberal Arts	\$515 (per credit)
Commerce & Finance	\$560 (per credit)
Science, Nursing, Non-matriculated, Visitors, Post graduate	\$540 (per credit)
Engineering	\$580 (per credit)
General University Fee	\$150 (day); \$15 (evening)
Technology Fee <sup>3</sup>	\$100
Late Registration Fee	\$25
Late Payment Fee <sup>4</sup>	Determined by balance due
Monthly Services Fee for Past-Due Accounts	\$5
Returned Check Charge	\$25
Parking Fee <sup>5</sup>	\$40

<sup>1</sup> Beginning Fall 1999, a technology curriculum was instituted for all evening business administration and accountancy majors. Rental of a notebook computer is included in the tuition fee. Contact Part-Time Studies for details.

<sup>2</sup> Any student carrying 12 or more credits of all day classes or 12 or more credits of any combination of day/evening classes will be charged at the applicable full-time undergraduate school rates. These rates are listed above.

<sup>3</sup> For Non-matriculated and Post-graduate students taking business courses. Includes rental of notebook computer.

<sup>4</sup> A Late Payment fee is charged to any account which is not paid in full by the official first day of class.

<sup>5</sup> Annually for evening students. For students taking day courses, the fee is \$75.

*NOTE:* Registration or the release of academic records cannot be completed until all financial obligations have been settled with the Bursar's Office.

## Refunds

Refunds as a result of official withdrawal will be made according to the schedule listed below. Activities, library, and medical fees are not refundable. There will be no refund for unauthorized withdrawals. Students who do not register or who notify the Registrar's Office prior to the first week of class that they will not enroll are entitled to a full refund.

Segment of Semester	Refund
Up to first week	80%
Up to second week	60%
Up to third week	40%
Up to fourth week	20%
Beyond fourth week	No refund

## Financial Assistance

([www.finaid.villanova.edu](http://www.finaid.villanova.edu))

The cost of a college education is a major concern facing parents and students. Villanova University recognizes this fact and attempts to provide a comprehensive package of financial assistance consisting of grants, loans, and student employment. In addition to these need-based programs, Villanova offers several merit-based scholarships which are granted irrespective of students' needs.

### Scholarships

**Presidential Scholarships.** Villanova University offers four-year full-tuition Presidential Scholarships to every incoming class based exclusively on academic merit. To be eligible for consideration for this full-tuition scholarship, students must score at least 1400 on the SAT I (with a minimum of 670 verbal and 670 math) or an ACT composite score of 32, rank in the top 5% of their high school class, or have a weighted grade point average of a 3.80 on a 4.0 weighted scale if the high school does not provide class rank. All class ranks and grade point averages are taken cumulatively at the end of the sixth semester, and all SAT I or ACT scores must be received by November 1. All applicants to the University who meet these criteria will be invited by the middle of January to submit an additional application for the scholarship. The scholarship selection committee also considers each applicant on the basis of his or her essay, interview, and high school and community involvement. Candidates who are selected as finalists and who are interviewed for the Presidential Scholarship but not selected as recipients, will be awarded a \$12,500 Villanova scholarship. Selections are based exclusively on merit, without regard for race, religion, gender, financial need, or secondary school. For more information, see the Honors Program section of the Catalog.

**Villanova Scholarships.** Scholarships beginning at \$1,000 per academic year are awarded through the Villanova Scholars program. The minimum criteria in order to be considered for these scholarships include a secondary school cumulative class rank in the top five percent (if rank is reported), a combined SAT I score of 1350 (650 minimum for both verbal and math), and leadership skills demonstrated through high school and community involvement. All ranks and grade point averages are taken cumulatively from the end of the sixth semester, and all SAT I or ACT scores must be received by January 7. Villanova Scholars awards must be used for tuition only.

**Commuting Scholarships.** Partial Scholarships ranging from \$2,000 to \$10,000 per academic year are awarded to outstanding students commuting from their parents' homes. To qualify for this award, students must have a combined score of at least 1250 on the SAT I and must have a cumulative rank in the top 10% of their high school class (if rank is reported) at the end of the sixth semester. Commuting Scholars awards must be used for tuition only.

**Presidential Scholarships for Underrepresented Students.** Each year, based on the recommendation of the Scholarship Committee, students from groups historically underrepresented within the Villanova University community, and show evidence of their ability to make significant and diverse contributions to the academic and social culture of the University, are offered the Presidential Scholarship for Underrepresented Students. These

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outstanding candidates must have exceptional high school credentials and must have scored a minimum of 1250 on the SAT I. This renewable award covers full tuition, textbooks, room and board charges for the eight consecutive semesters. Students who wish to apply should contact the Office of Multicultural Affairs at 610-519-4075 for the Scholarship application. The application deadline is the last Monday in January.

**St. Martin de Porres Grant** Villanova University provides grants valued at full tuition for traditionally underrepresented students from the Greater Philadelphia area. To be eligible for consideration, students must have exemplary high school records, correspondingly high SAT I or ACT scores, leadership roles, and active involvement through service to the community. The Greater Philadelphia area is defined as Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania; Burlington, Camden, Gloucester, and Salem counties in New Jersey; and New Castle county in Delaware.

## Student Financial Aid

To apply for all types of student aid, prospective students must file the Free Application for Federal Student Aid (FAFSA) and the Villanova University Institutional Financial Aid Application. The FAFSA can be obtained from the high school guidance counselor or on the web at [www.fafsa.ed.gov](http://www.fafsa.ed.gov). The Villanova University Institutional Financial Aid Application can be downloaded from the financial assistance website at [www.finaid.villanova.edu](http://www.finaid.villanova.edu). To receive priority consideration for financial aid, applicants must file the FAFSA by February 14th. Signed copies of the student's and parents prior year Federal Tax Returns (no schedules are required), W-2 forms and the Villanova University Institutional Financial Aid Application must be submitted to the Office of Financial Assistance by March 7th. All returning undergraduate students wishing to reapply for financial aid must file the Renewal FAFSA. Returning students who are new financial aid applications must file an original FAFSA. Applicants who are not Pennsylvania residents should file the appropriate application for State Grant consideration in their home state. All returning students must also complete the Villanova University Institutional Financial Aid Application (available through the Office of Financial Assistance website) and return it to the Office of Financial Assistance (Kennedy Hall, second floor) with signed copies of prior year Federal Tax Returns (no schedules are required) and W-2 forms for both student and parents by April 21. *Late applications will be aided only if funds remain available.*

Throughout the application process students are encouraged to check on the completeness and status of their application via NOVASIS. Additionally, award eligibility is posted to NOVASIS.

Additional information regarding the financial assistance process may be obtained via the Office of Financial Assistance website at [www.finaid.villanova.edu](http://www.finaid.villanova.edu). Students and families may also address questions or concerns to the Office of Financial Assistance via phone at 1-610-519-4010, fax 1-610-519-7599 or email at [finaid@villanova.edu](mailto:finaid@villanova.edu).

In addition to assistance from federal and state sources, students attending Villanova University may be considered for aid administered by the university which is provided through the generosity of individuals and organizations.

Villanova University believes the primary responsibility for meeting educational expenses



belongs to both the parents and the student. However, Villanova is committed to help meet the needs of families whom the federal need analysis determines cannot afford the full cost of a Villanova education with fair and equitable financial aid packages from the following federal, state, private, and university sources:

**Villanova University Grant.** This is an institutional grant based on financial need. Students must be accepted/enrolled in a full time undergraduate degree program. All Villanova students must apply for need-based financial aid to be considered for this program. This award can be applied only to tuition charges billed by Villanova University during the academic year (i.e. Fall and Spring semesters).

**Federal Pell Grant Program.** This is a federal grant for students demonstrating exceptional financial need and accepted/enrolled in an undergraduate degree program. Application for Federal Pell Grants may be made by submitting an initial FAFSA or a Renewal FAFSA.

**Federal Supplemental Educational Opportunity Grant (SEOG).** This is a federal grant administered by the educational institution based on financial need. Only undergraduate degree candidates are eligible. All Villanova students must complete the Villanova University Institutional Financial Aid Application and an initial FAFSA or the Renewal FAFSA to be considered for this program.

**Federal Perkins Loan.** This is a federal loan based on financial need for students accepted/enrolled in an undergraduate or graduate degree program. All Villanova students must complete the Villanova University Institutional Financial Aid Application and an initial FAFSA or the Renewal FAFSA to be considered for this loan program. The Perkins Loan is a 5% interest loan and becomes payable nine months after leaving the University, or nine months after the student is no longer enrolled at least half time. Exit interviews are required by federal law. A hold may be placed on a student's transcript if the student does not appear for the exit interview or complete and sign all documents. No credits will be placed in the student's account in the Bursar's office until all documents, including promissory note, have been completed by the student borrower and returned to the Office of Financial Assistance.

**Federal Work Study (FWS).** Federal employment program based on financial need for students who are accepted/enrolled in either an undergraduate or graduate degree program. All students must complete the Villanova University Institutional Financial Aid Application and an initial FAFSA or the Renewal FAFSA to be considered for this program. Students are given the choice to work on or off campus with salaries set according to the job description. Students receiving work-study awards are limited to earning the amount of their initial allocation. Once that limit has been reached, students should contact a Financial Assistance counselor concerning further work study employment. Current work study job listings are posted on the Office of Financial Assistance website ([www.finaid.villanova.edu/jobs](http://www.finaid.villanova.edu/jobs)).

**PHEAA Grant.** A Pennsylvania State Grant based on financial need for students who qualify for PA state residency and who are accepted/enrolled in an undergraduate program and enroll for at least six credits each semester. For State Grant consideration, students are required to file either an initial FAFSA or a Renewal FAFSA.

**Other State Grants.** Certain states allow residents to take their state grants into Pennsylvania for study at Villanova. Students are responsible for checking with the respective State Higher Educational Agencies as to the correct application necessary for state grant consideration.

**Outside Awards.** Organizations outside Villanova University may provide scholarships or financial assistance to Villanova students. Students are responsible for consulting the individual organization for the proper applications and deadlines and for sending transcripts to the scholarship committee if required. *NOTE:* State, federal, and University regulations prohibit over awards. All outside scholarships, whether based on academic merit or financial need, will be counted as a source of aid and will be added to the student's total aid package. This may result in a reduction of a Villanova Grant or federal aid. It is the student's responsibility to notify the Office of Financial Assistance concerning any outside aid received.

Any change in a student's financial or academic status may result in an adjustment to his or her aid. The Office of Financial Assistance retains the right to make any necessary changes.

**Federal Stafford Student Loan Program.** An educational loan available to students accepted/enrolled on at least a half time basis in an undergraduate degree program. Students must complete a Master Promissory Note from their lender or State Higher Education Assistance Agency. They must also file the Villanova University Institutional Financial Aid Application and an initial FAFSA or the Renewal FAFSA. Eligibility for a Federal Stafford Loan is based on cost of education, amount of other financial aid being received, as well as an expected family contribution towards educational costs. Students who demonstrate remaining financial need will qualify for the Federally Subsidized Stafford Student Loan. Students without remaining financial need will either need to make interest payments while enrolled or capitalize interest payments (i.e. add interest to the principal balance).

Repayment of the Federal Stafford Loan begins 6 months after the student leaves the University or is no longer enrolled at least half time. The student has up to 10 years to repay. The interest rate will be determined by the date of the student's first student loan. Disbursement will be made either through the issuance of check or electronic fund transfer (EFT). The loan check is made payable to both the student and the school and will be forwarded to the school in two equal disbursements. A guaranty fee and/or an origination fee may be charged on each loan. The maximum loan amount per year is \$2,625 for freshmen, \$3,500 for sophomores, and \$5,500 for juniors and seniors. Funds to be delivered via EFT will be directly deposited into the student's billing account.

**Information regarding the Stafford Loan Application.** Beginning with the 2000-2001 Academic Year, Villanova University implemented changes in the processing of Federal Stafford Loan applications. These changes included a new Master Promissory Note (MPN) which is required by federal regulations.

*New Borrowers at Villanova University:* Once aid eligibility is determined, each applicant will receive a notice of aid eligibility from the Office of Financial Assistance. Included in the notice will be the amount of Federal Stafford Student Loan that the student is eligible to receive. This notice of eligibility will initiate the loan process by creating an electronic loan application. As a result of the electronic loan application, all students will receive an MPN from the Pennsylvania Higher Education Assistance Agency (PHEAA).

If you previously borrowed a Stafford loan at another institution and used PHEAA as the guarantor, use the PHEAA note with Villanova University pre-printed on the MPN to complete the application process.

If you borrowed through a guarantor other than PHEAA, contact the guarantor or your

previous lender for the MPN and forward the MPN to the Villanova University Office of Financial Assistance.

*NOTE:* You may reduce the loan amount printed on the MPN or on your notice of aid eligibility by contacting the Office of Financial Assistance in writing.

*Previous Villanova University Borrowers:* Once aid eligibility is determined, each applicant will receive a notice of aid eligibility from the Office of Financial Assistance. Included in the notice will be the amount of Federal Stafford Student Loan that the student is eligible to receive. This notice of eligibility will initiate the loan process.

Students who borrowed during the 2000-2001 academic year and had a loan processed through the Pennsylvania Higher Education Assistance Agency (PHEAA) will receive a notice of eligibility directly from PHEAA. A Master Promissory Note will not be required. Stafford loan proceeds will be transmitted via Electronic Funds Transfer (EFT) and credited to the student account at the beginning of each academic term.

Students who borrowed during the 2000-2001 academic year, for attendance at Villanova University, through a guarantor other than PHEAA will not need to obtain a Master Promissory Note from their lender. The Villanova University Institutional Financial Aid Application and the FAFSA will serve as the request for a loan for the 2002-2003 academic year.

*NOTE:* You may reduce the loan amount printed on the MPN or on your notice of aid eligibility by contacting the Office of Financial Assistance in writing or via email at [finaid@villanova.edu](mailto:finaid@villanova.edu).

**Villanova Financing Plan.** The Villanova Financing Plan has been developed in order to provide students and families with a way through which they can manage the challenge of affording a Villanova education. The Financing Plan offers the family the opportunity to combine Interest-Free Monthly Payment Options offered by the Villanova Tuition Payment Plan administered through Tuition Management Systems (TMS) with low cost loan options such as the Federal Parent Loan for Undergraduate Students (PLUS) and the Villanova Loan Program.

**Villanova Tuition Payment Plan.** The Villanova Tuition Payment Plan allows students to spread their balance out over ten months for a small fee. There is no interest charged on the plan and life insurance is included to cover the bill payer and provide a variety of other benefits. Tuition Management Systems (TMS) administers the program for Villanova. Information on this program can be obtained via their website at [www.afford.com](http://www.afford.com) or by calling them directly at 1-800-722-4867.

**Federal Parents Loan for Undergraduate Students (PLUS).** Effective July 1, 1993, parents of dependent undergraduate students may be eligible to borrow up to Villanova's cost of education minus estimated financial assistance. Eligibility for this loan is based on creditworthiness and the interest rate is variable but will not exceed 9% interest and principal payments are monthly. Applications can be obtained from the Office of Financial Assistance. A Villanova University PLUS Application must also be completed. *NOTE:* For important information concerning aid payments and student rights and responsibilities, contact the Office of Financial Assistance.

**The Villanova Loan.** The Villanova Loan has been specially designed to provide a low interest loan program to students. This program may be used to bridge the gap between cost

and traditional need-based and/or merit-based assistance. The Villanova Loan requires that the borrower (the student) and a co-signer be evaluated in order to determine if they meet the minimum standards of a credit check. Refer to the Villanova University Financial Aid website ([www.finaid.villanova.edu](http://www.finaid.villanova.edu)) for the latest rates and terms of the loan.

## Minimum Standards for Satisfactory Academic Progress for Financial Aid Applicants

Federal regulations require that an institution establish, publish, and apply reasonable standards for measuring whether a student, who is otherwise eligible for aid, is maintaining satisfactory academic progress in his or her course of study. The standards must be the same or stricter than the institution's standards for a student enrolled in the same academic program who is not receiving financial aid assistance. Listed below is the complete statement of Minimum Standards for Satisfactory Academic Progress for Financial Aid Recipients.

Villanova University Academic Maximum Time Frames for Completing Degree Requirements: Students are expected to complete their program of study (degree) in the number of semesters indicated in the catalog. Transfer students and students changing programs are placed in an appropriate semester on the basis of credits transferred. Such students are expected to complete their degree according to the remaining semesters in their program plus one additional semester to allow for scheduling difficulties.

The maximum time frame for completing Associate degree requirements is three years for full-time students and six years for part-time students.

The maximum time frame for completing Baccalaureate degree requirements is six years for full time students and twelve years for part time students. Transfer credits earned at other institutions that are applicable to the student's program of study will be considered in determining the student's maximum time frame for program completion.

Students must make quantitative and qualitative progress toward their educational goals *each academic year* to receive financial aid. The academic year consists of two regular semesters and the summer sessions.

**Quantitative Standards.** Full time students must successfully complete a minimum of 24 credit hours each academic year. Students admitted in January must successfully complete a minimum of 12 credits during their first Spring semester.

Students enrolled on a three-quarter basis (9-11 credits per semester) must successfully complete a minimum of 18 credit hours each academic year.

Students enrolled on a half-time basis (6-8 credits per semester) must successfully complete a minimum of 12 credit hours each academic year.

**Qualitative Standards.** Students must maintain a Cumulative Grade Point Average (GPA) of 2.0 calculated at the end of the academic year in order to be considered a student in good standing.

**Measurement of Academic Progress Requirements.** Academic progress will be measured in May of each year. Measurement begins with the Fall semester and ends with the last summer session. Students who were enrolled during the Fall and/or Spring semesters and failed to meet the qualitative and quantitative requirements for academic progress can attempt to complete additional credits and bring up their GPA during the summer sessions. Upon completion of the additional credits, a new determination of academic progress will be made.

Transfer students are evaluated for academic progress in May, after the first Spring semester attended at Villanova University. Students that transfer in for the Fall semester are evaluated on their academic performance during their first Fall and Spring semesters. Students that transfer in beginning with the Spring semester are evaluated on their performance during their first Spring semester.

All financial aid applicants are subject to the satisfactory academic standards regardless of whether or not they received financial aid previously.

Failures and withdrawals are courses attempted, not completed. Incompletes are not counted toward credits completed until after the coursework is successfully completed and posted by the Registrar. Repeat courses will not count toward credits completed for satisfactory academic progress since the credits were already counted toward the quantitative standards the first time the course was completed.

**When Minimum Standards of Academic Progress Are Not Achieved.** A student who does not make satisfactory academic progress will be placed on financial aid suspension until the requirements are met. The student will be notified in writing of the financial aid suspension. The student can appeal the decision to the Office of Financial Assistance. The appeal must be submitted in writing and specify the extenuating circumstances which prevented achieving satisfactory academic progress.

The following types of mitigating circumstances may be considered when a student appeals: extended illness, death in the family, and changes in educational objective. The Office of Financial Assistance may request additional documentation and/or require a personal interview with the student. After the review, the Office of Financial Assistance will notify the student in writing of the action taken.

If the Office of Financial Assistance determines that the academic progress standards can be waived for one semester, the student will be placed on Financial Aid Probation. At the end of the probationary semester, the Office of Financial Assistance will determine if academic progress requirements have been met. If requirements have been met, the probationary status will be removed. If academic requirements have not been met, the student will be placed on financial aid suspension.

Once financial aid has been discontinued, it will be reinstated provided:

The student has successfully achieved the required number of credits and grade point average;

The student has requested reinstatement in writing; and

Funds are still available.

Reinstatement is not automatic. The student is responsible for making certain that the grades and credits completed have been properly posted with the Registrar prior to requesting reinstatement of financial aid. Students are encouraged to file all financial aid application forms by Villanova University's established deadline so that once reinstatement has been achieved, he or she can be considered for aid as quickly as possible.

A student who is denied aid based on qualitative or quantitative standards will be considered for aid when standards have been achieved. Under no circumstances will aid be awarded retroactively to the semester(s) in which standards were not met.

**Return of Federal Title IV Aid.** If a student completely withdraws from the University and has utilized Federal Title IV funds (e.g., Federal Pell Grant, Federal Supplemental Educational

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Opportunity Grant [SEOG], Federal Perkins Loan, Federal Stafford Student Loan, Federal Parent Loan for Undergraduate Students [PLUS]) during the semester in which they withdraw. The University will observe the federally mandated process in determining what amount of money, if any, must be returned to the federal program(s).

Students who intend to withdraw from the University must complete the process as outlined in the University Catalog under the Academic Policies section. In cases where a student has received federal financial assistance during that semester, the Office of Financial Assistance will determine what, if any adjustment must be made. This determination will be based on the formula prescribed in the federal regulations for the return of Title IV funds. This determination is made on the basis of the number of calendar days completed in the semester prior to the student's notification to withdraw, divided by the total number of days in the semester. If the resulting percentage is greater than or equal to 60%, no return of federal funds will take place.

If the percentage is less than 60%, this percentage will be used to determine the portion of Title IV aid that has been "earned". The remaining amount must be returned in the following order:

Unsubsidized Federal Stafford Loan

Subsidized Federal Stafford Loan

Perkins Loan

PLUS

Pell Grant

SEOG

Other Title IV Aid

*NOTE:* Refunds as a result of official withdrawal or leave of absence will be made in accordance with the University's refund policies which appear in the Tuition and Fees section of this *Catalog*.

If the amount of money that must be returned to Title IV programs exceeds that which exists in the student's account as a result of the University's refund policy, the student will be notified as to the amount of any grant money that must be repaid. This repayment must take place in order for a student to reestablish eligibility to receive federal funds in the future. Any loan proceeds must be repaid and will become part of the normal repayment procedures for the loan program.

## Citizens and Eligible Non-Citizens

In order to receive financial assistance, a student must be a U.S. Citizen, a U.S. National, a U.S. permanent resident who has an I-151 or I-551 Alien Registration Card, or an otherwise eligible non-citizen with a temporary resident card (I-688); or must possess one of the following:

A Form I-94 (Arrival-Departure Record) with an appropriate endorsement;

A Form I-181 or I-181B that has been signed by an INS district director;

An official statement granting asylum in the US; or

Other proof from the U.S. Immigration and Naturalization Service that one is in the U.S. for other than a temporary purpose.

Students should check with the Financial Assistance administrator at Villanova to see what documents are required. Students in the U.S. on an F1 or F2 student visa only, or on a J1 or J2 exchange visitor visa only, may not receive student aid, nor can those who possess only a notice of approval to apply for *permanent residence* (I-171 or I-464A).

## Verification

Verification is a requirement of the U.S. Department of Education and is the process of confirming information submitted on the various Federal Title IV Funds including the Federal Stafford Loan. Applicants should be aware that this federal regulation requires them to submit tax data and other requested information to the Office of Financial Assistance before the processing of student loan applications and/or the awarding of funds. Students must submit the required information to complete the verification process no later than 45 days before the last day of the student's enrollment.

Items to be verified include: adjusted gross income from the IRS form; U.S. income taxes paid; number of family members for whom parents provide more than half of their support; the number of children in post secondary schools who are enrolled at least half time; dependency status; untaxed income; eligible non-citizen status and any other item for which conflicting information has been submitted to the Office of Financial Assistance.

Documents Required:

(For dependent students): signed copies of parents' and student's U.S. income tax returns (no schedules are required), from the prior year.

(For independent students): signed copy of the student's (and spouse's if applicable) prior year U.S. income tax return (no schedules are required).

If the student or parent did not file taxes, a signed non-tax filer statement and copies of all W-2 forms must be submitted. Non-taxable income verification such as VA Benefits, Social Security and Public Assistance Letters must be submitted to the Office of Financial Assistance.

Villanova University Institutional Financial Aid Application.

## Academic Policies

The following policies and regulations, along with those of the individual colleges and programs, govern academic life at the University. In order that the programs offered reflect current advances in and additions to knowledge and changes in professional requirements, the University and each of its colleges reserves the right to change program requirements without prior notice. Unless otherwise specified, students are bound by the policies and regulations in effect when their entering class begins its first year of study. *It is the responsibility of the student to know and comply with the academic policies and regulations of the University and their respective colleges.* Students should consult the individual college sections of this *Catalog* and the special publications and guidelines issued by the colleges and departments.

## Academic Standing

**Quality Point Averages.** In addition to passing all courses taken the student is also required

to maintain a specified grade average leading to graduation with a college degree. The average is derived from the grades and credit hours of the courses taken and is known as the quality-point average. It is determined by multiplying the number of credits for each course attempted by the allotted quality points for the grades received and dividing the total quality points by the total credit hours attempted. Quality points for grades are as follows: A=4.00; A-=3.67; B+=3.33; B=3.00; B-=2.67; C+=2.33; C=2.00; C-=1.67; D+=1.33; D=1.00; D-=.67.

**Class Rank.** A student's rank in class is determined by the cumulative quality-point average, which is computed each semester. Only credits earned with Villanova University or in formally approved inter-institutional programs will be considered in determining the cumulative quality-point average. Credits and grades earned in the summer at other colleges are not counted in the quality point average.

**Academic Progress.** To qualify for a Bachelor's degree, a student, in addition to completing all the studies prescribed for the degree sought, must earn a cumulative quality-point average of at least 2.00. In circumstances involving those students who have entered Villanova University through the Academic Advancement Program, satisfactory progress of the student will be determined by the Academic Standing Committee and/or Dean of the college in which the student is matriculated. In the event that, due to poor high school preparation, additional time is necessary for the student to complete the requirements towards graduation, the student will be viewed as being in a five year program. Satisfactory progress will be viewed accordingly.

**Academic Probation.** The record of any student whose cumulative or semester quality-point average falls below 2.00 will be reviewed by the Academic Standing Committee for appropriate action. Students in science or engineering whose technical course quality-point average falls below 2.00 will also come before the committee (technical courses include all science, mathematics and engineering courses). Typically the student will either be placed on academic probation or dismissed.

A student on academic probation will normally be allowed only one semester to achieve the required quality-point average. While on academic probation, the student is limited to a schedule of five courses and is ineligible to participate in any extracurricular activities. In the College of Liberal Arts and Sciences a student on probation is limited to a schedule of four courses.

**Honors.** At graduation students receive honors of three kinds -- *summa cum laude*, *magna cum laude*, and *cum laude* -- after being approved for such honors by the faculty and administration of the University. To be eligible for these honors, students must attain a minimum cumulative quality-point average of 3.90, 3.75, 3.50, respectively, and at least sixty credits of course work (not including Satisfactory/Unsatisfactory courses) must have been taken at Villanova University.

**Repeat Freshman Year.** The Academic Standing Committee may allow a freshman student to declare academic bankruptcy and repeat the year with a new start on the cumulative average (though a record of the year's work will remain on the transcript).

## Complaints about Faculty and Grades

Villanova University has a set of procedures for resolving student complaints about faculty performance or about grades. A student who has concerns about either of these issues



should, if at all possible, discuss the problem directly with the faculty member. If this is not possible, the student should contact the faculty member's department chair or program director who will provide the student with a copy of the procedures and, if the student wishes, review the process involved. If the student is, for good reason, reluctant to contact the department chair, the student may also contact the Dean of the faculty member's college.

A copy of the procedures is also available on request from the Academic Affairs Office, 103 Tolentine Hall, (610/519-4520).

## Class Attendance

Class and laboratory attendance for first year students is mandatory with the following exceptions: approved athletic participation, approved field trips, certified serious illness, death in the immediate family, or approved placement activities. An absence card, available from the Office of the Dean of the student's college, must be completed and presented to the Dean no later than 4:30 p.m. on the day the student returns to classes. Excused absences allow the student to make up tests and do not count toward a failure in the course. Absence from class does not release the student from work assigned.

A first-year student will receive a grade of "Y" (failure) whenever the number of unexcused absences in a course exceeds twice the number of weekly class meetings for the course.

For students beyond the first year, attendance policies are determined by the instructors of the various courses. Enforcement of such attendance policies lies with those instructors. Of course, it always is a courtesy to inform one's professors about any absence.

## Course Numbering

Courses of instruction are numbered according to the following system: courses designated 1000-6999 are given for undergraduate students only; courses numbered 7000-7999 are graduate courses ordinarily open to qualified undergraduates; courses numbered 8000-9999 are graduate courses not ordinarily open to undergraduates.

If a qualified senior wishes to enroll in a graduate course, written approval must be obtained from the student's adviser and undergraduate college Dean. The College of Liberal Arts and Sciences requires, in addition, approval of the instructor and departmental chairperson of the course involved.

## Discipline and Academic Integrity

Academic honesty and integrity lies at the heart of the values expressed in the University's mission statement and inspired by the spirit of Saint Augustine. When one comes to Villanova, one joins an academic community founded on the search for knowledge in an atmosphere of cooperation and trust. The intellectual health of the community depends on this trust and draws nourishment from the integrity and mutual respect of each of its members.

Villanova University has a formal code of academic integrity ([www.vpaa.villanova.edu](http://www.vpaa.villanova.edu)), which discusses issues such as plagiarism and other unacceptable academic behaviors. This document is included in *The Blue Book: Villanova University Student Handbook*, which is distributed to all students. It is the responsibility of every student to be familiar with this code and to adhere to it. A student who violates the academic integrity code in a course will

receive an F for the assignment or a more severe penalty up to an F for the course. In addition, the student will be expected to complete an educational program, supervised by the student's college dean, to help the student come to a fuller understanding of academic integrity. For the second offense, the student will be dismissed from the University and a record of the reason for dismissal will be retained in the student's permanent file and will appear on the student's official transcript. A student who commits an academic integrity violation outside of a specific course will receive a penalty determined by the dean of the student's college.

Students who receive an academic integrity penalty may, if they believe that they have not committed an academic integrity violation, take their case to the Board of Academic Integrity.

Detailed descriptions of the University's Academic Integrity Policy are available from department chairs and deans.

In keeping with its nature and goals as a private, church-related institution, Villanova University regards student life on campus as an integral part of the student's educational experience. Hence it is to be understood that the student, in joining the University community, accepts the regulations promulgated in the *Student Handbook*. The student should also become acquainted with and understand the responsibilities set forth in the *Student Handbook*, especially those in the sections on *Policy and Regulations*. Adherence to University regulations is expected and required for successful completion of the program of studies. Enforcement within the classroom of regulations regarding smoking, proper classroom attire, deportment, etc., is the responsibility of the faculty member.

## Disclosure of Student Records

Villanova University, in accordance with the Family Educational Rights and Privacy Act (FERPA) of 1974, as amended, has adopted this Student Records Policy to address the following issues: (1) disclosure of directory information; (2) confidentiality of personally identifiable information; and (3) student rights to inspect, review and seek amendment of their records.

**I. Disclosure of Directory Information.** Information concerning the following items about individual students is designated by the University as directory information and may be released or published without the student's consent: full name; address (local, home or electronic mail); telephone number; photograph; date and place of birth; major field of study; dates of attendance; degrees and awards received; most recent previous educational institution attended; participation in officially recognized University activities and athletics; and weight and height of members of athletic teams. Students who do not wish directory information to be released or made public must inform the appropriate office, in writing, at the time the information is originally sought.

**II. Confidentiality of Personally Identifiable Information.** All personally identifiable information contained in student records other than directory information is considered confidential information. This information includes, but is not necessarily limited to: academic evaluations; general counseling and advising records; disciplinary records; financial aid records; letters of recommendation; medical or health records; clinical counseling and psychiatric records; transcripts, test scores, and other academic records; and cooperative work records. "Personally identifiable information" means that the information includes:

(a) the name of the student; (b) the address of the student; (c) a personal identifier such as social security number; or (d) a list of personal characteristics or other information that would make the student's identity easily traceable.

The University will generally not disclose personally identifiable information to third parties without the written consent of the student. The consent should specify the records to be disclosed, the purpose of the disclosure, and to whom the records are to be disclosed. However, personally identifiable information may be disclosed, without the student's consent, to the following individuals or institutions, or in the following circumstances:

University officials (or office personnel ancillary to the officials) who require access for legitimate educational purposes such as academic, disciplinary, health or safety matters. University officials may include, without limitation, the President, Vice Presidents, Deans, Directors, Department Chairs, Faculty Members, NROTC Commanding Officer, General Counsel, Deputy General Counsel, Judicial Officers, Counselors, Resident Advisers, Coaches and Admissions Officers.

Officials of other educational institutions to which the student seeks or intends to enroll (on condition that the student upon request is entitled to a copy of such records).

Appropriate federal, state or local officials or authorities, consistent with federal regulations.

Organizations conducting studies for, or on behalf of, educational agencies or institutions. Accrediting organizations to carry out their accrediting functions.

Parents of a dependent student as defined in Section 152 of the Internal Revenue Code of 1986.

Parents or guardians of a student, where the information pertains to violations of any federal, state or local law or of any University rule or policy governing the use or possession of alcohol or a controlled substance, and the student has committed a disciplinary violation.

In connection with the student's application for, or receipt of financial aid.

To comply with a judicial order or lawfully issued subpoena (on condition that a reasonable effort is made to notify the student of the order or subpoena, if legally permitted to do so).

In case of an emergency, to protect the health or safety of students or other individuals.

The University will inform a party to whom a disclosure of personally identifiable information is made that it is made only on the condition that such party will not disclose the information to any other party without the prior written consent of the student.

**III. Inspection and Review Rights; Right to a Hearing.** A currently or previously enrolled student has the right to inspect and review his or her educational records. This right does not extend to applicants, those denied admission, or those admitted who do not enroll. Offices may require that requests for access be submitted in writing, and may ask for, but not require, the reason for the request. The University will comply with requests to inspect and review a student's records that it has determined to honor within a reasonable period of time, but in no case more than forty-five days after the request was made.

Records to which students are not entitled to access, include:

Confidential letters and statements of recommendation placed in a student's record before January 1, 1975, or confidential letters and statements of recommendation to which students have waived their rights of access.

Employment records of students as University employees.

Campus law enforcement records created and maintained by the Public Safety Office, in accordance with the requirements of FERPA.

Records that are made or maintained by a physician, psychiatrist, psychologist, or other recognized professional or paraprofessional acting in his or her professional capacity or assisting in his or her paraprofessional capacity, and that are made, maintained, or used only in connection with treatment of the student and are not disclosed to anyone other than the individuals providing the treatment. These records may be reviewed, however, by a physician or other appropriate professional of the student's choice.

Financial records of the parents of the student or any information contained in those records. Records of instructional, supervisory, and administrative personnel and educational personnel ancillary to those persons, that are in the sole possession of the maker of the record and are not accessible or revealed to any other individual except a temporary substitute for the maker.

Institutional records of students which may be maintained by the University in a computer printout or similar format (so long as this computerized information is not intended to be distributed outside the University), as long as the original source of computer information is available in the office or department having original jurisdiction for the records.

Records that only contain information about a person after that person was no longer a student at the University (e.g., information collected by the University pertaining to accomplishments of its alumni).

Those portions of a student's records that contain information on other students.

Students may be invited but not required to waive their right of access to confidential letters of recommendation for admission, honors or awards, or employment. Failure to execute a waiver will not affect a student's admission, receipt of financial aid, or other University services. If a student signs a waiver, he/she may request a list of all persons making confidential recommendations.

A student who believes that any information contained in his or her educational records is inaccurate or misleading, or otherwise in violation of his or her privacy rights, may request that the University amend the records. The student should first discuss his or her concerns with the individual responsible for the office where the records are maintained. If the student is not satisfied with the resolution, the student should contact the individual to whom that person reports. If still not satisfied, the student may contact the appropriate vice president or designee. The final level of appeal is a formal hearing. To obtain a hearing, the student should file a written request with the Vice President for Student Life. The hearing will be conducted in accordance with the requirements of FERPA.

The substantive judgment of a faculty member about a student's work (grades or other evaluations of work assigned) is not within the scope of a FERPA hearing. A student may challenge the factual and objective elements of the content of student records, but not the qualitative and subjective elements of grading.

If as a result of a hearing the University determines that a student's challenge is without merit, the student will have the right, and will be so informed, to place in his or her records a statement setting forth any reasons for disagreeing with the University's decision.

Students have a right to file complaints concerning alleged failures by the University to comply with the requirements of FERPA and the implementing regulations. Complaints should be addressed to the Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Avenue, S.W., Washington DC 20202-4605. Students are encouraged to bring any complaints regarding the implementation of this policy to the attention of the General

Counsel.

## Final Examinations and Conflict

Final examinations are given in virtually all courses at a time and place designated. *NOTE: It is the student's responsibility to contact the professor within 48 hours if an examination is missed.* Provisions exist to alleviate scheduling problems caused by conflicts; i.e., if two of a student's examinations are scheduled at the same time or if three of his/her examinations are scheduled on the same day.

In the event of a conflict, the student must request in advance that a special examination be given by one of the instructors in accordance with the following directions.

Group departmental examinations should take precedence over any other.

Major or required courses should take precedence over electives.

A regular course should take precedence over a repeat or make-up course.

Extraordinary difficulties encountered in effecting such an arrangement will be resolved by the Dean of the respective college.

## Grading System

At mid-semester and at the end of the semester grades are available to the student. The grade report at the end of the semester is part of the student's permanent record. Any inaccuracy on this record must be reported to the Registrar within two weeks of its receipt; otherwise, the record will stand as it is.

### Grade Definitions

A the highest academic grade possible; an honor grade which is not automatically given to a student who ranks highest in the course, but is reserved for accomplishment that is truly distinctive and demonstrably outstanding. It represents a superior mastery of course material and is a grade that demands a very high degree of understanding as well as originality or creativity as appropriate to the nature of the course. The grade indicates that the student works independently with unusual effectiveness and often takes the initiative in seeking new knowledge outside the formal confines of the course.

A-

B+

B denotes achievement considerably above acceptable standards. Good mastery of course material is evident and student performance demonstrates a high degree of originality, creativity, or both. The grade indicates that the student works well independently and often demonstrates initiative. Analysis, synthesis, and critical expression, oral or written, are considerably above average.

B-

C+

C Indicates a satisfactory degree of attainment and is the acceptable standard for graduation from college. It is the grade that may be expected of a student of average ability who gives to the work a reasonable amount of time and effort.

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This grade implies familiarity with the content of the course and acceptable mastery of course material; it implies that the student displays some evidence of originality and/or creativity, works independently at an acceptable level and completes all requirements in the course.

C-	
D+	
D	denotes a limited understanding of the subject matter, meeting only the minimum requirements for passing the course. It signifies work which in quality and/or quantity falls below the average acceptable standard for the course. Performance is deficient in analysis, synthesis, and critical expression; there is little evidence of originality, creativity, or both.
D-	
F	Indicates inadequate or unsatisfactory attainment, serious deficiency in understanding of course material, and/or failure to complete requirements of the course.
N	Incomplete: course work not completed.
S	Satisfactory: Assigned in Satisfactory/Unsatisfactory courses (work must be equivalent to C or better).
SP	Satisfactory Progress.
T	Transfer grade.
WX	Approved withdrawal without penalty.
W	Approved withdrawal with penalty.
U	Unsatisfactory: Assigned in Satisfactory/Unsatisfactory courses
AU	Audit.
Y	Unofficial withdrawal from course (or for freshmen, failure for excessive absences).
NG	(Or Blank): no grade reported.

All grades are permanent, except N and NG, which are temporary grades used to indicate that the student's work in a course has not been completed. An N or NG grade must be removed and a grade substituted by the instructor according to the following schedule:

For the Fall Semester: Students must submit all work to the instructor by the last Friday in January; grade changes must be submitted to the Registrar's Office by the second Friday in February

For the Spring Semester: Students must submit all work to the instructor by the last Friday in June; grade changes must be submitted to the Registrar's Office by the second Friday in July

Students should check the academic calendar for actual dates. NOTE: if a change is not reported, the N or NG grade automatically becomes an NF.

Without the approval of the instructor, the department chairperson, and the Dean, no grade higher than C may replace the N.

A student may also receive an N for missing a final examination if the student reports a serious medical reason (or other reason certified by the Dean as acceptable) within 48 hours

of the time of the examination. Otherwise an F grade must be reported. The student may report the reason for absence to the instructor, the department chair, or the Dean.

The grade WX indicates an authorized withdrawal with the grade not considered in the calculation of the quality-point average. The grade W also indicates an authorized withdrawal, but the grade is calculated as an F in determining the quality-point average. Authorization for WX and W may be given only by the student's Dean. The grade Y is given when a student unofficially withdraws from a course. It is reflected in the average as an F. Required courses carrying a final grade of F must be repeated unless the student transfers to another college of the University where the course for which an F grade was received is not a requirement for the degree. The reasons for student deficiencies are reported by the faculty member at mid-semester and at the end of the semester to the Dean of the student's college. When a student who has failed in a course presents evidence of subsequently passing a like course in another institution, the University reserves the right to withhold credit for the course until the student shall have passed a qualifying examination given by the Faculty from which a degree is sought.

Students should recognize that failure in one course or more will usually make it impossible for them to graduate with the class in which they matriculated.

**Audit.** Courses may be audited with an adviser's consent. The student who has been granted audit status will not be responsible for the assignments and examinations required in the course, but must attend all class and laboratory sessions. Although no credit or grade is received, the same tuition and fees are charged for an audit as for a credit course. A student must declare audit status by completing the appropriate form in the Registrar's Office by the end of the drop/add period, and no change from credit to audit status or *vice versa* may be made after that period.

A class taken for audit may subsequently be taken for credit, but the student will be charged normal tuition and fees for the course.

**Satisfactory/Unsatisfactory Option.** For the regulations governing students eligible for the satisfactory/unsatisfactory option in the different colleges and the courses that may be required, see the appropriate section of the catalog in which the college degree programs are listed. The following regulations apply to all colleges:

The satisfactory/unsatisfactory grade will be shown on the transcript but will not be reflected in the quality-point average.

Failures in the satisfactory/unsatisfactory option need not be repeated.

The grade S is the grade C or better.

A student must declare election of the satisfactory/unsatisfactory option by the end of the drop/add period.

## Residence Requirement for Graduation

A student must complete the final 30 credit hours of an academic program at Villanova.

## Scholastic Load

A student must take a minimum of 12 credits a semester to be a full-time student. A normal scholastic load is defined by the program set forth in this catalog. Permission to take fewer than 12 credit hours or a course in excess of the normal load may be obtained in exceptional

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circumstances with the written approval of the Dean. All colleges require a 3.5 QPA (Engineering 3.00) for a student to be granted an overload.

### Transfer of Credit from Another University

For students who are matriculated in degree programs at Villanova University and who seek to transfer courses taken at another university: (1) No course may be taken at another institution, domestic or foreign, for transfer of credit back to Villanova without pre-approval by the Dean of the student's college or his/her designee. (2) Villanova will not pre-approve courses for students who will be on a University leave of absence when they enroll in such courses.

### Transcripts

Students may obtain transcripts of their records from the Office of the Registrar, Tolentine 202, either in person or by writing to the office. Telephone requests cannot be accepted. Two weeks' notice is required.

Official transcripts bear the seal of the University and the signature of the Registrar. Those given or mailed to the student, are stamped with a statement which points out this fact.

Transcripts will not be released for persons whose financial accounts are not clear in the Bursar Office.

### Withdrawal from a Course

Until the final day for authorized withdrawal from courses (the Friday following mid-term break), a student may withdraw from a course without penalty and will receive the grade of "WX." After that date, a student seeking authorized withdrawal without penalty must petition the Dean of his or her college, who has sole authority to grant withdrawals without penalty. Each college has different requirements, which may be found under "Withdrawal from a Course" in each college's section of this *Catalog*. Note that withdrawals without permission will receive a "W" grade, which is calculated as an "F" in computing one's quality point average.

### Withdrawal from the University

Official withdrawal from the University must be authorized by the Dean of the appropriate college. In order to affect an official withdrawal, a student must submit to the Dean a formal letter, or the appropriate college form, and then have an interview with the Dean. The letter of withdrawal may be countersigned by the student's parents or legal guardian. The parents or guardians may, if they wish and if authorized by the student, submit the official letter of withdrawal. Applications for withdrawal must usually be made by the end of the fourth week of school.





# College of Liberal Arts and Sciences

**Rev. Kail C. Ellis, O.S.A., Ph.D.**, Dean

**Robert DeVos, Ph.D.**, Associate Dean

**John A. Doody, Ph.D.**, Associate Dean

**Edwin L. Goff, Ph.D.**, Associate Dean

**Catherine M. Hill, Ed. D.**, Associate Dean

**Mario J. D'Ignazio, M.Ed.**, Assistant Dean

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**Website:** [www.artsci.villanova.edu/](http://www.artsci.villanova.edu/)

*Set love as the criterion of all that you say, and whatever you teach, teach in such a way that the person to whom you speak, by hearing may believe, by believing hope, and by hoping love.*

THE INSTRUCTION OF BEGINNERS by St. Augustine

## History

The College of Liberal Arts and Sciences of Villanova University was founded by the Augustinian Order in 1842. The College traces its origins to old St. Augustine's Church in Philadelphia, which the Augustinians founded in 1796, and to its parish school, St. Augustine's Academy, established in 1811.

In 1842, the Augustinians purchased "Belle Air", the country estate of John Rudolph, a Revolutionary War officer and Philadelphia merchant. There, they established the "Augustinian College of Villanova", under the patronage of St. Thomas of Villanova, a sixteenth-century Augustinian educator and Bishop of Valencia, Spain. Eventually the College came to be known as Villanova and gave its name to the town which grew up around it.

Classes for the new College began on September 18, 1843, when thirteen students embarked on a traditional liberal arts curriculum. At the outset, however, difficulties plagued the new College. The anti-Catholic "Know Nothing" riots in Philadelphia in 1844 resulted in the burning of St. Augustine's Church. The need to rebuild the church and maintain the new college created a financial crisis for the Order. As a result, the College closed its doors on February 20, 1845. It was able to reopen in September, 1846, with a student population of twenty-four, and the first commencement took place on July 21, 1847. The following year, on March 10, 1848, the Governor of Pennsylvania, Francis R. Shunk, signed the Act of Legislature incorporating the College.

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In 1857, Villanova College closed for a second time. Demands on the services of priests through the expansion of parishes in the area created staffing problems for the Augustinians, while the Panic of 1857 brought on hard economic times. The onslaught of the Civil War in 1860 affected student enrollment and the College was not reopened until September, 1865. In the years that followed, the College prospered, increasing its student population and adding significantly to its physical facilities.

Although in the first fifty years of its existence, the College concentrated exclusively on the liberal arts, it nevertheless remained open to the changes in the curriculum which were required to meet the needs of the time and the demands for specialization. Responding to the demands of the medical profession for new requirements, for example, the College inaugurated its Sciences unit in 1915, and established as the standard premedical course, a four-year program leading to a Bachelor of Science degree in Biology.

Today, the College continues to offer a variety of educational programs which are aimed at the total growth of the individual, and which prepare students for viable careers. Graduates of the College have taken their place in almost every field of endeavor, serving in education, business, government, law, medicine and research, where they make vital contributions to the communities and the world in which they live.

## Objectives

The College of Liberal Arts and Sciences exists to provide an atmosphere of responsible learning to a varied group of students who will be called to intellectual, moral, and professional leadership. To fulfill these goals, the College seeks to promote intellectual curiosity and rigor within the University, to instill the fundamentals of critical insight, mature judgment, and independent thinking in its students, and to awaken in its students a sense of the importance of values and the moral responsibility of caring for others and working for the betterment of society.

Villanova has always openly and proudly declared that it is a Catholic institution of higher learning. The University maintains a strong respect for the beliefs of its diverse community of faculty, students, and staff. In keeping with its central place in a Catholic University, the College of Liberal Arts and Sciences has a special commitment to the Christian belief that creation is an expression of divine truth through the redemptive life, death and resurrection of Jesus Christ, the incarnate Word of God. It also seeks to provide a Christian intellectual and moral environment and believes that it is the common right of all to participate in creation, to seek truth and to apply such truth attained to protect and enrich personal and communal life.

Villanova's special Augustinian heritage enables the College to draw upon the dynamic legacy of St. Augustine whose passionate pursuit of wisdom, understood through the metaphor of one heart and one mind, inspires its own quest for knowledge in open, intelligent, responsible and mutually respectful interaction of points of view. This legacy is classically illustrated by the Augustinian Order's impact on the medieval universities, its distinguished cultivation of Renaissance art, and its fostering of the scientific discoveries of Gregor Mendel. It is further expressed in the conviction that all authentic human wisdom is

ultimately in harmony with Divine Wisdom, and it invites collaboration with other Christians and peoples of other traditions who might share at least the general features and dynamics of this Augustinian vision.

In light of this legacy, the College has developed a diversified academic program and a core curriculum which provide its students with a scale of well-defined universal values that equips them to be wise critics of the society in which they live, and which sustains a moral base and social consciousness that transcends economic barriers and questions of race, gender, and creed.

## Academic Mission

The academic mission of the College is intimately connected with its Curriculum. The courses in the Core Curriculum treat a broad range of disciplines from a variety of approaches; at the same time, the Core strives to ensure depth of study and intellectual sophistication while recognizing that learning implies different modes of inquiry. The objectives of the Core are to:

- ✂✂ Achieve a synthesis of knowledge that provides a basis for informed judgement, not simply a fact finding.
- ✂✂ Promote literacy as a foundation for intelligent discourse and the articulation of informed views.
- ✂✂ Advance culture in a broad sense, educating students to understand and to appreciate the interrelated patterns of customary beliefs and practices, social forms, aesthetics, and material traits that act to define a culture and its position within a larger historical and intellectual framework. The educational program does not simply look to the past, but acknowledges that culture is vibrant and continuously redefined.
- ✂✂ Challenge students to understand that the present is recognizably formed from past influences and that in order to assess our culture and arrive at a view of its future, students must be trained to scrutinize and bring into perspective the relationship of the present culture with that of the past.
- ✂✂ Prepare students to become active participants within society, to engage in the process of informed political debate, to discover the impact of new technologies, and to encourage an understanding and appreciation of the diversity of cultures and experiences, a respect for the individual, and the development of a multicultural and international perspective.
- ✂✂ Encourage personal development in preparing students to regard themselves as citizens living in a democratic society, as belonging to a world community, and as therefore having communal responsibilities.

## Mission to its Students Faculty and Staff

The College strongly adheres to the principles of the University Mission Statement which commits Villanova to developing and sustaining an academic environment in which the potentialities of its members may be realized. In so doing, the College is guided by the teachings of Vatican II which emphasized that the human spirit must be cultivated in such a way that there results a growth in its ability to wonder, to understand, to contemplate, to make personal judgements, and to develop a religious, moral, and social sense (*Pastoral Constitution on the Church in the Modern World*, 59).

In order to fulfill its academic mission of transmitting, pursuing and discovering knowledge, the College commits itself to the hiring and retaining of outstanding teacher-

## College of Liberal Arts and Sciences

scholars and dedicated staff personnel whose academic and professional interests will develop and foster the goals of the University's Mission Statement. In hiring faculty and staff personnel, the College further commits itself to the goal of maintaining a richness of diversity by actively recruiting women and minorities. In all hiring strategies and decisions, the College strives to utilize procedures that will reliably determine the best qualified applicants.

While the College is committed to maintaining its Catholic identity, it does not seek a particular religious affiliation within its personnel. Rather, as formulated in the University's Mission Statement, it asks that all respect its attempts to develop an environment in which students, faculty and staff may experience a Christian intellectual and moral perspective, and have a willingness to enter into the conversation that gives its mission life and character.

The College is strongly committed to academic freedom which makes open discussion and inquiry possible. It believes that open discussion among scholars and students is a self-correcting process that is intrinsic to academic freedom and that this process is in accord with responsible freedom, a central value of the Christian tradition, and of the thought of St. Augustine, himself the great theologian of Christian freedom.

The College seeks to encourage and equitably reward the valuable performance of its faculty and staff by offering competitive salaries and by making available opportunities which will enhance their professional development. It also seeks to promote a congenial work environment that is conducive to self-motivation. In recruiting students, the College will seek to ensure the best applicant pool possible. It will strive to retain students by offering excellent academic programs and by providing them with quality campus activities.

## Degrees Offered

The College of Liberal Arts and Sciences offers the Bachelor of Arts degree in Art History, Classical Studies, Communication, Economics, English, French, Liberal Arts, Geography, German, History, Honors Program, Human Services, Philosophy, Political Science, Psychology, Sociology, Spanish, and Theology and Religious Studies.

A Bachelor of Science degree is offered in Astronomy and Astrophysics, Biology, Chemistry, Comprehensive Science, Computer Science, Secondary Education, Honors Program, Information Science, Mathematics, and Physics. The chemistry program is accredited by the American Chemical Society and the computer science program is accredited by the Computer Science Accreditation Commission of the Computing Sciences Accreditation Board, a specialized accreditation body.

The requirements for degrees in these majors may be found under the departmental listings contained in this *Catalog*. Students must earn an overall 2.0 grade point average. See the section on Minors, Concentrations, and Certificates for additional information related to degree programs.

The College of Liberal Arts and Sciences also offers minors in most of the fields listed above. In addition the College offers minors, concentrations, or certificates in the following fields: Africana Studies, Arab and Islamic Studies, Cognitive Science, Criminal Justice, Ethics,

Irish Studies, Latin American Studies, Military Science, Peace and Justice, Russian Area Studies, and Women's Studies. The requirements for these programs are listed with the departmental programs.

## Baccal aureate Degree Requirements

The requirements for a Bachelor of Arts or a Bachelor of Science degree are:

- ☞☞ A minimum of 40 courses of 3 credits or more and 2 labs (science degrees vary according to major), which includes the successful completion of the Core Curriculum (general core requirements and distribution requirements), an academic major, and electives.
- ☞☞ A minimum of 122 credits (science degrees vary according to major).
- ☞☞ A minimum grade point average (QPA) of 2.00.
- ☞☞ Residency requirement: the final 30 credits (senior year), at least half of all courses in one's major, and at least half of the courses required for the degree, must be taken at Villanova University. Students may complement their majors by taking one or more interdisciplinary concentrations, as described below in the section on [AMinors, Concentrations, and Certificates.](#)

## The Core Curriculum

### Objectives

The courses in the Core Curriculum treat a broad range of disciplines, using a variety of approaches and different modes of inquiry. At the same time, the Core strives to ensure depth of study and intellectual sophistication. The purpose of the Core is to achieve a synthesis of knowledge that provides a basis for informed judgement. The Core also seeks to promote literacy as a foundation for intelligent discourse and the articulation of informed views.

The Core aims to advance culture in a broad sense, training students to understand and to appreciate the interrelated patterns of customary beliefs and practices, social forms, aesthetics, and material traits that act to define a culture and its position within a larger historical and intellectual framework. This educational program does not simply look to the past, but acknowledges that culture is vibrant and continuously redefined. The Core challenges students to understand how the present is recognizably formed from past influences, and that in order to assess our culture and arrive at a view of its future, students must be trained to scrutinize and bring into perspective the relationship of the present culture with that of the past.

In fostering active participation in learning, the Core prepares students to become active participants within society, to engage in the process of informed political debate, and to encourage an understanding and appreciation of the diversity of cultures and experiences, a respect for the individual, and the development of a multi-cultural and international perspective. In this way the Core encourages personal development in preparing students to

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regard themselves as citizens living in a democratic society, as belonging to a world community, and as therefore having communal responsibilities.

### Core Curriculum General Requirements

All candidates for a baccalaureate degree in the College of Liberal Arts and Sciences must complete the following requirements:

Core Humanities Seminar	2 courses	Mathematics	1 course
College Ethics	1 course	Mathematics/Computer Science	1 course
Fine Arts	1 course	Philosophy	2 courses
Foreign Language	2 courses	Theology and Religious Studies	2 courses
History	2 courses	Social Sciences	3 courses
Literature	2 courses	Natural Science (with lab)	2 courses

In general, once a sequence of courses is begun in a particular discipline, a student may not revert to a lower level course in that same discipline to fulfill a core requirement without prior approval from the Dean's Office. Courses or sections of courses that are approved to fulfill Core requirements are designated as such in the Pre-registration Master Schedule issued at pre-registration each semester. Retroactive approval of a course taken previously for fulfillment of a core requirement is not possible.

**Core Humanities Seminar (2 courses):** During the first year of study, each student must successfully complete CHS 1000 (Ancient, Medieval and Renaissance Thought) and CHS 1001 (Modern Thought: Enlightenment to the Present)

**College Ethics (1 course):** Each student (normally during the sophomore year) must successfully complete ETH 2050 (Ethical Traditions and Contemporary Life)

**Fine Arts (1 course):** Each student is required to take one semester of Fine Arts. Art History, Theatre, studio art courses which have a theoretical basis, and courses in music appreciation and film analysis are examples of courses which will fulfill this requirement. Consult the Master Schedule issued each semester at pre-registration for a list of courses that will fulfill this requirement.

**Foreign Language (2 courses):** In most cases, each student is required to complete at least two courses in the same foreign language at or above the intermediate level. For most students this requirement will involve a two-semester continuation of a language studied in high school. A student may elect to study a new language, which will entail completing two semesters of the language at the introductory level in addition to satisfying the intermediate level course requirement. In these cases, the two introductory level courses will be counted as electives if that language was *not* studied for two or more years at the high school level.

The language requirement may also be satisfied with two semesters of study at the introductory level for Arabic, Chinese, ancient Greek, Japanese, or Russian.

International students (for whom English is a second language) may not choose their native language to fulfill the language requirement. Instead, they may take a total of four English courses (ENG 1050 and three literature courses at the 2100 level or above) to fulfill both the literature and foreign language core requirements. *NOTE: The credit value of*

*language courses varies from three to six credits. Regardless of the number of credits, a language course counts for only one course.*

**History (2 courses):** Each student must successfully complete HIS 1050 and a second History course with a course number of 2000 or higher.

**Literature (2 courses):** Each student must successfully complete ENG 1050 and a second literature course with a course number of 2100 or higher chosen from the English departmental course offerings or a literature course offered by the Department of Classical and Modern Languages.

**Mathematical Sciences/Computing Sciences (2 courses):** Students may choose *two courses* in mathematical sciences (MAT) or *one course* in mathematical sciences and *one course* from computing sciences (CSC). All courses for which a student has the appropriate pre-requisites or equivalent experience may be used to satisfy this requirement. Beginning a course in a particular series does not obligate a student to finish that series. For example, a student taking MAT 1320 (Calculus I) is not required to take MAT 1325 (Calculus II). *NOTE: Students majoring in a science or those intending to apply to medical, dental or veterinary school must take two semesters of Calculus. Additional information is available from Dr. Friede, Health Sciences Adviser (610/519-4833). Students anticipating a Business Minor should take Introductory Statistics: Math 1230 and 1235.*

**Philosophy (2 courses):** Each student must successfully complete PHI 1050 and a second philosophy course with a course number of 2000 or higher.

**Theology and Religious Studies (2 courses):** Each student must successfully complete THL 1050 and a second Theology and Religious Studies course with a course number of 2000 or higher. The required introductory course, Theology and Religious Studies 1050, is an academic presentation of Christian thought, suitable for any student. It is normally taken during the sophomore year. In special cases, the following courses may be substituted for this course with permission from the Dean: THL 2800; THL 5400; THL 5800; THL 5900

**Social Sciences (3 courses):** Each student must successfully complete one introductory course in each of two distinct disciplines, and one advanced course (2000 level or above) in one of those two disciplines. The Social Sciences disciplines are: Economics, Geography, Political Science, Psychology, and Sociology.

**Natural Sciences (2 courses with 2 labs):** Each student must successfully complete, by the end of the sophomore year, two semesters of natural sciences with accompanying laboratories. Each student may choose Option A or Option B as described below:

**Natural Sciences Option A:** A year-long sequence (two courses with two labs) in one scientific discipline consisting of an introductory course followed by a theme course for which an introductory course is a prerequisite. These courses have been designed for non-science majors. The following sequences may be used to satisfy this option:

≠≠ AST 1050/1051 and AST 1052/1053.

≠≠ AST 1072/1073 and AST 1074/1075.

≠≠ BIO 1505 and BIO 1605, or 1625, or 1655 or 1705. Offerings will vary from year to year.

≠≠ CHM 1021/1001 and CHM 1022/1002.

≠≠ CHM 1050/1001 and CHM 1051/1002, or 1052/1001, or 1053/1002 or 1054/1004, or CHM 1057/1007.

≠≠ PHY 1010/1011 and PHY 1012/1013.



## College of Liberal Arts and Sciences

☞☞ PHY 1020/1021 and PHY 1022/1023.

**Natural Sciences Option B** - A year-long sequence (two courses with labs) in one scientific discipline. These courses are generally taken by science majors. The following course sequences satisfy this option:

☞☞ AST 2121/2133 and AST 2122/2134.

☞☞ BIO 2105 and BIO 2106.

☞☞ CHM 1131/1103 and CHM 1134/1108.

☞☞ CHM 1151/1103 and CHM 1152/1104.

☞☞ PHY 2410/2411 and PHY 2412/2413.

## Core Curriculum Distribution Requirements

In addition to satisfying the curricular requirements listed above, students are required to satisfy certain distribution requirements. The distribution requirements may be satisfied by courses used to satisfy either core, major or elective requirements. Additionally, a single course may satisfy more than one of the distribution requirements.

**Writing Requirement (8 courses):** Each student must take at least four courses which are designated as *Writing Intensive* and four courses which are designated as *Writing Enriched*. These designations will appear in the Master Schedule available during pre-registration each semester. (Students may also be expected to do extensive writing in courses which are not formally designated as writing enriched or writing intensive.)

The Core Humanities Seminars (1000 and 1001) and the Introductory Literature course (ENG 1050) fulfill three of the four Writing Intensive course requirements. The fourth Writing Intensive course requirement is to be taken in the student's major area. College Ethics (ETH 2050) fulfills one of the four Writing Enriched requirements.

**Integrative Sequences (2 sequences of 2 courses each):** Integrative courses enable a student to examine a topic or theme from the perspective of several disciplines. One of these sequences is to be in the humanities and the other is to be in the sciences. The two Core Humanities Seminars fulfill the former and the Natural Science core requirement fulfills the latter.

**Diversity Requirement (2 courses):** Each student is required to select one course in two of the following three areas:

☞☞ Diversity (1) - courses which provide a focus on studies emphasizing ethnic and minority experiences in the United States.

☞☞ Diversity (2) - courses which provide a focus on women's experiences and highlight the ways in which gender influences experience.

☞☞ Diversity (3) - courses which provide a focus on the culture, economics, politics or ecology of societies and nations other than those of Europe and the United States.

**NOTE:** 1.) A student may not use a single course to fulfill more than one category of the diversity requirement. 2.) The diversity requirement cannot be fulfilled by independent study or a senior thesis. 3) Language courses cannot fulfill the requirement, although literature courses in a foreign language can fulfill the requirement provided they focus on appropriate material.

## Special Programs

### Academic Seminars in Washington, D.C.

Villanova University in conjunction with the Washington Center sponsors intense two week academic seminars in the District of Columbia in January, May and August. Seminars do not interfere with the University calendar. Upon successful completion of the program, three elective credits are awarded the students. Program details are available in the Internship Office, 451 St. Augustine Center (610/519-4661).

### Associate Degrees

Villanova University, through the College of Arts & Sciences, awards the Associate of Arts Degree and the Associate of Science Degree in Natural Science. The Associate Degree Program is designed for students who are not seeking a regular baccalaureate degree, but still wish to follow a specific curriculum. The Associate Program can be completed in half the time it normally takes to complete the baccalaureate program. Students completing the Associate Degree may continue directly toward the completion of the requirements for the baccalaureate degree without any loss of credit or time. Students associated with one of the Affiliation Programs may complete an Associate Degree based on work done at Villanova University.

#### **Associate of Arts Degree**

##### **Arts courses** (*17 courses*)

College Ethics (ETH 1050)

Core Humanities Seminar I & II (CHS 1000 and 1001)

Fine Arts

Intermediate Language I & II

Introductory History (HIS 1050)

Introductory Literature (ENG 1050)

Introductory Philosophy (PHL 1050)

Introductory Theology/Religious Studies (RST 1050)

Social Science Elective

6 additional courses in any department or program within the College of Arts or Sciences

**Mathematics/Science courses** (3 courses in at least two science disciplines, with at least one course with a laboratory segment)

Several courses in Mathematics are suitable, as well as any of several year-long Core Science sequences in Biology (and/or Human Anatomy and Physiology I & II), Chemistry, Computer Science, and Physics/Astronomy.

## College of Liberal Arts and Sciences

### Sample Curriculum (many possibilities exist)

<b>FIRST YEAR</b>	
<i>First Semester</i> Introductory English Intermediate Language I Mathematics/Science Elective I Introductory Philosophy Core Humanities Seminar I	<i>Second Semester</i> Introductory History Intermediate Language II Mathematics/Science Elective II Introductory Religious Studies Core Humanities Seminar II
<b>SECOND YEAR</b>	
<i>First Semester</i> College Ethics Mathematics/Science Elective III Advanced Elective Advanced Elective Advanced Elective	<i>Second Semester</i> Fine Arts Social Science Elective Advanced Elective Advanced Elective Advanced Elective

### Associate of Science Degree in Natural Science

#### Arts courses (7 courses)

Core Humanities Seminar I  
 Introductory History (HIS 1050)  
 Introductory Literature (ENG 1050)  
 Introductory Philosophy (PHL 1050)  
 College Ethics (ETH 1050) or Ethics of Health Care  
 Introductory Theology/Religious Studies (RST 1050)  
 Social Science Elective

**Mathematics/Science courses** (9 courses and associated laboratories in at least two departments). Any science course **appropriate for a major in any science department** will count. Suitable courses include year-long sequences in Astronomy (AST), Biology (BIO; including Human Anatomy and Physiology I & II), Chemistry (CHM), Computer Science (CSC), Mathematics (MAT), or Physics (PHY). At least *two courses* must be in Mathematics/Computer Science\*.

\* Students in Affiliation Programs typically will take at least one semester of Calculus (e.g., MAT 1310 and one semester of Statistics (MAT 1230)

#### Electives (3 courses)

Any course taken from any department or program within the College of Arts and Sciences.

#### Sample Curriculum

(many possibilities exist; the schedule and the specific science courses listed represent only one possible scenario)

<b>FIRST YEAR</b>	
<i>First Semester</i> Core Humanities Seminar I Mathematics Elective I Biology 2105 Chemistry 1151/1103	<i>Second Semester</i> Mathematics Elective II Biology 2106 Chemistry 1152/1104 Introductory Religious Studies Introductory Philosophy
<b>SECOND YEAR</b>	
<i>First Semester</i> Science Elective College Ethics Introductory English Social Science Elective PHY 1100/1101	<i>Second Semester</i> Introductory History Elective Elective Elective PHY 1102/1103

Associate Degree programs designed for the special requirements of physical therapy, occupational therapy, cytotechnology, medical technology, dental hygiene, and diagnostic imaging/multi competency are also available. Interested students should contact the College of Liberal Arts and Sciences.

Students wishing to continue for a baccalaureate degree need to take the required courses as stated in the current catalogue for the major into which they enroll.

### Business Minor Program

Students in Liberal Arts and Sciences may take courses leading to a business minor. Information on the business minor is available from the College of Commerce and Finance, and the program is described in more detail in the Commerce and Finance section of this *Catalog*. *NOTE: Students in the Business Minor are required to purchase a notebook computer, approved by the College of Commerce and Finance (call 610/519-4334 for more information).*

### Elementary Education Certification -- Rosemont Colleges

Villanova, in cooperation with neighboring Rosemont College, offers students a program leading to a Pennsylvania-approved program in elementary education certification. Students planning to teach are admitted to the teacher certification program in the sophomore year after interviews and scholastic averages indicate they have the acceptable qualifications. A Villanova student may be recommended for certification in elementary education by Rosemont College by satisfactorily completing (1) all major and core requirements of Villanova University, (2) the professional education requirements of Rosemont College, and (3) the necessary psychology and education courses at Villanova.

## College of Liberal Arts and Sciences

Interested students must make application to the Office of the Dean through the Director of Liberal Arts, St. Augustine Center, room 451, in the fall semester of their sophomore year and must have achieved a cumulative grade point average of 3.00. An interview with the Director of the Education Program at Rosemont College is required. A limited number of students may be accommodated in this program. Students should arrange their own transportation.

Students in the Elementary Education Program are required to complete professional courses, and student teaching during the first semester of the senior year. To be eligible for the student teaching experience, students must fulfill the following requirements:

- ✂ A cumulative grade point average 3.00 with a minimum grade of B- in each required professional course.
- ✂ A cumulative grade point average of 3.00 in the student's major and a recommendation from the Villanova department chairperson.
- ✂ Doctor's certification of physical and mental health.

## Secondary Education Program and Teacher Certification

Villanova University's secondary teacher education program is approved by the Pennsylvania Department of Education as satisfying the requirements for teacher certification in twelve subject areas. Students who are enrolled in the Bachelor of Science in Education program are also enrolled in the teacher education program. Upon successful completion of the degree and the National Teachers Examination (NTE/Praxis) in communication skills, general knowledge, professional knowledge and subject specialization, the student is eligible for certification.

Students in other departments may be admitted to the teacher education program upon the approval of the Undergraduate Committee. Students admitted to the teacher education program must complete the same requirements as the candidate for the Bachelor of Science in Education, including student teaching.

With the exception of Education 4220, 4281, 4282, 4283, 4284, 4285, 4286, 4291 and 4292, Education courses may be taken as electives by students in other departments of the University.

Students enrolled in the Teacher Education Program will have their work reviewed each semester by a department committee to determine progress and professional development for certification. Students must achieve a 3.0 cumulative average in their teaching specialty and a 3.0 overall before they are permitted to do student teaching. Students who do not achieve the required cumulative average by senior year will not be allowed to continue in their major.

All Education majors will select a Content Area in which to be certified; they are also encouraged to earn a second major in the Content Area. The specific courses in the Content Area are determined by the Department and the subject area department. Student Teaching is normally taken in the second semester of the senior year.

The core curriculum for Education majors differs in some respects from the normal Arts and Sciences core and interested students should contact the Department of Education and Human Services. Students who possess a bachelor's degree and want to pursue Teacher

Certification on a part-time or full-time basis should apply through the Department of Education and Human Services.

## Exchange Programs

Villanova University enjoys cooperative exchange arrangements with neighboring Rosemont College and nearby Gratz College, allowing Villanova students the opportunity to take classes at the other schools. Students who participate in the exchange program must possess a cumulative average of 2.75. Superior juniors and seniors in the College of Liberal Arts and Sciences may take courses at Bryn Mawr College on a limited basis. Courses taken at Bryn Mawr must be in the student's field of study and not offered at Villanova. Registration is through the Honors Program Office, St. Augustine Center, Room 103 (610/519-4650).

## Honors Program (Dr. Edwin Goff, Director)

The Honors Program is designed to bring together superior students and dedicated faculty in a small college environment of rigorous seminars, flexible requirements, and independent research in order to promote breadth, diversity, and depth throughout the students = academic careers. The Program is open to students in all undergraduate colleges with the approval of the Honors Director. The Program offers the Bachelor of Arts and Bachelor of Science degrees. To qualify for an Honors Program degree, the student must be a full-time participant in the Honors Program, must complete a specified sequence of courses, and must maintain a 3.33 QPA with periodic evaluation and approval by the Honors teaching staff. For students whose course of studies prevents them from pursuing an Honors Program degree, an Honors sequence in Liberal Studies is available, which requires a minimum of eight Honors courses, a 3.33 QPA, and periodic evaluation and approval by the Honors teaching staff. Program details can be found in the AHonors Program@ section of this *Catalog* and are available in the Honors Program Office, 103 St. Augustine Center (610/519-4650).

## Human Services Program

The Bachelor of Arts in Human Services is designed for the student who chooses a liberal arts degree combined with an opportunity to pursue an experiential component geared toward the human services area. The program is for those who want to combine a liberal arts education with expertise in basic communication skills, human resource development, and knowledge of the professional field and are interested in the fields of business. The practicum experience gives the student the opportunity to work in an agency setting pertinent to the chosen specialization. Upon completion of the degree requirements, students will have minors in Psychology and Sociology. The program also prepares the student to pursue graduate level courses in Counseling and Human Relations.

## International Studies

The College of Liberal Arts and Sciences strongly encourages all majors in the College to consider studying overseas in a foreign university for a summer, a semester, or for a year

## College of Liberal Arts and Sciences

during the sophomore or junior years at Villanova. Villanova has its own six-week overseas summer programs in Chile, France, Ireland, Italy, Palestine, and Spain open to all Villanova students for intensive language or area studies. Students may study subjects in their major, minor or concentrations, strengthen their modern language skills, or complete Core course requirements through Overseas Programs. In any case, students normally enhance past skills such as high school languages learned but no longer studied due to heavy course requirements at Villanova, work towards a career path through overseas internships, gain fluency in language currently being studied, or begin learning a language. Interested students should see the detailed discussion of International Studies in the Villanova University section of this catalog or contact the Office of International Studies, St. Augustine Center, Room 415, (phone 610/519-6412).

### Internships

The College of Liberal Arts and Sciences provides its students with the opportunity to earn course credit in departmentally related and academically creditable internships. The following majors offer this option: Art History, Biology, Chemistry, Communication, Computing Sciences, Comprehensive Sciences, Economics, English, Geography, History, Liberal Arts, Mathematics, Philosophy, Political Science, Psychology, and Sociology (Criminal Justice). Internships are not restricted to the Delaware Valley, and might take place in Washington, DC, as well as other parts of the country. Qualified juniors and seniors with a 3.0 QPA are eligible to participate in the program. Internships last for the semester and can be either full-time or part-time. They are also available during the summer sessions. Program details are available from the Internship Director, St. Augustine Center, Room 451 (610/519-4661).

### Naval Science

Eligibility for a commission in the U.S. Navy, Naval Reserve, U.S. Marine Corps or Marine Corps Reserve, through the NROTC Program, is contingent upon successful completion of required University and naval professional courses of study. Program details are found in the Naval Science course listings section of this *Catalog*.

## Academic Policies and Information

Unless otherwise noted, the College of Liberal Arts and Sciences follows the general academic policies and regulations listed in the University section of this Catalog. *It is the responsibility of the student to know and comply with all academic policies and regulations of the University and of the College of Liberal Arts and Sciences. Such policies may change without prior notice.* Policies specific to the College of Liberal Arts and Sciences follow, and can be seen in greater detail in *Enchiridion: The Undergraduate Handbook*:

## Academic Standing and Academic Probation

The College Academic Standing Committees meet at the end of each regular semester to review the academic records of any student in the College who is on academic probation or experiencing academic difficulties. The Committee recommends corrective actions to the Dean that may range from Letters of Concern to Probation to a Dismissal From the College. Each student deserving corrective action will receive a letter from the Dean's office stating the action taken. While on academic probation, a student's course load may be limited to four courses plus any associated laboratories, *and* the student may not participate in any extracurricular activities. Students may be removed from the Academic Probation List only upon satisfying each of the requirements of the term of probation.

There is no requirement that a student must receive a Letter of Concern or Probation prior to being dismissed from the College of Liberal Arts and Sciences, and possibly from the University. A dismissal from the College may be appealed in writing. Detailed instructions accompany each letter from the Dean.

## Advising

Every student in the College of Liberal Arts and Sciences is assigned an academic adviser. Before declaring a major, each student is assigned to a specially trained faculty member who serves as the student's pre-major adviser. After declaration of major, advising is done by faculty in the student's major department.

## Closed Sections

Ordinarily, students will not be permitted to enroll in closed sections. Exceptions to this rule can be made only by the appropriate chairperson and only when a student graduating at the end of the current semester must enroll in the specific section in order to complete his or her primary major. If other sections or other courses are available to satisfy the degree requirements, the exception will not be granted.

## Dean's List

At the end of each academic year, the College of Liberal Arts and Sciences officially recognizes its best students by including their names on the Dean's List. Inclusion on the list is a tribute to a student's diligent work and superior academic performance. In an effort to retain the honor which is integral to membership on the list, the requirements for inclusion are justifiably rigorous.

In order to be named to the Dean's list, a student in the College of Liberal Arts and Sciences must maintain a minimum semester grade point average of 3.50 in both the fall and the spring semesters of a single academic year. All students included on the list will receive a congratulatory letter from the Dean following the conclusion of the spring semester.

## Graduate Courses

A qualified Senior with a cumulative QPA of 3.0 may enroll in a graduate course upon obtaining the written approval of the adviser, the department chairperson of the course involved, and the Dean before submitting the request to the Dean of the Graduate School.



## College of Liberal Arts and Sciences

Courses numbered 7000-7999 are graduate courses open to qualified undergraduates. Courses numbered 8000-9999 are graduate courses not ordinarily open to undergraduates.

### Medal I ion of Excel I ence

Each department in the College of Liberal Arts and Sciences may nominate one graduating senior each year to receive a Medallion of Excellence. Generally, to be eligible for nomination, students must have earned a minimum of three-fourths of their degree at Villanova in the College of Liberal Arts and Sciences and must have a minimum cumulative grade point average of 3.50.

Each department has named its medallion either for a luminary from the past who has deeply affected the discipline or an outstanding person who helped to shape the course of study at Villanova University.

### Phi Beta Kappa

Phi Beta Kappa is a National Honors Fraternity for Colleges of Liberal Arts and Sciences. It was founded at the College of William and Mary in 1776. Since that time, its rigorous and comprehensive standards have made election to it a premier sign of excellence. Villanova University became one of the colleges and universities to shelter a chapter when the Sigma of Pennsylvania Chapter of Phi Beta Kappa was installed at Villanova in April 1986. The Phi Beta Kappa standards reflect the highest ideals of liberal education at Villanova: education that is concerned with values as well as facts, and wisdom as well as knowledge; education that seeks freedom from ignorance, alienation, and inhumanity; that values intellectual integrity and tolerance over expediency, and breadth of scholarly achievement over specialized expertise.

Juniors and seniors who are candidates for a degree in the College of Liberal Arts and Sciences, whose academic achievements reflect the goals of Phi Beta Kappa, and who meet the following specific criteria shall be eligible for consideration for election to Phi Beta Kappa:

- ≪≪ Candidates must have completed three semesters of work in the College of Liberal Arts and Sciences and be fully registered for a fourth.
- ≪≪ Candidates must have a grade point average of at least 3.50 (3.80 to be elected as a junior).
- ≪≪ At least three-fourths of a candidate's academic work must have been taken in the liberal arts and sciences, as distinct from applied or professional work.

In choosing candidates for election, the Chapter seeks evidence of academic achievement that is of exceptional distinction, and gives weight to the breadth and the quality of the overall program of courses taken by each candidate.

Election to membership in Phi Beta Kappa is wholly within the discretion of the members of the Chapter, subject only to the limitations imposed by its Constitution and By-Laws. Fulfillment of the minimum qualifications does not assure election to the membership.

### Pre-Professional Heal th Related Science

Adviser (Dr. John Friede). The Health Related Science Adviser:

## Villanova University

- ?? Provides information to prospective students and their parents regarding Villanova University's programs in the sciences and how Villanova University can prepare them for careers in health related professions;
- ?? Provides information to matriculated students on professional schools and their application processes;
- ?? Prepares the evaluation materials for each Villanova student applying to a professional school in the health sciences; and
- ?? Serves as the academic adviser for students accepted into the affiliation programs.

Additional information is available from the Health Science Adviser in 151 Mendel Science Center (610/519-4833) or from the Office of the College of Liberal Arts and Sciences.

### Satisfactory/Unsatisfactory Option

Sophomores, Juniors, and Seniors may take one elective course a semester on a satisfactory/unsatisfactory basis. The satisfactory/unsatisfactory option may not be used for courses that fulfill core, major or minor requirements, but individual departments may offer the major seminar on a satisfactory/unsatisfactory basis.

### Scholastic Load

A student must take a minimum of 12 credits a semester to be a full-time student. A normal scholastic load (usually five courses plus labs) is defined by the program of studies set forth in this *Catalog*. Permission to take one other course in excess of the normal load may be obtained with the written approval of the Dean.

In order to qualify for such approval in the College of Liberal Arts and Sciences, a student must demonstrate academic proficiency of a high order as indicated by a 3.5 cumulative average.

### Summer School at Villanova

In order to accommodate students wishing to accelerate or enrich their studies, Villanova offers three summer sessions. Courses taken in Villanova Summer School are treated as though they were taken during the year. Prior to enrollment in Villanova Summer School, students in the College of Liberal Arts and Sciences must secure an adviser's signature.

### Summer School at Other Institutions

Students in the College of Liberal Arts and Sciences may be permitted to take summer school courses at institutions other than Villanova University. In all cases permission to enroll in such courses must be obtained from the student's adviser and from the Dean's Office before enrolling in the course(s).

Courses will generally be approved if they are taken at accredited four year colleges or universities and if they are equivalent to course offerings at Villanova. Upon completion of the course it is the student's responsibility to see that an official, sealed transcript is sent to the College of Liberal Arts and Sciences at Villanova.

Transfer credit will be awarded on the Villanova transcript only for pre-approved courses in which a student earns a grade of "C" or better. The actual grade received at the other

institution does not transfer and is not calculated into the student's cumulative grade point average.

## Withdraw from a Course

After the Friday following mid-term break, and up to and including the last day of the semester, students may withdraw from a course without academic penalty and receive the grade of "WX" *only* by permission of the Dean of the College. Students may request an authorized withdrawal by providing to the Dean a written statement of justifiable cause for withdrawal as well as the written recommendation of the instructor and the student's chairperson. Justifiable cause is a reason such as illness which is extrinsic to the nature or difficulty of a course and which would prevent a student from completing the substantial requirements of the course. The proper form for this procedure may be obtained in the Dean's Office, 105 St. Augustine Center.

## Sample Degree Programs

The following chart offers a sample program for students with majors in Liberal Arts. It is just one of the many possible arrangements students may choose in pursuing a degree. Students are required to meet with an assigned adviser at least once each semester in order to select courses for registration. While a student may decide to alter the following course order, no courses may be omitted. It is exclusively the responsibility of the student to see that the appropriate courses are selected in the pursuit of any of the various degrees in the College.

### SAMPLE CURRICULUM FOR AN ARTS MAJOR PROGRAM

<b>FIRST YEAR</b>	
<i>Fall Semester</i>	<i>Spring Semester</i>
Core Humanities Seminar*	Core Humanities Seminar*
Introductory Philosophy	Introductory Literature
Social Science	Introductory History
Language	Language
Mathematical/Computing Sciences	Mathematical/Computing Sciences
<b>SECOND YEAR</b>	
<i>Fall Semester</i>	<i>Spring Semester</i>
Natural Science & Laboratory*	Natural Science & Laboratory*
Fine Arts	College Ethics
Introductory Theology	Social Science
Elective/Major/Social Science	Elective/Major/Social Science
Adv. Humanities (History/Philos)	Adv. Humanities (Theol/Literature)
<b>THIRD YEAR</b>	

Villanova University

<i>Fall Semester</i>	<i>Spring Semester</i>
Major	Major
Major	Major
Advanced Humanities	Advanced Humanities
Elective	Elective
Elective	Elective
<b>FOURTH YEAR</b>	
<i>Fall Semester</i>	<i>Spring Semester</i>
Major	Major
Major	Major
Elective	Elective
Elective	Elective
Elective	Elective

\*NOTE: These courses must be taken in the semester indicated.

### Sample Curriculum for a Sciences Major Program

The following chart offers a sample program for students with majors in the Sciences. Students are required to meet with an assigned adviser at least once each semester in order to select courses for registration. While a student may decide to alter the following course order, no courses may be omitted. It is exclusively the responsibility of the student to see that the appropriate courses are selected in the pursuit of any of the various degrees in the College.

<b>FIRST YEAR</b>	
<i>Fall Semester</i>	<i>Spring Semester</i>
Core Humanities Seminar*	Core Humanities Seminar*
Major Science	Major Science
Science or Core	Science or Core Requirement
Mathematics	Mathematics
Foreign Language	Foreign Language
<b>SECOND YEAR</b>	
<i>Fall Semester</i>	<i>Spring Semester</i>
Major Science	Major Science
Major Science	Major Science
Math or Core	Math or Core
Science or Core	Science or Core
Introductory Literature	Core Elective
<b>THIRD YEAR</b>	

College of Liberal Arts and Sciences

<i>Fall Semester</i>	<i>Spring Semester</i>
Major Science	Major Science
Major Science	Major Science
Science or Core	Science or Core Requirement
Advanced Humanities	Advanced Humanities
Elective	Elective
<b>FOURTH YEAR</b>	
<i>Fall Semester</i>	<i>Spring Semester</i>
Major Science	Major Science
Major Science	Major Science
Science or Core	Science or Core Requirement
Advanced Humanities	Advanced Humanities
Elective	Elective

*\*NOTE: These courses must be taken in the semester indicated.*

Students wishing to receive the Bachelor of Science in Astronomy and Astrophysics, Biology, Chemistry, Computer Science, Mathematics, Physics or the Bachelor of Science Comprehensive Program must attain a QPA of 2.00 in the science and mathematics courses taken in fulfillment of their major, as well as attaining an overall QPA of 2.00.

## Departments and Programs

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### Aerospace Studies

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**Faculty:** Hopkins, Alzate, Boyd, Sutton  
**Website:** [www.csc.vill.edu/~afrotc/index.htm](http://www.csc.vill.edu/~afrotc/index.htm)

Air Force Reserve Officer Training Corps participation is available through a cross-enrollment agreement with St. Joseph=s University. Participation in a one through four-year program leads to a commission as a Second Lieutenant in the Air Force. Scholarships are available in any major. Contact AFROTC Detachment 750 at (215) 871-8324 for further details.

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### Africana Studies Program

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**Director:** Dr. Maghan Keita  
**Office:** 448 St. Augustine Center, tel. 610/519-4661  
**Website:** [www.artsci.villanova.edu/africanastudies/](http://www.artsci.villanova.edu/africanastudies/)

**CONCENTRATION:** The Africana Studies program combines an introductory core with a number of electives. Concentrators are required to take two courses (six credits) from the introductory core. Each of these courses must be from a different discipline. In addition the student is required to take fifteen credit hours of approved electives. The list of approved electives available in any given semester is available from the Africana Studies Office, St. Augustine 451.

**MINOR:** For the Africana Studies minor, a student is required to take two courses (six credit hours) from the introductory core. Each of these courses must be from a different discipline. In addition the student is required to take nine credit hours of approved electives.

Introductory Core:

COM 2700	Black Rhetoric
ENG 2505	African American Literature: Poetry
ENG 2510	African American Literature: Novel
ENG 2515	African American Literature: Drama
HIS 2291	African American History during Slavery
HIS 2292	African American History since Slavery
HIS 4115	The Roots of African Culture
HIS 4120	The Emergence of Modern Africa

## College of Liberal Arts and Sciences

### Sample Electives:

ECO 1103	The Economics of Social Issues
GEO 3700	Africa
HIS 4130	Southern Africa in Historical Perspective
HIS 4470	Third World Revolution
HIS 4490	Topics: Racism and Justice in the Americas
HON 4050	Africana Intellectualism
HON 5700	Urban Realities/Suburban Perspectives
HON 5702	Philosophy, Issues of Race
P J 5000	Race/Class/Gender
PSC 3500	Civil Rights and Civil Liberties
PSC 4700	Africa
PSC 5500	Africa in World Politics
THL 5700	Black Religious Experience
SOC 3600	Race Relations and Ethnic Relations

The number of electives, and therefore students' choices, will vary from year to year.

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## Arab and Islamic Studies

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<b>Director:</b>	TBA
<b>Office:</b>	104 St. Augustine Center, tel. 610/519-7325
<b>Website:</b>	<a href="http://www.artsci.villanova.edu/arabislamic/">www.artsci.villanova.edu/arabislamic/</a>

**CONCENTRATION:** AIS 4100; ARB 1111, 1112, 1121, 1122; HIS 4031, 4041; PSC 4900 or 5900; THL 5150; and one elective from the courses listed below.

**MINOR:** ARB 1111, 1112; HIS 4041; PSC 4900 or 5900; and two electives. *NOTE:* Students are advised to enter the program no later than the first semester of their junior year in order to complete the requirements. Approval of the program director must be obtained to enter the program. The Center for Arab and Islamic Studies is located in 104 St. Augustine Center (610/519-7712 or 7325).

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## Army ROTC

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**Faculty:** Lieutenant Colonel Latsha, Major Keim, Captain Karbel, Captain Limmer, Master Sergeant Pearson, Staff Sergeant Ortega

**ARMY ROTC PROGRAM:** By agreement with Widener University's Department of Military Science, Villanova offers a program of study leading to a commission as a Second Lieutenant in the United States Army or Army Reserve. Details are found in the general University section of this *Catalog*

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## Art History

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**Chair:** Dr. Adele Lindenmeyr  
**Office:** 403 St. Augustine Center, tel. 610/519-4660  
**Website:** [www.history.villanova.edu/arhistory/](http://www.history.villanova.edu/arhistory/)  
**Course descriptions:** [www.artsci.villanova.edu/courses/art\\_history.html](http://www.artsci.villanova.edu/courses/art_history.html)

The Art History major and minor are administered by the Chair of the History Department.

**MAJOR:** Art History majors must complete AAH 1101 and AAH 1102 (History of Western Art, Ancient to Medieval and Renaissance to Contemporary World) plus one Studio Art Course and seven upper-level art history courses. These seven upper-level courses must include one course in each of the four general areas of art history (Ancient, Medieval, Renaissance, Modern); an art history elective; a Senior Seminar (4000-level course); and a Senior Thesis. Majors in Art History have the opportunity to do internships at nearby museums, auction houses, or historical sites; or to participate in the Villanova-Rosemont Summer Program in Siena, Italy, which places a strong emphasis on art history.

**MINOR:** Students seeking a minor in Art History are required to earn at least 15 credit hours in art history, six of which must be the two survey courses (AAH 1101 and 1102), plus 3 credit hours in Studio Art.



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## Astronomy and Astrophysics

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<b>Chair:</b>	Dr. George P. McCook
<b>Office:</b>	457 Mendel, tel. 610/519-4820
<b>Professors:</b>	Guinan, McCook, Sion
<b>Associate Professors:</b>	Maloney, Fitzpatrick
<b>Assistant Professor:</b>	Ambruster
<b>Instructor:</b>	DeWarf
<b>Website:</b>	<a href="http://www.astronomy.villanova.edu">www.astronomy.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/astronomy.html">www.artsci.villanova.edu/courses/astronomy.html</a>

**MAJOR:** AST 2120, 2121, 2122, 2133, 2134, 3141, 3142, 3152, 3162, 4121, 4122; MET 2001; CSC 4630; MAT 1500, 1505, 2500, 2705; PHY 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2601, 2603, 4200, 4202, and 3 Physics courses (9-12 credits) numbered above 3000. Recommended are PHY 4000, 4002.

**MINOR:** 22 credits, including AST 2120, 2121, 2122, 2133, 2134, and three (3) of the following: AST 3141, 3142, 3152, 3162, 4121, 4122; MET 2001. *NOTE: prerequisites in Math and Physics must be met to gain admission to these courses.*

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## Biology

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<b>Chair:</b>	Dr. Russell M. Gardner
<b>Professors:</b>	Bauer, Desmond, Gardner, Maksymowych, Orkwiszewski, Stephens, Wieder
<b>Associate Professors:</b>	Baker, Curry, Dollahon, Olson, Knepper, Russell, Webb
<b>Assistant Professors:</b>	Balsamo, DiBenedetto, Friede, Russo, Shurer,
<b>Instructor:</b>	Chubb
<b>Office:</b>	152 Mendel, tel. 610/519-4830
<b>Website:</b>	<a href="http://www.bio.villanova.edu">www.bio.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/biology.html">www.artsci.villanova.edu/courses/biology.html</a>

**MAJOR:** Thirty-six credits in Biology, including BIO 2105, 2106, 3351, and 5100. Cognate requirements include: CHM 1151/1103, 1152/1104, 2211/2201, 2212/2202; MAT 1310/1315; PHY 1100/1101 and 1102/1103. In addition, Biology majors must select a minimum of five laboratory science electives from the Biology departmental offerings (five courses including laboratories) numbered 3000 and higher. At least one course with laboratory must be chosen from each of the following areas: Population Biology, Organismal Biology, Cellular/Molecular Biology. *NOTE: Courses numbered below 2000 will not apply toward a major in biology.*

## Villanova University

**MINOR:** Twenty-three credits Biology, including BIO 2105 and 2106. Additional elective courses from Biology departmental offerings numbered 3000 and higher. These Biology electives must include at least 3 lab science courses. Minors must complete at least 12 of their Biology credits at Villanova and achieve a minimum QPA of 2.0 in those courses.

*NOTE: Courses numbered 7000 to 7999 are open to undergraduates with advanced standing and a QPA of 3.0 or higher. See the Biology listings in the Graduate School of Liberal Arts and Sciences Catalog.*

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# Chemistry

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<b>Chair:</b>	Dr. Barry S. Selinsky
<b>Professors:</b>	Birdsall, Doyne, Edwards, Giuliano, Wójcik
<b>Associate Professors:</b>	Bessel, Ludwig, Selinsky, Spritzer
<b>Assistant Professors:</b>	Ahmadi, Bausch, Casillas, Kassel, Rucker
<b>Office:</b>	215 Mendel Hall, tel. (610) 519-4840
<b>Website:</b>	<a href="http://www.chemistry.villanova.edu">www.chemistry.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/chemistry.html">www.artsci.villanova.edu/courses/chemistry.html</a>

**MAJOR:** CHM 1000; 1311/1301; 1512/1502; 3511/3501; 3211/3201; 3212/3202; 3311/3301; 3411/3401; 3412/3402; 4611; MAT 1500/1505; PHY 2410/2411; 2412/2413. In addition, Chemistry majors must select a minimum of two Chemistry electives and one Chemistry lab elective.

**MINOR:** CHM 1151/1103; 1152/1104; 2211/2201; 2212/2202. In addition, Chemistry minors must select a minimum of three courses (along with appropriate laboratories) from any 3000 level course or higher.

**BIOCHEMISTRY CONCENTRATION:** The curriculum is identical to the Chemistry major except for the following: CHM 4611 and one Chemistry elective are replaced by CHM 4621/4622/4603. Three semesters of Biology are required: BIO 2105; 2106; and a molecular based biology course.

**RESEARCH OPPORTUNITIES:** The Chemistry Department offers two mechanisms for participation in research by the undergraduate major. Departmental fellowships for 8-10 weeks of summer research are funded by industrial and government sources. Recipients of these fellowships carry out a research project under the direction of a faculty member. In addition, students are encouraged to enroll in research for academic credit during the school year (CHM 4801, 4802, 4803).

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# Classical and Modern Languages and Literature

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<b>Interim Chair:</b>	Prof. Edward F. Jaworowski
<b>Professors:</b>	Helmetag, Hunt, Juliá, Ogden,
<b>Associate Professors:</b>	Omran, Pastore, Peraita, Poeta, Rigaud, Trujillo
<b>Assistant Professors:</b>	Chi, Hamada, Hart, Jaworowski, Nakagawa, Waggaman
<b>Office:</b>	303 St. Augustine Center, 610/519-4680
<b>Website:</b>	<a href="http://www.classicalmodernlanglit.villanova.edu/">www.classicalmodernlanglit.villanova.edu/</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/languages.html">www.artsci.villanova.edu/courses/languages.html</a>

**MAJORS:** Majors in French, German or Spanish are required to take ten courses above the intermediate level. Once a sequence of language courses has begun, a student may not revert to a lower level course. French 2144 is required of all majors in French; Spanish 2211, 2212 and 3950 are required of all majors in Spanish. In addition, majors in French and German are required to take French 3950 or German 3950. A major in Classical Studies generally requires a minimum of 12 courses, (minimum 36 credits) in Latin or Greek. Up to 2 Classics courses (taught in English: Archaeology, Mythology, etc.) may be included in the 12 course total. Classics 3001, Independent Study, will be considered a Latin or Greek course when the study is done in these languages.

**MINORS:** Students may minor in Arabic, Chinese, French, German, Italian, Japanese, Russian or Spanish. Minors in Arabic, Chinese, Japanese and Russian must complete six courses in the language. For Minors in French, German, Italian and Spanish four courses above the intermediate level are required. A minor in Classical Studies generally requires a minimum of 6 courses (minimum 18 credits) in Latin or Greek. Up to 2 Classics courses (taught in English: Archaeology, Mythology, etc.) may be included in the 6 course total. Classics 3001, Independent Study, will be considered a Latin or Greek course when the study is done in these languages.

The Department also offers courses in foreign literatures in English translation. Such courses may be used to fulfill a Humanities elective; however, they may not be used toward credit requirements for a foreign language major or minor.

Students may obtain up to six credits through Villanova summer programs abroad in France, Chile, Germany, Italy and Spain.

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## Cognitive Science Program

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**Director:** Dr. Thomas C. Toppino  
**Office:** 331 Tolentine Hall, 610/519-5432  
**Website:** [www.artsci.villanova.edu/cogscience/](http://www.artsci.villanova.edu/cogscience/)

Cognitive Science is a basic and applied science with the primary goal of explaining intelligent behavior, whether exhibited by humans, animals, or machines. The purpose of the Cognitive Science Program is to offer an interdisciplinary course of study related to intelligent systems emphasizing the perspectives of psychology, computer science, philosophy, and biology. The program offers both a concentration and a minor to students in all of the University's undergraduate colleges.

**Requirements for Concentration:** All five courses from Categories A and B. At least two additional courses from Category C.

**Requirements for Minor:** Two of the three courses in Category A At least three additional courses selected from Categories A, B, or C. *Note:* Course selections for the minor must include approved courses in three of the following four disciplines: Psychology (PSY), Computer Science (CSC), Philosophy (PHI), and Biology (BIO).

**Category A:**

PHI 4650            Philosophy of Mind  
PSY 4500            Cognitive Psychology  
CSC 4500            Introduction to Artificial Intelligence

**Category B:**

CSC 1051            Algorithms and Data Structures I  
CGS 5900            Cognitive Science Seminar

**Category C:**

BIO 4605            Neurobiology  
BIO 6509            Directed Research (with Cognitive Science Program approval)  
CSC 4170            Theory of Computation  
CSC 4380            Information Visualization  
CSC 4730            Human-Computer Interaction  
CSC 5900 & CSC 5930            Special Topics (with Cognitive Science Program approval)  
CSC 5993            Independent Study (with Cognitive Science Program approval)  
ECE 3420            Expert Systems Programming  
ECE 5445            Introduction to Neural Networks  
PHI 2950            Topics in Philosophy (with Cognitive Science Program approval)  
PHI 3400            Theories of Knowledge

## College of Liberal Arts and Sciences

PHI 4200	Philosophy of Language
PHI 4975	Independent Study & Research (with Cognitive Science Program approval)
PSY 2300	Perception
PSY 2800	Human Factors
PSY 3000	Special Topics (with Cognitive Science Program approval)
PSY 4050	Research Methods
PSY 4200	Physiological Psychology
PSY 5100	Animal Learning and Cognition
PSY 5900	Undergraduate Research (with Cognitive Science Program approval)

*Note: Cognitive Science students who do not have the prerequisites for an approved course should apply through the Cognitive Science Program to have the prerequisites waived. Decisions will be made on a case-by-case basis by the course instructor or, in some instances, by the Director of the Cognitive Science Program after considering the particular student's background. In the case of courses that are required by the Cognitive Science Program, it is expected that the prerequisites will be able to be waived for Cognitive Science students. A waiver of prerequisites is also possible in other courses.*

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## Communication

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<b>Chair:</b>	Dr. Teresa A. Nance
<b>Professor:</b>	Lynch
<b>Associate Professors:</b>	Bowen, Mackey-Kallis, Michal-Johnson, Rose, Shyles
<b>Assistant Professors:</b>	Basso, Berens, Crable, Moore, O=Leary, Wilke, Woodard
<b>Instructors:</b>	D=Angelo, Linkins
<b>Website:</b>	<a href="http://www.communication.villanova.edu">www.communication.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/communication.html">www.artsci.villanova.edu/courses/communication.html</a>

**MAJOR:** Thirty (30) credit hours are required. COM 1000, Survey of Communication Studies, and COM 1100, Public Speaking, are prerequisites which must be taken in the sophomore year. A minimum G.P.A. of 2.5 is required. COM 5000, Communication Research, should be taken in the junior year or prior to taking COM 5050, Senior Project.

After completing COM 1000 and declaring the Communication major, students will consult their academic advisers and choose one of three areas of emphasis: Rhetoric & Performance Studies (2000-2950), Media & Film Studies (3000 -3950), and Interpersonal and Organizational Studies (4000 - 4950). They will take three courses in the area of emphasis, one course in each of the other two areas, and one additional course in an area of their choice to complete the

Villanova University

major. A complete listing of courses divided by area of emphasis is available in the Communication office.

Communication majors who choose internships may use three credits to satisfy major requirements. If more internship credits are taken, they must be free electives.

**MINOR:** Survey of Communication Studies (COM. 1000), plus four courses from the major course offerings.

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## Comprehensive Science

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**Director:** Dr. Frederick Hartmann  
**Office:** 451 St. Augustine Center, 610/519-4661  
**Website:** [www.comprehensivesci.villanova.edu](http://www.comprehensivesci.villanova.edu)

**MAJOR:** The Comprehensive Science program is designed to allow students interested in the physical and life sciences to get a broad based and thorough exposure to a full spectrum of scientific concerns and practices. The information provided here is a basic outline of the comprehensive science requirements. The elective courses taken may vary based upon special concentrations selected by the student.

The following courses are required of Comprehensive Science majors:

CSC 1024	Computing for Scientists
BIO 2105, 2106	General Biology I and II
CHM 1151, 1152	General Chemistry I and II
CHM 1103/1104	General Chemistry I and II Laboratory
MAT 1500/1505/2500	Mathematical Analysis I, II and III
PHY 2410/2411	University Physics: Mechanics and Lab
PHY 2412/2413	University Physics:Electricity & Magnetism & Lab
<b>OR</b>	
PHY 2414/2415	University Physics: Thermodynamics and Lab

One Mathematics or Computing Sciences elective selected from the following:

CSC 1051	Algorithms and Data Structures I
MAT 2310	Statistics for Experimenters
MAT 2705	Differential Equations with Linear Algebra
MAT 4310	Statistical Methods

At least eight science electives and appropriate laboratories chosen in consultation with the student's advisor.

## College of Liberal Arts and Sciences

The degree program allows for students to design a concentration in a particular discipline or an interdisciplinary field.

### Areas of Concentration:

Biological-Chemistry  
Chemistry  
Environmental Studies  
Mathematics  
Pre-Medical  
Physics

Biology  
Cognitive Science  
Geography  
Meteorology  
Pre-Optical

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## Computing Sciences

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<b>Chair:</b>	Dr. Robert E. Beck
<b>Professors:</b>	Beck, Cassel, Fleischman
<b>Associate Professors:</b>	Goelman, Hardt, Levitin, Lewis, Joyce, Soong
<b>Assistant Professors:</b>	Gormley, Japaridze, Klassner, Papalaskari,
<b>Office:</b>	161 Mendel Science Center, tel. 610/519-7307
<b>Website:</b>	<a href="http://www.csc.villanova.edu">www.csc.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/computing.html">www.artsci.villanova.edu/courses/computing.html</a>

Two separate majors are offered by the Department of Computing Sciences. The Computer Science Major emphasizes the theory, abstraction and application of computing. Central to computer science is the investigation of algorithms, their complexity and the data structures on which they operate. The Information Science Major focuses on the acquisition, representation, storage, indexing, manipulation, retrieval and management of information in all its forms --text, audio, video, image, animation, and hypermedia.

**COMPUTER SCIENCE MAJOR:** CSC 1051, 1052, 1200, 1300, 1600, 1700, 1800, 2053, 4170, 4700, and 4790; MAT 1500, 1505, and 2310 plus four departmentally approved elective courses in computer science; PHI 2180; a two-semester science sequence with corequisite laboratories selected from an approved set of courses in Astronomy, Biology, Chemistry or Physics; and one more approved science or engineering course. A specific list of approved electives and approved science/engineering courses can be obtained from the department office. A total of 26 credits in science and mathematics is required. The major in computer science is accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

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**CSC MINOR:** CSC 1051, 1052, 1200 or ECE 2490, CSC 1300, CSC 1700, CSC 2053, and two elective courses chosen from the list of approved courses available from the department office.

**INFORMATION SCIENCE MAJOR:** CSC 1051, 1052, 1200, 1300, 1600, 2053, 2500, 3400, 4140, 4480, 4700, and 4800; MAT 1500, 1505, and 2310 plus three departmentally approved elective courses in information science; PHI 2180; a two-semester science sequence with corequisite laboratories, selected from an approved set of courses in Astronomy, Biology, Chemistry or Physics. A specific list of approved electives and approved science courses can be obtained from the department office.

**ISC MINOR:** CSC 1051, 1052, 1300, 2500, 3400, 4480 and two elective courses chosen from the list of approved courses available from the department office.

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## Core Humanities

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**Director:** Dr. John A. Doody  
**Assistant Director:** Dr. Paul Wright  
**Office:** 104 St. Augustine Center, tel. 610/519-7325  
**Website:** [www.artsci.villanova.edu/corehumanities/](http://www.artsci.villanova.edu/corehumanities/)

The College of Liberal Arts and Sciences is committed to the view that the humanities play an essential role in university education by stimulating intellectual wonder, broadening cultural awareness, helping us examine moral values, and strengthening our search for a just and humane society. All Arts and Sciences students have an intensive exposure to the humanities in their Core Humanities Seminar in each semester of the first college year.

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## Criminal Justice Program

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**Director:** Dr. William Waegel  
**Office:** 204 St. Augustine Center, 610/519-4740  
**Website:** [www.artsci.villanova.edu/criminaljustice/](http://www.artsci.villanova.edu/criminaljustice/)

The Criminal Justice Concentration is an interdisciplinary program designed to provide students with an understanding of the causes of crime, societal reactions to crime and the nature and application of criminal law.



## College of Liberal Arts and Sciences

**CONCENTRATION:** Six courses, including Criminology (SOC 3000), Philosophy of Criminal Justice (PHI 2140), and a course focusing on due process issues from the list below. Students are *strongly encouraged* to take SOC 3000 as their first course.

SOC 3000

Criminology

PHI 2140

Philosophy of Criminal Justice

Due Process issues, at least one of the following two courses:

PSC 3500

The Supreme Court and Criminal Justice

SOC 4100

Criminal Procedure

At least three of the following:

SOC 2200

Sociology of Deviance

SOC 3020

Criminal Law and the Community

SOC 3100

Juvenile Delinquency

SOC 3200

Penology and Corrections

SOC 3300

Sociology of Law

PSC 3600

Criminal Justice System

CJ 3000

Introduction to Victimology

SOC 4100

Special Topics:Criminal Justice

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## Economics

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**Chair:**

Dr. Edward J. Mathis

**Professors:**

DeFina, Mathis, Thanawala, Zech

**Associate Professors:**

Donziger, Clain, Farrell, Giordano, Kroch, Wolnicki, Zaleski

**Assistant Professors:**

Alexandrin, C. Asher, Casario, Mao, Matthews, Taylor, Walsh, Webster

**Office:**

342 Bartley, tel. 610/519-4370

**Website:**

[www.cf.villanova.edu/economics/](http://www.cf.villanova.edu/economics/)

**Course descriptions:**

[www.artsci.villanova.edu/courses/economics.html](http://www.artsci.villanova.edu/courses/economics.html)

**BACHELOR OF ARTS IN ECONOMICS:** Students in the College of Liberal Arts and Sciences who specialize in Economics earn the degree of Bachelor of Arts in Economics. Such students must take MAT 1330 (calculus) either to satisfy their math requirement or as a free elective. They should take ECO 1001 and ECO 1002 as two of the three social science courses in the Sophomore year. In the Sophomore or Junior year majors are required to take MGT 1006. In addition, students must successfully complete: ECO 2101, 2102; STA 2107, 2108; and 15 elective Economics credits.

**MINOR:** Students must take MAT 1330 (calculus), and complete a total of 18 credits consisting of ECO 1001, 1002, 2101, 2102, and 6 economics elective credits, excluding ECO 2110.

For a list of economics courses, please see the Economics listing in the College of Commerce and Finance section of this catalog.

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## Education and Human Services

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<b>Chair:</b>	Dr. Connie Titone
<b>Professors:</b>	Brooks, Heitzmann, Weinrach
<b>Associate Professor:</b>	Davis, Durnin, Jacobs, Titone
<b>Assistant Professors:</b>	Fierros, Hill, Kahn, Lafferty, Monnig, Murray, Nichols, Ramirez, Rosa, Schussler
<b>Office:</b>	302 St. Augustine Center, tel. 610/519-4620
<b>Website:</b>	<a href="http://www.education.villanova.edu">www.education.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/education.html">www.artsci.villanova.edu/courses/education.html</a>

The Department of Education and Human Services secondary teacher education program seeks to develop prospective teachers able to meet the demands of teaching in a variety of school environments, public and private, urban and suburban. Provisions for professional competencies and teacher certification include a thorough grounding in the liberal arts, a substantial concentration in an area of specialization and a study of the foundations, principles and methods of education. NOTE: Courses marked with an \* are for education majors and students from other departments who have been accepted into the Teacher Education Program. Education majors and minors must come to the Department each semester for advising.

**MAJOR:** Secondary Education majors are required to earn a total of 37 credit hours in Education courses. These 37 hours include a Senior Seminar and a 12 credit Student Teaching experience which is open only to students of the senior year who have completed all the subject matter courses in the field of specialization. Students are required to maintain a QPA of 3.0. Students are also required to successfully complete the state mandated Praxis Series of Examinations. These examinations are usually completed during the senior year.

**MINOR:** A minor in Education requires at least 16 credits. Distribution requirements are: EDU 2202, 3251, 3254, 4290. An additional three credits must be earned from among the following: EDU 2201, 3263, 4220, 4245, 4301.

### **HUMAN SERVICES PROGRAM**

The Human Services program is designed for students who desire a degree in liberal arts while pursuing a course of study which includes an experiential component as well as training for a specific career. Specialization within the program will allow the student to concentrate on specific areas related to government and human service agencies.

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**MAJOR:** The requirements for a major in Human Services include the courses listed below in addition to Psychology 1000, 2200, 2500, 2600, and elective; Sociology 1000, 2200, 3600, 2300, and an elective which lead to a minor in Psychology and Sociology, respectively.

**MINOR:** A minor in Human Services requires a total of 15 credits. Distribution requirements are: H S 2000, H S 2100, H S 3000, H S 3100. An additional three credits must be earned from one of the following: H S 3500, H S 3600 or HS 3700.

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# English

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<b>Chair:</b>	Dr. Charles L. Cherry
<b>Professors:</b>	Cherry, Delano, McDiarmid, Nolan, Sherry, Thomas, Wilkinson
<b>Associate Professors:</b>	Berthold, Kirschke, Murphy, Ormsby-Lennon, Radcliffe, Schwarz
<b>Assistant Professors:</b>	Akoma, Bader, Black, Hicks, Hollis, Irwin, Lucky, Sewell, Shohet, Vilmure, Wood
<b>Instructors:</b>	Bonds, Forste-Grupp
<b>Office:</b>	402 St. Augustine Center, tel. 610/519-4630
<b>Website:</b>	<a href="http://www.english.villanova.edu">www.english.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/english.html">www.artsci.villanova.edu/courses/english.html</a>

**MAJOR:** Thirty-three hours in advanced English courses (numbered 2000 or above) in the junior and senior years, including:

- ✂✂ Two courses in British literature pre-1800 from two of three areas: (1) Medieval; (2) Renaissance (to 1649); (3) Restoration and Eighteenth Century.
- ✂✂ One course in American literature to 1900 or one course in nineteenth-century British literature.
- ✂✂ One course in American literature or British/Irish literature after 1900.
- ✂✂ Senior Seminar
- ✂✂ Six electives

British Literary Tradition 1 and 2 (2101, 2102) and American Literary Tradition 1 and 2 (2103, 2104) are not required for the major, but can operate as free electives, with a maximum of two permitted toward the major (including any survey course taken as a Core literature requirement).

**MINOR:** Fifteen hours including:

- ✂✂ At least one course from the British literature offerings (3000 level courses).
- ✂✂ At least one course from the American literature offerings (4000 level courses)

## Villanova University

≪≪ At least three electives from the English departmental offerings (2000 to 4999)

**ENGLISH AS A SECOND LANGUAGE:** English 0990 (ESL 1), and English 0095 (ESL 2). For those foreign students who need to strengthen their oral and verbal skills in English, The ESLP provides two courses ENG 0990 and ENG 0095, the courses will concentrate on improving students' basic grammar, as well as their pronunciation, conversation, reading comprehension, and writing skills.

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# Ethics

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<b>Director:</b>	Dr. Sarah Vaughan Brakman (on leave 2001-2002)
<b>Acting Director</b>	Dr. Mark Doorley (2001-2002)
<b>Office:</b>	485 St. Augustine Center, tel. 610/519-4780
<b>Website:</b>	<a href="http://www.ethics.villanova.edu">www.ethics.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/ethics.html">www.artsci.villanova.edu/courses/ethics.html</a>

The University believes that issues of ethics and values are at the heart of every human endeavor. In addition to regular requirements in the sciences and humanities, the College of Liberal Arts and Sciences and the College of Commerce and Finance require each student to take a special multidisciplinary course in ethics, typically in the sophomore year. The purpose of this course is to give students the opportunity to examine and discuss both ethical theories and their applications to contemporary moral issues. This course is designed to contribute to the implementation of Villanova's mission statement which states that, as a Catholic institution Villanova both emphasizes the values of the Jewish and Christian humanistic traditions and concerns itself with all value systems.

**CONCENTRATION:** The Ethics Concentration offers students an opportunity to pursue in-depth an intellectual discipline that studies human character and conduct. Each student in the concentration selects one of four tracks and takes ETH 2050, two required track courses, two additional electives from that track, and ETH 3000. Concentrators must also fulfill the service requirement.

Service component: a minimum of 100 hours of approved service, including work with the poor or otherwise marginalized members of our society and/or work related to building a sustainable world environment. This component affords students the opportunity to engage in practical moral inquiry. The student, in conjunction with the program director, will arrange and design the service with the goal of enhancing comprehension of applied ethical issues in the track selected by the student.

### **TRACKS:**

#### **A. ETHICS AND HEALTH CARE**

## College of Liberal Arts and Sciences

### Required track courses:

PHI 2115	Ethics for Health Care Professionals
THL 4200	Ethics of Life and Death or THL 5950 Death and Dying

### Track Electives:

BIO 3341	Genetics
BIO 3905	General Microbiology
NUR 4130	Issues in Health Care Delivery
NUR 4800	Women's Health Issues
NUR 4802	Issues and trends in Gerontology
PHI 2125	Death and Dying
PHI 3525	Philosophy of Human Sexuality
PHI 2950	Topic in Philosophy: Feminism, Ethics and Medicine
THL 4100	Christian Ethical Traditions and Contemporary Life

## **B. ETHICS, POLITICS, AND LAW**

### Required track courses:

PHI 3650	Philosophy of Law
PJ 5000	Meanings of Justice

### Track electives:

PHI 2140	Philosophy of Criminal Justice
PHI 2130	Business Ethics
PJ 5100	Discrimination, Justice and the Law
PSC 3500	Civil Rights and Civil Liberties
PSC 3800	Environmental Law
SOC 3000	Criminology
SOC 3010	Crime and Criminal Justice
THL 4300	Ethical Issues in Peace and Justice
THL 4600	North/South: Development Ethics

## **C. ETHICS, ECONOMICS, AND PUBLIC POLICY**

### Required Track Courses:

ECO 4207/PJ 5200	Poverty and the American Economy
THL 4320	The Social teachings of the Christian Churches

### Track Electives:

PHI 1600	Business and Society
PHI 2130	Business Ethics
PHI 2400	Social and Political Philosophy
PHI 3820	Environmental Ethics
PHI 2410	Ethics of War
PHI 2170	Ethical and Social Issues in Mass Media
PHI 2150	Engineering Ethics

## Villanova University

PJ 2500	Education and Social Justice
PJ 2400/THL 4350	Service and Education for Justice
PJ 3400/THL 4310	War and Morality
PJ 5400/THL 4340	Ethics, Justice and the Family
PJ 5000	The Meaning of Justice
PJ 2600	Catholic Social Thought and Analysis
PSC 2600	Public Policy
PSC 3800	Environmental Law and Regulation
PSC 3500	Civil Rights and Civil Liberties
THL 4600	North/South: Development Ethics
THL 4300	Ethical Issues in Peace and Justice

### **D. ETHICS, SCIENCE, TECHNOLOGY, AND ENVIRONMENT**

#### Required Track Courses:

PJ 2200	Caring for the Earth
PHI 3820	Environmental Ethics

#### Track Electives:

BIO 3255	Introductory Ecology
BIO 3351	Genetics
ECO 1104	The Environment and the Economy
HIS 3321	Science and Technology in Modern History
PHI 2180	Ethical Issues in Computer Science
PHI 3825	Technology and Society
PHI 4050	Philosophy of Natural Science
PHI 2430	Eco-Feminism
PHI 2150	Engineering Ethics
PHI 295	(Topics in Philosophy) Philosophy of Biology
PSC 3800	Environmental Law and Regulation
THL 4600	North/South: Development Ethics
THL 5400	Science and Religion

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## Geography

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<b>Program Director:</b>	Dr. J. Harold Leaman
<b>Associate Professor:</b>	Leaman
<b>Assistant Professor:</b>	Hu
<b>Office:</b>	202 St. Augustine Center, tel. 610/519-4710
<b>Website:</b>	<a href="http://www.geography.villanova.edu/">www.geography.villanova.edu/</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/geography.html">www.artsci.villanova.edu/courses/geography.html</a>

The geography major and minor are administered by the Political Science department.

The geography major focuses on the interaction of human and physical environments within a spatial context. Individual programs are formed around major geographic problems and world regions. The department offers course work in four areas (1) human systems analysis; (2) geographical techniques; (3) regional analysis; and (4) environmental analysis. Students are encouraged to explore closely related academic fields and interests.

**MAJOR:** At least 24 credits in geography. The distribution of these credits is: GEO 1000 introductory courses (6 credits); GEO 3000 regional courses (3 credits); GEO 4000 techniques courses (3 credits); GEO 6000 seminar and independent study courses (3 credits); and 9 credits for any combination remaining of the 1000, 2000, 3000, 4000, 5000, and 6000 series courses.

Majors and Minors who meet certain academic standards are eligible for membership in The Eta Lambda chapter of Gamma Theta Upsilon, the International Geography Honors Society, which annually sponsors activities, lectures and field trips. Internships designed for geography majors are also available.

**MINOR:** Requirements are: GEO 1000 introductory courses (3 credits); GEO 3000 regional courses (3 credits); and 9 credits from any combination of the 1000, 2000, 3000, 4000, 5000, and 6000 series courses.

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## History

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<b>Chair:</b>	Dr. Adele Lindenmeyr
<b>Professors:</b>	Bergquist, Lindenmeyr, Gallicchio
<b>Associate Professors:</b>	Haas, Johnson, Keita, Kiley, Koven, Little, McLaughlin
<b>Assistant Professors:</b>	Ener, Kerrison, Mires, O'Toole, Ryan, Steege, Sullivan, Winer
<b>Office:</b>	403 St. Augustine Center, tel. 610/519-4660
<b>Website:</b>	<a href="http://www.history.villanova.edu">www.history.villanova.edu</a>
<b>Course Descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/history.html">www.artsci.villanova.edu/courses/history.html</a>

**MAJOR:** HIS 1050 plus 27 additional credits in history including: HIS 5501 (Historical Methods) or HIS 5515 (Independent Research); at least six credits in United States history (2000 level courses) at least three credits of which must be HIS 2000 or HIS 2001; at least six credits in European history (3000 level courses); at least three credits in Latin American, Middle Eastern, African, or Asian history (4000-4500 level courses); and nine credits of history electives. One of the European history courses must be in a period before 1750.

**MINOR:** At least 18 credit hours in history. For students in the College of Liberal Arts and Sciences, the 18 credit hours must include HIS 1050.

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## Honors Program

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<b>Director:</b>	Dr. Edwin L. Goff
<b>Assistant Director:</b>	Ms. Christine Muller
<b>Office:</b>	103 St. Augustine Center, tel. 610/519-4650
<b>Website:</b>	<a href="http://www.honorsprogram.villanova.edu">www.honorsprogram.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/honors.html">www.artsci.villanova.edu/courses/honors.html</a>

The Villanova Honors Program is a comprehensive four-year curriculum of small seminars designed to foster the free and open exchange of ideas among students and faculty. Honors courses emphasize extensive reading and writing, and attempt to develop the critical abilities of judgment and analysis. Innovative courses include team-taught seminars and seminars given by visiting professors. All Honors courses are enriched by a variety of lectures, cultural events, and social activities. Students in the College of Liberal Arts and Sciences may receive the degree of B.A or B.S. Honors Program. The Honors Program Sequence in Liberal Studies (the Honors Program concentration) is open to students in all colleges.



## College of Liberal Arts and Sciences

**B.A.H. DEGREE:** Twelve Honors courses, including the Humanities or Social Science Seminar, a five-credit or six-credit senior thesis, and three upper-level courses (HON 2500 or above) not used to fulfill core requirements.

**B.S.H. DEGREE:** Ten Honors courses, including the Natural Science Seminar, a five-credit senior thesis, and three upper-level courses which may be used to fulfill core requirements. (Two Honors laboratory sections are the equivalent of one course.)

**HONORS PROGRAM SEQUENCE (CONCENTRATION) IN LIBERAL STUDIES:** Eight courses in Honors, at least three of which must be upper-level.

All Honors Program certifications require a minimum overall QPA of 3.33. Honors classes may be used to fulfill liberal arts requirements and electives. For first- and second-year students, the Program offers Honors seminars in place of the core curriculum introductory courses in the humanities, social sciences, and natural sciences. Some students are invited to take multi-credit, team-taught interdisciplinary seminars (HON 1000, 1050, 2000 series) which examine the major works of Western Civilization in place of regular core requirements. This Honors core culminates with specially-designed seminars on methodology, current issues, and ethical questions in the humanities, social sciences, or natural sciences. On the advanced level, the Honors Program offers a variety of seminars that include traditional themes of enduring significance, timely issues of concern, and interdisciplinary studies not available elsewhere in the college. All have in common small student enrollment, active class participation, and intensive writing requirements. Specific offerings change from semester to semester to reflect the interests of faculty and students in the Program. All upper-level seminars also fulfill major and minor requirements in specific academic disciplines.

Admission to the Honors Program is by invitation or by application to the Director. Members of the Program are expected to take Honors courses at least every other semester, and to maintain high academic standards. Individual Honors courses are open to all Villanova students who have at least a 3.0 overall QPA or will bring a special expertise to the course, contingent upon class size limitations. Admission to all Honors courses requires the permission of the Director.

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## Irish Studies

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**Director:** Dr. James J. Murphy  
**Office:** 467 St. Augustine Center, tel. 610/519-4676  
**Website:** [www.artsci.villanova.edu/irishstudies/](http://www.artsci.villanova.edu/irishstudies/)

Irish Studies explores the history and culture of the Irish people from different perspectives – literature, history, art, politics, and folklore. The program is open to students from all colleges. Interested students may also study in Ireland either in a Semester A broad program or with the Villanova-in-Ireland Summer program at University College Galway. Details are available in the Irish Studies Office.

**CONCENTRATION:** Fifteen credits including two core courses, ENG 2500 and HIS 3216, and any three of the following: AAH 3007; ENG 2450, 2460, 2500, 2700, 3615; HIS 3215, 3216; HON 5601; PSC 4950, 6875; or SOC 6500.

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## Latin American Studies

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**Director:** Dr. Satya Pattnayak  
**Office:** 273 St. Augustine Center, tel. 610/519-4773  
**Website:** [www.latinamericanstudies.villanova.edu](http://www.latinamericanstudies.villanova.edu)

The Latin American Studies Program is an interdisciplinary program that provides courses, a minor, and a concentration in Latin American Studies. It is open to students in all degree programs and in all four undergraduate colleges.

**MINOR:** Two courses in Spanish language training at or above the intermediate level and five additional courses (15 credits) as follows: HIS 4410, 4415, 4420, 4425, or 4495; PSC 4750 or ECO 4200; LAS. 1100 and two electives which can be taken either from the program core or from the list of electives.

**Concentration:** Two courses in Spanish language training beyond the intermediate level and six additional courses (18 credits) as follows: HIS. 4410, HIS. 4415, HIS. 4420, HIS. 4425 or HIS. 4495; PSC. 4750 or ECO. 4200; LAS. 1100; one course in Latin American literature and two electives, which can be taken either from the program core or from the list of electives.

Program Core:

ECO 4200 Special Topics: The Economics of Latin American and the Caribbean  
HIS 4410 Colonial Latin America

College of Liberal Arts and Sciences

HIS 4415	Latin America since Independence
HIS 4420	Latin American Revolutions
HIS 4425	Mexico
HIS 4495	Topics in Latin American History
HON 4000	Latin American Themes
LAS 1100	Latin American Seminar
LAS 3412	Special Topics
PSC 4750	Latin American Politics
S OC 6500	Seminar in Sociology: Third World Development: Latin America
SPA 1121	Intermediate Spanish I
SPA 1122	Intermediate Spanish II
SPA 1131	Conversation and Composition
SPA 1132	Advanced Conversation and Composition
SPA 1138	Advanced Grammar
SPA 2143	Spanish American Civilization
SPA 2212	Survey of Spanish American Literature
SPA 2213	Spanish American Theater
SPA 2214	Spanish American Novel
SPA 2215	Spanish American Short Story
SPA 3822	Spanish American Poetry

Elective courses:

HIS 4490	Topics in World History: Racism and Justice in the Americas
LAS 5000	Internship
LAS 6000	Independent Study Research
PSC 5800	Politics of International Economics
PSC 6875/ HIS 4490*	Modern Political History of the Southern Cone*
SOC 3600	Race and Ethnic Relations
SOC 3750	Human Populations
SOC 4000	Social Change In South America*
SPA 1133	Business Spanish I
SPA 1134	Business Spanish II
THL 3740	Liberation Theologies
THL 4600	North/South Development Ethics

\*Offered only through Villanova Summer Program in Valparariso, Chile.

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# Liberal Arts Program

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<b>Director:</b>	Dr. John Schrems
<b>Office:</b>	451 St. Augustine Center, tel. 610/519-4661
<b>Website:</b>	<a href="http://www.liberalarts.villanova.edu">www.liberalarts.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/liberal.html">www.artsci.villanova.edu/courses/liberal.html</a>

The Liberal Arts major is an interdisciplinary major within the College of Liberal Arts and Sciences. Students in the program select a Liberal Arts concentration in one of the following areas: (1) Humanities, (2) Social Sciences, or (3) Independent Studies. Within the selected concentration the student plans a course of study which cuts across normal academic lines.

**GENERAL REQUIREMENTS:** A minimum of eight advanced courses are chosen for the Liberal Arts major. The normal fourth Core Writing Intensive course is satisfied with the Liberal Arts Seminar (LA 5001). Under special circumstances outlined by the Director and upon written request a student may substitute a research project (LA 6001) for the seminar. Courses which may not be used for the major in Liberal Arts include all courses numbered from 1000 to 1999 (except for Art and Art History) as well as certain specific courses numbered 2000 and above found listed in the Enchiridion or at the Office of Special Programs. The Liberal Arts degree may not be part of a double major.

## CONCENTRATIONS:

- ≪≪ The Humanities Concentration: (1) Seven non-excluded upper level electives beyond the core requirements from within the following disciplines: Art History, Classical Studies, Communication Arts, Education, English, French, German, History, Peace and Justice, Philosophy, Religious Studies, Spanish, Theatre, and appropriate Honors courses; and, (2) the Liberal Arts Seminar (LA 5001).
- ≪≪ The Social Sciences Concentration: (1) Seven non-excluded upper level electives beyond the core requirements from within the following disciplines: Criminal Justice, Economics, Geography, Political Science, Psychology, Sociology, and appropriate Honors courses; (2) the Liberal Arts Seminar (LA 5001).
- ≪≪ Independent Studies Concentration: (1) Seven non-excluded upper level electives beyond the core requirements from within a combination of the humanities and social sciences. This affords the student the freedom to define their educational program and goals through the design of an intellectually challenging and coherent program. Students interested in this concentration must submit to the Director of Liberal Arts an essay describing the goals and proposed program of study. With the approval of the Director and in cooperation with the student, a faculty mentor will be assigned. (2) Unless waived in lieu of a special seminar or research project (LA 6001) the student must also take the Liberal Arts Seminar (LA 5001). Students may use this option for concentrations in family studies, environmental studies, medieval thought, Catholic studies, psychology of learning, etc.

*NOTE:* (Elementary Education, in cooperation with Rosemont College, is coordinated through the Liberal Arts major. Incorporated into the Liberal Arts Major may be such specialized College concentrations as Africana Studies, Arab and Islamic Studies, Criminal Justice, Irish Studies, Latin American Studies, Peace and Justice, and Women's Studies. Many other concentrations of the student's own making are possible, and are commonly pursued, within the major.)

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## Mathematical Sciences

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<b>Chair:</b>	Dr. Robert A. Styer
<b>Professors:</b>	DeVos, Feeman, Fleischman, Hartmann, Jantzen, Marrero, Pigeon, Sprows, Woldar
<b>Associate Professors:</b>	Gluchoff, Kleiber, Levitan, Longman, Lynn, Norton, Pollack-Johnson, Rhodes, Short, Styer, Volpert
<b>Assistant Professors:</b>	Ashley, Bartlow, Belkin, Borchardt, Buckley, Deanin, Lupinacci, Pasles, Seliktar
<b>Instructor:</b>	Lukens, Santomas
<b>Director of Mathematics Learning and Resource Center:</b>	Chiacchiere
<b>Office:</b>	305 St. Augustine Center, tel. 610/519-4850
<b>Website:</b>	<a href="http://www.math.villanova.edu">www.math.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/math.html">www.artsci.villanova.edu/courses/math.html</a>

**FRESHMAN CALCULUS:** Prospective first year Villanova students who have completed a year's study of calculus in high school should take the CEEB Advanced Placement test for possible credit for the first course at Villanova.

**MAJOR:** MAT 1500, 1505, 2500, 2600, 2705, 3300, 3400, 3500, and 5900; an approved analysis elective course, plus four additional mathematics courses numbered 3000 or higher; a two-semester natural science sequence with laboratory, e.g. PHY 2410/2411 and 2412/2413; a third science course, e.g. CSC 1051 (all science courses must be at the science-major level) and CSC 1024.

**MINOR:** MAT 1500, 1505, 2500, 2600, plus four courses chosen from MAT 2705, 2710, and courses numbered 3000 or higher. Students may petition to substitute an approved upper division course (e.g., CSC 4170, ECE 3720, PHY 4202, CEE 3702) in his/her major for one of these four courses. To graduate with a minor, students must have at least a 2.0 Q.P.A. in their Mathematics courses.

*NOTE:* The University offers multiple versions of calculus and of statistics. One cannot receive credit for two similar versions of calculus or statistics without prior approval. Please contact the department for more information.

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## Naval Science

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<b>Chair:</b>	Col. J. Bruce Hulick, USMC
<b>Professor:</b>	Hulick
<b>Instructors:</b>	Andersen, Blanchard, Durden, McKenzie, Reller,
<b>Office:</b>	103 John Barry, tel. 610/519-7380
<b>Website:</b>	<a href="http://www.nrotc.villanova.edu">www.nrotc.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/naval.html">www.artsci.villanova.edu/courses/naval.html</a>

Eligibility for a commission in the U.S. Navy or the U.S. Marine Corps through the NROTC Program is contingent upon successful completion of required University and naval professional courses of study. Courses required by the NROTC program are as follows:

1. Navy Option: NS 0100, 1000, 1100, 2100, 2200, 3100, 3200, 4100, 4200 plus six credits each of calculus (completed by end of Sophomore year), and physics (completed by the end of Junior year). Also three credits each of Computer Science, American military affairs, and English. All courses must be approved by the Naval Science Adviser.
2. Marine Option: NS 0100, 1000, 1100, 3500, 3600, 4100, 4200 and three credits of American military affairs, approved by the Marine Option Adviser.
3. Nurse Option: NS 0100, 1000, 1100, 4100, 4200, and six credits of English, approved by Naval Science Adviser.

MINOR: (Navy Option) NS 0100, 1000, 1100, 2100, 2200, 3100, 3200, 4100, 4200. (Marine Option) NS 0100, 1000, 1100, 3500, 3600, 4100, 4200.

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## Peace and Justice

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**Director:** Dr. William Werpehowski  
**Office:** Ground Floor, Sullivan, tel. 610/519-4499  
**Website:** [www.peaceandjustice.villanova.edu/](http://www.peaceandjustice.villanova.edu/)  
**Course descriptions:** [www.artsci.villanova.edu/courses/pj.html](http://www.artsci.villanova.edu/courses/pj.html)

**CONCENTRATION:** Twenty-four 24 credit hours, including all requirements for the minor plus two additional courses from Peace and Justice seminar categories or cross-listed by Peace and Justice.

**MINOR:** Eighteen credit hours, including either PJ 1100 or 5300; at least three courses from two different Peace and Justice seminar categories (2000, 3000, 4000, 5000); and two courses from the remaining Peace and Justice seminars or from those courses cross-listed as Peace and Justice courses.

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## Philosophy

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**Chair:** Dr. Helen Lang  
**Professors:** Betz, Brogan, Busch, Caputo, Doody, Fielder, Immerwahr, Schmidt,  
**Associate Professors:** Carvalho, Goff, Losoncy, McCartney, Scholz, Wall  
**Assistant Professors:** Brakman, Klein, Mensch, Miles, Regan,  
**Office:** 108 St. Augustine Hall, tel. 610/519-4690  
**Website:** [www.philosophy.villanova.edu](http://www.philosophy.villanova.edu)  
**Course descriptions:** [www.artsci.villanova.edu/courses/philosophy.html](http://www.artsci.villanova.edu/courses/philosophy.html)

**MAJOR:** In order to graduate in the major, students must take Philosophy 1050 and 10 additional courses in the major. Of these 10 courses, 3 are the history sequence (2500 or 3000; 2150, 3100, 3120, 3130, 3160, 4600; 2520). Student make take one of two paths within the major to complete the seven other classes: In the Track Path students will select a track and take 3 courses as part of that track. The track will serve as a focus within the major. Students will be required to take at least 2 advanced seminars (5000) or a seminar and a thesis. The Five Tracks are Cultural Studies, Pre-law, Social and Political Philosophy and Ethics, History of Philosophy, Continental Philosophy. In the Thesis Path students will treat 6 of the 7 courses as free electives, one of which must be an advanced seminar. The seventh course will be PHI 6000, the thesis, and is required of all students in this path. The thesis will provide a focal point for the student's work and development in philosophy.

**MINOR:** In order to graduate as a Philosophy minor, the student must take fifteen credit hours in Philosophy, this number to include credits taken to satisfy the collegiate core requirements. At least nine credits must be taken from courses other than 1050, 2015, 2115, 2130 and 2150.

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## Physics

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<b>Chair:</b>	Dr. Philip Maurone
<b>Professors:</b>	Hones, Maurone, Phares
<b>Associate Professors:</b>	Shaw, Vassiliou, Wunderlich, Zamani
<b>Assistant Professors:</b>	Arrison, Besson, Papaefthymiou-Davis, Schick, Siah, Strieb,
<b>Office:</b>	352A Mendel, tel. 610/519-4860
<b>Website:</b>	<a href="http://www.phy.villanova.edu">www.phy.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/physics.html">www.artsci.villanova.edu/courses/physics.html</a>

**MAJOR:** PHY 2410/2411, 2412/2413, 2414/2415, 2416/2417, 2601/2603, 3310/3311, 4000/4001, 4002/4003, 4100/4102, 4200/4202, 5100, 5200, 5300; CHM 1103, 1151/1152; MAT 1500, 1505, 2500, 2705. In addition, Physics majors must select a minimum of one elective from the Physics departmental offerings and three science courses chosen from courses for Science, Mathematics or Computer Science Majors.

**MINOR:** Successful completion of an introductory sequence in Physics, plus a minimum of 15 credits from the upper level Physics courses numbered above 3000. Physics minors are open to all science and engineering students.



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## Political Science

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<b>Chair:</b>	Dr. Craig Wheeland
<b>Professors:</b>	Hahn, Johannes, Kerbel, Langran, Lesch, Malik, Schrems, Thompson
<b>Associate Professors:</b>	Barrett, Ellis, Gustafson, Sheehan, Strack, Wheeland
<b>Assistant Professors:</b>	Kreuzer, Maranto, Smith
<b>Office:</b>	202 St. Augustine Center, tel. 610/519-4710
<b>Website:</b>	<a href="http://www.psc.villanova.edu">www.psc.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/psc.html">www.artsci.villanova.edu/courses/psc.html</a>

**MAJOR:** Thirty credit hours in political science courses are required for a major including the two introductory courses and a senior seminar (PSC 6900, restricted to Political Science senior majors). Elective courses are divided into three areas: American Government and Public Law (2000 and 3000 level), Comparative Government and International Relations (4000 and 5000 level), and Political Theory and Behavior (6000-6800). The political science major must complete three courses from at least one area, two from another area, and one from the remaining area. One additional course must be taken for a total of ten courses. Political science majors are encouraged to take two economics courses, more than the minimum number of courses in languages, at least one geography course, and the two introductory statistics courses to complete their core math requirement (MAT 1230 and MAT 1235).

**CONCENTRATION WITHIN THE MAJOR:** Nine additional credits beyond the 30 credits for a major may earn a student a certificate in a concentration area. Concentrations may be earned in: International Relations, Pre-Law, Public Administration, Pre-Graduate School, and Employment Oriented. A list of courses which satisfy each concentration is available in the departmental office.

**MINOR:** Fifteen credits consisting of the two introductory courses plus any three advanced courses will earn a student a minor in Political Sciences. Courses taken on a satisfactory/unsatisfactory basis cannot be used to satisfy requirements for the minor.

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## Psychology

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<b>Chair:</b>	Dr. Douglas Klieger
<b>Professors:</b>	Blewitt, Brown, Bush, Folk, Klieger, Long, Toppino, B. Ziegler
<b>Associate Professors:</b>	Kendzierski, Kurtz, Tuck
<b>Assistant Professors:</b>	Brand, Krauss, Kurtz, Sheldon
<b>Office:</b>	334 Tolentine, tel. 610/519-4720
<b>Website:</b>	<a href="http://www.psychology.villanova.edu/">www.psychology.villanova.edu/</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/psychology.html">www.artsci.villanova.edu/courses/psychology.html</a>

**MAJOR:** PSY 1000 plus 28 additional credits including PSY 4000, 4050, 4100, 4150, 4200, 4500, and 12 elective credits (four electives). PSY 4000 and 4050 are prerequisites for many upper level Psychology courses (PSY 4200 and above). Students who contemplate majoring in psychology may begin the major early by taking PSY 1000, plus any elective courses for which PSY 1000 is the only prerequisite.

To choose psychology as a major, a student must have earned a "C+" or higher in General Psychology (PSY 1000) or have a cumulative QPA of 3.00 or better. Because of course prerequisites, students should expect that completion of the major will require at least four semesters after their formal declaration of the major.

**MINOR:** PSY 1000 plus any combination of 12 undergraduate credits in psychology.

Courses taken on a satisfactory/unsatisfactory basis cannot be used to satisfy requirements for the major or minor. PSY 1000 is a prerequisite for all other courses in psychology.

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## Russian Area Studies

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<b>Director:</b>	Dr. Jeffrey Hahn
<b>Office:</b>	264 St. Augustine Center, tel. 610/519-4640
<b>Website:</b>	<a href="http://www.artsci.villanova.edu/Russian/">www.artsci.villanova.edu/Russian/</a>

The Russian Area Studies Concentration is open to all students enrolled in the University. The purpose of the concentration is to provide students with a multi-disciplinary comprehension of an exciting, important, and complex part of the world.

**CONCENTRATION:** Two semesters of Russian at the intermediate level, or demonstrated proficiency at an equivalent level, plus fifteen credit hours selected from among the following: AAH 2009; HIS 3241, 3242; PSC 4401, 5351, 5950; RUS 1131, 1132, 3412, 3717, 3718, 3810, 3818, 3819; THL 5510; and appropriate special topics courses in Economics and approved by the

## College of Liberal Arts and Sciences

director. In addition students are required to take RAS 6000, a multi-disciplinary intensive investigation of a topic in Russian studies, generally taken in the senior year.

Students are encouraged to study in Russia for a summer or semester, either at Nizhny Novgorod State University in Central Russia (which has an exchange agreement with Villanova), or at another approved Russian university. Contact the Russian Area Studies Office or the International Studies Office for further details on available programs and transfer of credits.

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# Sociology

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<b>Chair:</b>	Dr. Thomas Arvanites
<b>Professors:</b>	Gallagher, Jones, Juliani, Knapp, McFalls
<b>Associate Professors:</b>	Arvanites, Eckstein, McGarry, Malik, Pattnayak, Shai, Waegel
<b>Assistant Professor:</b>	Hannon, McKenzie
<b>Office:</b>	204 St. Augustine Center, tel. 610/519-4740
<b>Website:</b>	<a href="http://www.sociology.villanova.edu">www.sociology.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/sociology.html">www.artsci.villanova.edu/courses/sociology.html</a>

**MAJOR:** The Sociology major requires completion of 10 courses. Four courses are required of all majors, while the remaining six are selected by students on the basis of their interests or career aspirations. Introduction to Sociology (Soc 1000) is required of all majors and is the first course that students should take. In addition, 3 courses are required in the theory-methods area (5000 level courses). There are 3 sociological theory course offerings (Soc. 5000, 5050, and 5100) and 3 research methods course offerings (Soc. 5200, 5300, and 5400). Students are required to take 2 courses from one group and 1 course from the other group.

Majors who wish to structure their Program toward a specific career objective can choose courses from one of the following areas, each of which provides training for a different occupational career.

**MINOR:** SOC 1000 and four other courses chosen from the offerings of the department. The student must inform the chair of his or her intention to minor and request certification of the minor when it has been completed. A concentration in Criminal Justice is available for interested students.

A student may take an internship in a field setting in the second semester of the junior year or during the senior year. Students should consult with the Chair and Director of the Internship Program.

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## Studio Art and Music

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**Office:** 205 St. Augustine Center, tel. 610/519-4760  
**Course descriptions:** [www.artsci.villanova.edu/courses/sar.html](http://www.artsci.villanova.edu/courses/sar.html)

Courses in Studio Art and Music are administered by the chair of the Theatre Department.

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## Theatre

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**Chair:** Rev. Peter M. Donohue, O.S.A.  
**Professor:** Christy  
**Associate Professors:** Cannuli, Power, Rotte,  
**Assistant Professors:** Donohue, Lloyd, Stagliano,  
**Office:** 205 St. Augustine Center, tel. 610/519-4760  
**Website:** [www.theatre.villanova.edu/](http://www.theatre.villanova.edu/)  
**Course descriptions:** [www.artsci.villanova.edu/courses/theatre.html](http://www.artsci.villanova.edu/courses/theatre.html)

**MINOR:** Students may fulfill a Theatre Minor by completing five theatre courses (three required/two elective) and a theatre practicum. Interested students should request further information through the Theatre Department Office in St. Augustine Center for the Liberal Arts, Rm. 205.

Students majoring in Communication may declare Theatre as their Area of Emphasis. Students majoring in Education may declare an English/Communication concentration with Theatre as the Area of Emphasis.

Any student may educate himself/herself in the art and craft of theatre through Electives and through participation in the department's Theatrical Productions. Auditions and backstage positions are open to all undergraduates for the entire academic theatre season.

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## Theology and Religious Studies

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<b>Chair:</b>	Rev. Arthur Chappell, O.S.A.
<b>Professors:</b>	Binns, Conn, Dobbin, Prusak, Scanlon, Van Allen, Werpehowski
<b>Associate Professors:</b>	Benavides, Danove, Eigo, Hadley, Godzieba, Inati, Lazor, Loya, Martin, Toton,
<b>Assistant Professors:</b>	Chappell, Doyle, Enright, Hughes, Graham, Laird, Pohlhaus, Veverka, Weaver
<b>Office:</b>	107 St. Augustine Center, tel. 610/519-4730
<b>Website:</b>	<a href="http://www.theology.villanova.edu">www.theology.villanova.edu</a>
<b>Course descriptions:</b>	<a href="http://www.artsci.villanova.edu/courses/theology.html">www.artsci.villanova.edu/courses/theology.html</a>

**MAJOR:** Thirty credit hours exclusive of the required introductory course, THL 1050, which students in the College of Liberal Arts and Sciences and the College of Commerce and Finance normally take in the sophomore year. Twenty-four credit hours are to be taken from among the following: THL 2725, 2726 and 2590 (to be taken as soon as possible after the major is declared); one course in Biblical Studies; THL 3100 or 3500; THL 3200; a choice of one among THL 3300, 3325, 3400, 3600; a choice of one among THL 5100 through 5300 plus 5500 and 5510. A student may choose the remaining three credit hours from any of the other Theology and Religious Studies courses. THL 3500 is especially recommended.

**MINOR:** Eighteen credit hours inclusive of the required introductory course (see above). Normally, a minor should be declared in the sophomore year or no later than the second semester of junior year. All courses required for the major are highly recommended for minors, especially THL 2725 and 2726; at least one Scripture course; THL 3500; and a selection from among THL 5100, 5150, 5260, 5270, 5280, 5700.

THL 1050 is a prerequisite for all other courses in Theology and Religious Studies.

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## Women's Studies

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**Director:** Dr. Gaile Pohlhaus  
**Office:** 478 St. Augustine Center, tel. 610/519-4798, or 130 St. Augustine Center, 610/519-7422  
**Website:** [www.arts.villanova.edu/womenstudies/](http://www.arts.villanova.edu/womenstudies/)  
**Course descriptions:** [www.arts.villanova.edu/courses/ws.html](http://www.arts.villanova.edu/courses/ws.html)

The Women's Studies Program is an interdisciplinary program providing courses, a minor and a concentration in Women's Studies. It is open to students in all degree programs.

**MINOR:** an Integrating Seminar and five additional courses of which at least two must be from those listed below. The Integrating Seminar is required of all students and is offered every spring.

**CONCENTRATION:** An Integrating Seminar and 7 additional courses of which at least 3 must be from those listed below. The Integrating Seminar is required of all students and is offered every spring.

COM 4150	Gender and Communication
ENG 2300	Women in Literature
HIS 2296	Changing Roles for Women in American Society, or HIS 3360 - European Women's History to 1800
PHI 2425	Philosophy of Women
PJ 5300	Race, Class and Gender
SOC 3500	Sociology of Gender Roles
THL 5850	Women in Religion and Society
WS 5000	Integrating Seminar
WS 3000	Independent Study
TOPICS	Courses in several departments are offered each semester. (Please see Master Schedule)

# College of Commerce and Finance

**Thomas F. Monahan, Ph.D., CPA**, Dean

**Mohammad K. Najdawi, Ph.D.**, Senior Associate Dean and  
Director of Graduate Business Programs

**Melinda B. German, M.B.A.**, Assistant Dean for Undergraduate Studies in Business

**Robert I. Blanchard**, Assistant Dean for Administration Services

**Office:** Bartley Hall 1045, Tel. 610-519-4330

**Website:** [www.cf.villanova.edu/](http://www.cf.villanova.edu/)

“Rapid changes in contemporary society have forced us to rethink our understanding of the world of business. Even an introductory grasp of business requires an understanding of changing domestic and foreign realities, a broad and flexible intellectual approach, and a sensitivity to complex and challenging ethical issues. The study of business is thus an immensely rewarding activity that prepares the learner for virtually any endeavor.”

## History

The College of Commerce and Finance was founded in 1922. Since that time, it has attracted outstanding undergraduate and graduate students from across the nation and the world. Current undergraduate enrollment is approximately 1900. Graduate enrollment in the Professional MBA program stands at 650 mostly part-time students, while the Master of Tax Program, offered jointly with the Villanova Law School, enrolls approximately 200 part-time students. The Executive MBA was inaugurated in the fall of 2000 and the new Masters of Accountancy and Professional Consultancy commenced in May of 2001.

The undergraduate and graduate business programs of the College are fully accredited by AACSB International - the Association to Advance Collegiate Schools of Business. In addition, the accounting program is separately accredited by the AACSB and, as such, is among a select number of accounting programs so designated.

The College faculty consists of 95 full-time professors, with over ninety percent holding the terminal degree in their area of expertise. Approximately 20 adjunct professors drawn from industry are also part of the faculty contingent. The faculty is widely recognized for its excellence in teaching, research, and professional service.

## Objectives

## Villanova University

The College of Commerce and Finance seeks to be a leader among business schools in fostering a learning environment that enables members of our community to develop the knowledge, experience, values, and capabilities needed for a lifetime of learning consistent with the moral vision of St. Augustine. Strengthened by our liberal arts foundation, we also strive to collaborate with the business and academic communities to create, share, and apply knowledge.

We value and support:

- ✂✂ the rich tradition of Catholic Social Teaching and the guidance it provides for all College activities
- ✂✂ an environment of mutual respect, professional development, and continuous improvement
- ✂✂ a quest to achieve educational distinctiveness in the markets in which we choose to compete
- ✂✂ active partnership with other units of the University
- ✂✂ the mutually supportive activities of teaching, research, and service
- ✂✂ innovation and experimentation by faculty and staff in achieving continuous improvement in the educational delivery process
- ✂✂ all dimensions of scholarship, including teaching, discovery, integration, and application
- ✂✂ stakeholder-based perspectives in decision-making
- ✂✂ life-long relationships with our graduates
- ✂✂ the creation of a learning environment the end product of which is adaptive problem solvers
- ✂✂ diversity of opinion and thought, as they relate to the development of operational strategies and tactics chosen to accomplish our mission

## Degree Programs

The College of Commerce and Finance awards both undergraduate and graduate degrees signifying the accomplishment of an education that empowers the student to compete effectively in the global marketplace. Attaining a Bachelor of Science degree in Accountancy, Economics, or Business Administration; a Master of Accountancy and Professional Consultancy, Master of Business Administration, or Master of Taxation degree clearly identifies the holder as a technologically competent, internationally aware, ethically and socially responsive, adaptive problem solver who is skilled in the effective and efficient use of communication arts and strengthened through practical experience.

## Special Programs

### Business Minors

#### **(1) MINORS FOR NON-BUSINESS MAJORS:**

##### A. Traditional Track (Spread over several semesters)

Students enrolled in other colleges of the University may seek a general business minor upon application to, and approval by, the Dean of the College of Commerce and Finance.



## Villanova University

Acceptance is determined on a competitive basis. Required business courses are ACC 1101; BL 1090; DIT 1006, ECO 1001, ECO 1002; FIN 1113; MGT 1102; and MKT 1137. In addition to the business courses, MAT 1230 and MAT 1235 are required. Students who have completed a calculus sequence may substitute DIT 2010 for the statistics sequence. DIT 2010 has been waived for Chemical Engineers. Students in the Business Minor program are required to participate in the College's laptop computer program by purchasing the computer once they begin taking business courses. Students who complete the General Business Minor may then minor in Accounting, Economics, Finance, International Business, Management Information Systems, or Marketing.

### B. Villanova Summer Business Institute (One full summer, two sessions)

The Villanova Summer Business Institute is an innovative, intensive program of instruction seeking to provide the motivated, non-business student with broad exposure to the major foundational areas of business education, and is recognized as a business minor by the College. The Institute's unique aspect is the integrated, cross-functional teaching approach employed. Faculty from each of the subject areas follow a truly interdisciplinary teaching approach. Specific courses included are:

- ☞ SBI 1106 Integrated Business Simulation
- ☞ SBI 1107 Financial Services
- ☞ SBI 1108 Strategic Analysis & Implementation
- ☞ SBI 1109 Operations Excellence

Recognizing the pervasive influence of law through the totality of business, appropriate topics of Business Law (1090) are integrated throughout the Institute.

Applicants must be in good academic standing and have completed 60 credits prior to their enrollment in the SBI. Included within those 60 credits should be MAT 1230, 1250, or DIT 2010. Those without one of these prerequisite courses may still apply; their acceptance into the SBI will be conditioned upon successful completion of the statistics prep course offered the week before the Institute begins.

Applications are accepted beginning January 2 each year and must be received by April 15. Decisions are made on a rolling basis, so early submissions of applications is encouraged. Space is limited; applications will continue to be accepted until the Institute is full or April 15, whichever occurs first. Complete details and applications are available from the Director, Villanova Summer Business Institute, (610) 519-4341, or email at [sbi@villanova.edu](mailto:sbi@villanova.edu).

Students who have completed the Summer Business Institute or the General Business Minor may also pursue a minor in the following business areas: Accounting, Decision and Information Technologies, Economics, Finance, and Marketing. (See course requirement below under Minors for Business Majors).

### **(2) MINORS FOR BUSINESS MAJORS:**

Students in the College of Commerce and Finance may pursue a minor in the following business areas with the requirements listed below:

Accounting:	In addition to the 2 accounting courses required of all C&F majors (ACC 1101, and 1102), ACC 2310, ACC 2320, plus one additional accounting course of his/her choosing
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## Villanova University

Economics:	ECO 2101, 2102 and any 2 Economics courses above 3000
Finance:	FIN 1113 plus any three (3) other FIN courses not including FIN 3350 and FIN 3360
International Business:	Language (6 credits) at or above the introductory level, MGT 2350 (3 credits), International experience is OPTIONAL (course-related trip, exchange program, semester abroad, or internship program approved by the IB minor advisor). Elective courses (6 credits) – must include the international course from their major department; plus any one of the remaining C&F international business courses; plus one international social science elective offered by the College of A&S.
Management Information Systems (MIS):	CSC 1051; DIT 2165; DIT 2170, and DIT 2175 (All courses required).
Marketing:	MKT 1137 plus three (3) other MKT courses, one of which must be either MKT 2120 or 2197. Graduates of the Summer Business Institute may also minor in Marketing with the same requirements.

## CO-MAJOR INTERNATIONAL BUSINESS

The IB Co-Major is restricted to College of Commerce and Finance (C&F) majors. The Co-Major must be taken in conjunction with another functional major within C&F.

During the past few decades, the world has observed extraordinary changes in international trade and investments. Concepts of time, distance, and markets have dramatically changed due to recent breakthroughs in communications, transportation, and information technology. Business leaders of tomorrow cannot operate on yesterday's knowledge. As companies recognize that they need to become international to stay ahead of the competition, they are also recognizing that they need new kinds of managers. Companies are looking for individuals with strong business skills who also speak the language, understand the business culture, and know how IB is different and more challenging, than just doing business at home.

The International Business Co-Major course requirements are as follows: Language requirement (6 credits of intermediate except Arabic, Chinese, Japanese and Russian); International Comparative Management (MGT 2350); Required international experience (course-related trip, exchange program, semester abroad or internship); 9 credits of elective courses selected from the following: International Finance (FIN 2335), International Marketing (MKT 2280), International law (BL 2160), Special Topics in International Management or an

## Villanova University

Approved IB Elective and one International related Social Science Elective (from the department of Geography, Psychology, Political Science, History or Sociology).

### Honors and Awards

Awards for distinguished scholarship in the College are made annually at the Beta Gamma Sigma dinner when the top 10% of the senior class and the top 7% of the junior class are honored. Beta Gamma Sigma is the national scholastic honor society in the field of business administration. Villanova's chapter is one of 157 from among 700 institutions offering undergraduate degrees in business.

The College's medallion winners for distinguished scholarship and service are awarded each year at the C&F Recognition Ceremony.

Other awards by professional organizations and departments are distributed on a regular basis at appropriate times.

### Honors Program

The Honors Program at Villanova brings together students with strong academic records and dedicated faculty members in challenging seminars that promote diversity and depth of learning. The seminars encourage innovation, development of communication skills, and independent research. Students in the College of Commerce and Finance who are interested in participating in the Honors Program should contact their academic advisors for eligibility criteria and registration procedures. General information about the Honors Program may be obtained from the Dean of the College of Commerce and Finance (Bartley Hall 1045; telephone 610 519 4330) or from the Honors program Office (SAC 103; telephone 610-519-4650).

### International Study

The College of Commerce and Finance supports an International Student Exchange Program. Alliances have been developed between Villanova and numerous institutions abroad.

The Office of International Studies Office (Geraghty Hall, 1<sup>st</sup> Floor, telephone 610-519-6412) provides assistance to students desiring to study in a foreign country through a variety of one semester, full academic year, and summer programs. The courses must be approved in advance as to content and rigor by the chairperson of the student's major.

### Internships

The intent of the Villanova Internship Program (VIP) is to provide meaningful, pre-professional work experience for students. The VIP is a partnership among the interns, the sponsoring company and the College. The overriding goal is to better prepare students to compete in the job market. Students should contact the Center for Student Advising and Professional Development, Bartley Hall 0028 for complete information and procedures.

### Non-Business Minors for Business Majors

Students enrolled in the College of Commerce and Finance may pursue minors in programs offered by other colleges of the University, including the Honors Program. Detailed

## Villanova University

information on the process for approval may be obtained in the department of the discipline of the minor. Students pursuing minors may receive permission for overloads.

### Laptop Computers

Computing technology is integrated throughout the undergraduate curriculum of the College of Commerce and Finance. The College leases state-of-the-art laptop computers and assigns them to students. This computer is fully configured, and contains the hardware features and software necessary to support the College's academic programs and to access all of the University's information resources. The University operates a Computer Support Center (Vasey Hall, Room 1001, Phone: 610-519-6646, 5723, 4882) that offers hardware and software assistance, and also provides a loaner pool of laptops for business students whose machines require service. During the summer after his/her sophomore year, the student returns the assigned computer in good working order to the University, and then receives an updated laptop. The student returns this second computer in good working order to the University when he/she graduates. If the student leaves the College for any reason, the student must immediately return the computer to the College in good working order. Further information on the College's laptop computer program can be obtained by contacting the Computer Support Center.

### Organizations

The objectives of collegiate education include proper social development and social leadership. Accordingly, Villanova University offers to the students a variety of extracurricular and co-curricular activities - religious, athletic, social, and cultural. Student activities are under the jurisdiction of the Dean of Students, the Dean's staff, and the Faculty Moderator of the individual organization. The College of Commerce and Finance sponsors the following organizations: Accounting Society, American Production and Inventory Control Society (APICS), Beta Gamma Sigma, Economics Society, Entrepreneurial Society, Financial Management Association, Gamma Phi Honor Society, International Business Society, Marketing Society, Omicron Delta Epsilon - Economics Honor Society, Pi Sigma Epsilon (Marketing Profession Fraternity), Small Business Consultants, Association of Information Technology Professionals, and Society for the Advancement of Management.

## Degrees Offered

The College of Commerce and Finance offers the following undergraduate degrees: Bachelor of Science in Accountancy; Bachelor of Science in Economics; and Bachelor of Science in Business Administration.

### Baccalaureate Degree Requirements

The Bachelor of Science degree in the College of Commerce and Finance has the following requirements:

- Completion of all **core curriculum and academic** major course requirements for the degree with an overall cumulative quality point average (QPA) of not less than 2.00.

## Villanova University

Students transferring into the College of Commerce and Finance must attain a QPA of 2.0 or better for all work attempted at Villanova University.

- ≠≠ At least 50% of the business credit hours required for degrees in the College must be completed at Villanova University.
- ≠≠ The final 30 hours of one's academic program must be completed at Villanova (residence requirement).
- ≠≠ Discharge of all financial obligations to Villanova University.

Students are responsible for the degree requirements as determined for the class in which they would normally graduate. If they are formally readmitted to the College, they must meet the requirements of their new graduating class. Transfer students' degree requirements are determined at time of transfer.

A student's eligibility for graduation is determined by the Dean. *NOTE: it is the personal responsibility of the student to ensure that all requirements for graduation are met.*

### Basic Curriculum

The curriculum outlined below provides a suggested sequence to complete the baccalaureate degree requirements. It incorporates some modifications based on particular majors. However, this suggested sequence should not be viewed as limiting since individual adjustments are made to meet desired educational objectives. For example, a student interested in continuing his/her study of a foreign language in freshman year would postpone either BL 1090, ENG 1010, and/or PHI 1050.

<b>FRESHMAN YEAR</b>		<i>Credits</i>
ACC 1101	Principles of Financial Accounting	3
BL 1090 <sup>1</sup>	Legal Environment of Business and Society	3
CHS 1000 <sup>2</sup>	Ancient Medieval Renaissance Thought	3
CHS 1001 <sup>2</sup>	Modern Thought: Enlightenment to Present	3
DIT 1006	Information Systems for Management	3
ECO 1001, 1002	Intro to Microeconomics/Macroeconomics	6
ENG 1010 <sup>3</sup>	Composition	3
MAT 1330, 1335	Quant Analysis Bus I, Quant Analysis Bus II	6
PHI 1050 <sup>3,4</sup>	Intro to Philosophy	3

<sup>1</sup> Students in ACC 1001 in the Fall will take BL 1090 in the Spring and vice-versa.

<sup>2</sup> Students in CHS 1000 in the Fall will take CHS 1001 in the Spring and vice-versa.

<sup>3</sup> Students in PHI 1050 in the Fall will take ENG 1010 in the Spring and vice versa.

<sup>4</sup> A foreign language (Humanities Elective) can be substituted in freshman year as described above. In addition, an overload may be permitted for students interested in pursuing a foreign language.

<b>SOPHOMORE YEAR</b>		<i>Credits</i>
ACC 1102	Principles of Managerial Accounting	3
COM 1101	Business & Professional Communication	3
DIT 2010	Business Statistics	3

Villanova University

ENG 1050	The Literary Experience	3
ETH 2050 <sup>1</sup>	Ethics of Tradition & Contemporary Life	3
FIN 1113	Principles of Finance	
HISTORY <sup>2</sup>	History Elective	3
MGT 1102	Organization and Management	3
MKT 1137	Principles of Marketing	3
THL 1050	Christianity: Tradition & Transitions	3

<sup>1</sup> Economics majors: Students who major in Economics will take two courses in their major (ECO 2101: Macro-Economic Theory and ECO 2102: Micro-Economic Theory) during their sophomore year. For these students, ETH 2050 is taken during the junior year

<sup>2</sup> History: Choose any offering from the Department of History.

<b>JUNIOR YEAR</b>		<i>Credits</i>
Behavioral Science Elective		3
ECO 3109	International Economics	3
DIT 1141	Operations Management	3
Humanities Elective <sup>3</sup>		3
Major Courses		9
Natural Science <sup>4</sup>		3
Social/Natural Science <sup>5</sup>		3
Non-Business Electives <sup>6</sup>		3

<sup>3</sup> Humanities: choose from Art History, Classical Studies, English, Modern Languages, Philosophy, or Theater.

<sup>4</sup> Natural Science: Choose from AST, BIO, CHM, or PHY.

<sup>5</sup> Choose from Geography, History, Political Science, Psychology, Sociology, or the Natural Sciences.

<sup>6</sup> MIS Majors: Substitute CSC 1051 for a non-business elective.

<b>SENIOR YEAR</b>		<i>Credits</i>
Major courses		9
MGT 3301	Policy Formulation and Administration	3
Theology	Elective	3
Free Electives <sup>1</sup>		15

<sup>1</sup> ACC Majors: it is recommended that BL 2185 be substituted for one free elective. Students seeking CPA certification in NY or NJ should take an additional finance course to meet the 6-credit minimum finance course requirement in these states.

# Academic Policies and Information

Unless otherwise noted, the College of Commerce and Finance follows the general university academic policies and regulations listed in the University section of this Catalog. The specific policies for the College of Commerce and Finance are listed in the *Commerce and Finance Undergraduate Handbook*, which is available from the office of the Dean. *It is the responsibility of the student to know and comply with all academic policies and regulations of the University and of the College of Commerce and Finance. Such policies may change without prior notice.*

## Departments

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### Accountancy

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<b>Chair:</b>	Dr. James P. Borden
<b>Professors:</b>	Bremser, Clay (Emeritus), Derstine, Monahan, Stout
<b>Associate Professors:</b>	Borden. Catanach, Emig, Hildebeitel, Licata, O'Mara, Rhoades-Catanach, Ward
<b>Assistant Professors:</b>	Barsky, Pelesh, Stiner, West
<b>Office:</b>	3019 Bartley Hall, tel. 610/519-4340
<b>Website:</b>	<a href="http://www.cf.villanova.edu/accountancy">www.cf.villanova.edu/accountancy</a>
<b>Course Descriptions:</b>	<a href="http://www.cf.villanova.edu/accountancy/courses.html">www.cf.villanova.edu/accountancy/courses.html</a>

The program is designed to provide academic preparation for those who seek employment in a wide-range of accounting, tax, and accounting-related areas. The program is also designed to provide a solid background for those individuals who intend to pursue graduate studies in business, law, or independent research. The program is separately accredited by the AACSB International – The Association to Advance Collegiate Schools of Business.

**MAJOR:** In addition to the two accounting courses required of all C & F students, (ACC 1101 and ACC 1102) accounting majors take the following courses: ACC 2310, 2320, 2430, 2460 and 2470.

**MINOR:** In addition to the two accounting courses required of all C & F students (ACC 1101, and ACC 1102), accounting minors take Intermediate Accounting I and II (ACC 2310 and ACC 2320) plus one additional accounting course of their choosing.

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## Business Law

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<b>Associate Professors:</b>	Kuhn, Rainone, Walsh
<b>Assistant Professors:</b>	Cerino, DiLullo
<b>Office:</b>	3015 Bartley Hall, tel. 610-519-4350
<b>Website:</b>	<a href="http://www.cf.villanova.edu/businesslaw">www.cf.villanova.edu/businesslaw</a>
<b>Course Descriptions:</b>	<a href="http://www.cf.villanova.edu/bl/blcourse.html">www.cf.villanova.edu/bl/blcourse.html</a>

The Business Law program is administered by the chair of the Marketing Department. Business Law provides the student with an understanding of individual legal responsibilities arising from the interaction of persons, property and government, and creates an awareness of the legal environment of business.

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## Decision and Information Technologies

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<b>Chair:</b>	Dr. Robert L. Nydick
<b>Professors:</b>	S. Chaudhry, Liberatore, Najdawi, Wolek
<b>Associate Professors:</b>	Chung, Nydick, Sipior, Varano
<b>Assistant Professors:</b>	Coughlan, Luo, Sloane, Wagner, Webster
<b>Office:</b>	3080 Bartley Hall, tel. 610-519-4395
<b>Website:</b>	<a href="http://www.cf.villanova.edu/dit">www.cf.villanova.edu/dit</a>
<b>Course descriptions:</b>	<a href="http://www.cf.villanova.edu/dit/ditcourse.html">www.cf.villanova.edu/dit/ditcourse.html</a>

The MIS Major prepares students to better understand and utilize information technology in the management and operation of business organizations. All MIS majors must complete specific courses in Computer Programming (CSC 1051), Systems Analysis and Design (DIT 2165), Database Management Systems (DIT 2170), Applied Decision Analysis & Support Systems (DIT 2175), Data Communications (DIT 2180), Topics in E-Business (DIT 2185), Dimension of Technology and Business (DIT 2185 section 3 only).

**MAJOR:** CSC 1051, DIT 2165, DIT 2170, DIT 2175, DIT 2180, and DIT 2185

**MINOR:** CSC 1051, DIT 2165, DIT 2170, and DIT 2175



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# Economics

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<b>Chair:</b>	Dr. Peter A. Zaleski
<b>Professors:</b>	DeFina, Mathis, Thanawala, Zech
<b>Associate Professors:</b>	Clain, Donziger, Farrell, Giordano, Kroch, Taylor, Wolnicki, Zaleski
<b>Assistant Professors:</b>	Asher, Casario, Mao
<b>Office:</b>	3019 Bartley Hall, tel. 610-519-4360
<b>Website:</b>	<a href="http://www.cf.villanova.edu/economics">www.cf.villanova.edu/economics</a>
<b>Course descriptions:</b>	<a href="http://www.cf.villanova.edu/economics/economicscourse.html">www.cf.villanova.edu/economics/economicscourse.html</a>

**BACHELOR OF SCIENCE IN ECONOMICS:** The Economics major offers a challenging intellectual experience designed for those who intend to enter business, government, legal, or teaching professions. It offers sound training in economic theory and institutions which foster the ability to analyze the problems of business and society through use of modern quantitative methods. The curriculum for the Economics major combines grounding in fundamentals with the opportunity to pursue individual interests in the selection of advanced courses. Beyond ECO 1001 and 1002 taken in the Freshman year, the major requires 6 credits in micro and macro economic theory (ECO 2101, 2102) taken in the sophomore year and 12 credits chosen from the Economics course offerings (ECO 3000 and above).

**BACHELOR OF ARTS IN ECONOMICS:** Students in the College of Liberal Arts and Sciences who specialize in Economics earn the degree of Bachelor of Arts in Economics. Such students must take MAT 1330 (Quantitative Analysis for Business) either to satisfy their math requirement or as a free elective. They should take ECO 1001 and ECO 1002 as two of the three social science courses in the Sophomore year. In addition, students must successfully complete: ECO 2101, 2102, 2137, 15 elective Economics credits, and ECO 4132.

**MINOR:** In order to earn a minor in Economics, students must take MAT 1330 (Quantitative Business Analysis) and complete a total of 18 credits consisting of ECO 1001, 1002, 2101, 2102, and 6 economics elective credits with course numbers ECO 3000 and above.

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## Finance

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<b>Chair:</b>	Dr. Andrea L. DeMaskey
<b>Professors:</b>	Nawrocki
<b>Associate Professors:</b>	DeMaskey, Cochran, Dellva, J. Heck, LeClair, McWilliams, Olson
<b>Assistant Professors:</b>	Grover, Sean Howton, Shelly Howton, Matthews, Pagano, Shaffer
<b>Instructor:</b>	N. Heck
<b>Office:</b>	2019 Bartley Hall, tel. 610-519-7395
<b>Website:</b>	<a href="http://www.cf.villanova.edu/finance">www.cf.villanova.edu/finance</a>
<b>Course descriptions:</b>	<a href="http://www.cf.villanova.edu/finance/financecourse.html">http://www.cf.villanova.edu/finance/financecourse.html</a>

The Finance Major is designed for those students interested in domestic and international business finance, financial institutions, and investments. The curriculum also provides a solid foundation for individuals in pursuing postgraduate study in business and law. All finance majors are required to take designated courses in Advanced Financial Management, Financial Markets, and Investments. In addition, elective courses are selected from other offerings in the Finance Department with the exception of Finance Internship and Independent Study.

**MAJOR:** FIN 1113 plus 15 credits including FIN 2114, 2227, and 2323, and 6 credits from other finance course offerings except FIN 3350 and 3360.

**MINOR:** FIN 1113 plus 9 credits from other Finance course offerings except FIN 3350 and 3360

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## Management

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<b>Chair:</b>	Dr. Stephen A. Stumpf
<b>Professors:</b>	Pearce, Stumpf
<b>Associate Professors:</b>	Rongione, Tymon
<b>Assistant Professors:</b>	Arvanites, P. Chaudhry, Clark, Doh, Fitzpatrick, Gull, Klingler
<b>Office:</b>	2084 Bartley Hall, tel. 610-519-6924
<b>Website:</b>	<a href="http://www.cf.villanova.edu/management">www.cf.villanova.edu/management</a>
<b>Course descriptions:</b>	<a href="http://www.cf.villanova.edu/management/managementcourse.html">www.cf.villanova.edu/management/managementcourse.html</a>

The Management major prepares students for success after graduation in either the pursuit of further study in business or law, or their entry into the business world. All Management Majors must complete specific courses in the areas of: Organizational Behavior (MGT 2155), International Comparative Management (MGT 2350), Systems Analysis and Design (DIT 2165) and two Elective courses from such fields as: Operations Research, Management Practice, Small Business Management and Human and Resource Management.

**MAJOR:** MGT 2155, MGT 2350, DIT 2165, and two (2) MGT Electives.

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## Marketing

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<b>Chair:</b>	Dr. P. Greg Bonner
<b>Professors:</b>	Sanchez, Taylor
<b>Associate Professors:</b>	Bonner
<b>Assistant Professors:</b>	Bang, Karson, Kozup, Landreth, O'Neill
<b>Instructor:</b>	Mullen
<b>Office:</b>	3015 Bartley Hall, tel. 610-519-4350
<b>Website:</b>	<a href="http://www.cf.villanova.edu/marketing">www.cf.villanova.edu/marketing</a>
<b>Course descriptions:</b>	<a href="http://www.cf.villanova.edu/marketing/course.html">www.cf.villanova.edu/marketing/course.html</a>

The Marketing major focuses on a systematic and analytic study of the marketing process for goods and services in consumer, industrial, governmental, and international markets, with particular emphasis on the development and implementation of products, pricing, promotion, and physical distribution programs. All marketing majors must complete specific courses in the areas of marketing research (MKT 2197) and marketing management, (MKT 2375), along with electives from such fields as advertising management, buyer behavior, business-to-business marketing, international marketing, marketing of services, retailing management, and sales management.

**MAJOR:** MKT 1137, 2197, 2375 and 3 Marketing electives.

Villanova University

**MINOR:** MKT 1137 plus three (3) other MKT courses, one of which must be either MKT 2120 or 2197.

# College of Engineering

**Barry C. Johnson, Ph.D.**, Dean.

**Edward V. McAssey, Jr., Ph.D.**, Associate Dean

**Lynda A. Capuzzi, BCE**, Assistant Dean

**Office:** 131 Tolentine Hall, tel. 610-519-4940

**Website:** [www.engineering.villanova.edu](http://www.engineering.villanova.edu)

## History

The second degree granting unit inaugurated at Villanova University was the College of Engineering, which began instruction in 1905 under the name of the School of Technology. It was the fourth engineering program to be established at a Catholic school of higher education in the United States (after The Catholic University of America, 1896, Manhattan College, 1896, and the University of Notre Dame, 1897). Dr. A.B. Carpenter, a graduate of Lehigh University, was hired in 1904 to organize and direct the School. He was ably assisted by Rev. James J. Dean, a young faculty member in the sciences. It was their responsibility to develop the curricula, hire faculty and plan the facilities needed. Programs in Civil and Electrical Engineering were the first to be initiated, with a total of twelve students enrolled. In 1908, an undergraduate program in Mechanical Engineering was established, and in 1909, the first engineering bachelor's degrees were awarded. An undergraduate program in Chemical Engineering was established in 1919. In the years following the Second World War, the College expanded its degree offerings to the masters level, establishing graduate programs in each of its four engineering departments. A fifth undergraduate degree program in Computer Engineering was added in 1993. All of the College's undergraduate degree programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). In the 1990s, research units were established in the areas of advanced communications and environmental engineering.

## Mission and Objectives

Villanova University is an independent coeducational institution of higher learning founded by the Augustinian Order of the Roman Catholic Church. The University is a community of persons of diverse professional, academic, and personal interests who, in a spirit of collegiality, cooperate to achieve their common goals and objectives in the transmission, the pursuit, and the discovery of knowledge. The College of Engineering is a tangible expression of the University's mission, tradition, and commitment to society. As a major engineering college under Catholic auspices, it is committed to the education of engineers within the framework of the University's Judeo-Christian humanistic tradition and the heritage of the Order of St. Augustine.

The College of Engineering, consistent with the mission of Villanova University, is dedicated to the education of engineers who are technically competent, liberally educated, and ethically motivated. The College emphasizes undergraduate instruction and

encourages research and scholarly activities in all of its departments. High quality research develops the faculty's intellectual skills and contributes to society's reservoir of knowledge. Graduate engineering programs within the College provide opportunities for advanced study, professional development, and participation in research.

The College mission is to provide an engineering education and to perform research in a manner that benefits society, yields an education based on established enduring values, and attracts quality students and faculty.

The College of Engineering strives to prepare its graduates to understand their roles in a technological society, to make constructive contributions to it, and to provide ethical and moral leadership in their profession and communities. It accomplishes this by various methods, but primarily by integrating into the curriculum the values and morality of the University's Augustinian heritage. In addition to being professionally competent, graduates are expected to have an understanding of their professional and ethical responsibilities, the impact on engineering solutions in a global and societal context, and an appreciation of humanistic concepts in literature, the arts, and philosophy.

The College pursues these objectives by stressing:

?? Excellence in teaching

?? Faculty development through research and professional activities

?? Emphasis on the design process so that the students are exposed to real-world situations

?? Graduating students with the following attributes:

- Ability to apply scientific and mathematical concepts and principles to solve problems in real-world context
- Ability to plan and conduct experimental investigations, and to analyze and interpret their results
- Ability to be an effective member of a project team
- Ability to communicate ideas and information
- Understanding of the role of the engineering profession and technology, including appreciation of concepts drawn from the humanities and social sciences
- Development of high professional and ethical standards  
Motivation and capability to acquire, evaluate, and assimilate knowledge and continue the learning experience

## Degrees Offered

## College of Engineering

The College of Engineering offers full-time (day) academic programs leading to the following degrees: Bachelor of Chemical Engineering, Bachelor of Civil Engineering, Bachelor of Computer Engineering, Bachelor of Electrical Engineering, and Bachelor of Mechanical Engineering.

The undergraduate engineering programs offered by Villanova University are fully accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

# Degree Requirements

The undergraduate engineering curriculum provides the foundation for careers in engineering as well as the basis for further study in engineering and other professions such as law, medicine, and management. Studies concentrate on mathematics, physics, chemistry, engineering science, and engineering analysis and design within a particular engineering discipline.

The curriculum places special emphasis upon developing oral and written communication skills, and it offers opportunities to develop an appreciation of the social sciences and humanities, and the flexibility to pursue minors. Courses in the humanities are included in each curriculum to make the student engineer more fully aware of social responsibilities and better able to consider non-technical factors in the engineering decision making process. Extensive hands-on laboratory experience leads to required projects for all seniors to ensure professional preparation in the fundamentals of the design process within the real constraints of problem solving. In order to qualify for a bachelor's degree in the College of Engineering, undergraduate engineering students must successfully complete all of the first year core curriculum courses, those major courses required for the particular engineering degree sought, and a series of electives, as indicated in the following sections. They must also achieve cumulative overall and technical grade point averages of at least 2.00 in their course work.

At least half of all the engineering courses and, normally, the final 30 credits of an engineering bachelors degree program, must be taken at Villanova University. All undergraduate degree requirements should normally be completed within a six-year period. *NOTE: It is the responsibility of each student to know and to fulfill all degree requirements. In order to keep the curriculum abreast of the latest engineering developments, Villanova University reserves the right to change the program requirements without prior notice.*

## CORE CURRICULUM

Freshman Year							
First Semester			Cr	Second Semester			Cr
CHM 1151	General Chemistry	4		CHM 1152	General Chemistry II	4	
CHM 1103	General Chemistry Laboratory I	1		CHS 1001 <sup>1</sup>	Modern Thought: Enlightenment to Present	3	
CHS 1000 <sup>1</sup>	Ancient Medieval and Renaissance Thought	3		EGR 1610	Engineering Design Graphics	3	
EGR 1611	Engineering Analysis	3		MAT 1505	Calculus II	4	
MAT 1500	Calculus I	4		PHY 2400	Physics I, Mechanics	3	
THL 1050	Christianity: Traditions and Transitions	3					

<sup>1</sup> NOTE: This course may be taken in either semester.

## Engineering Curriculum Elective Requirements in HUMANITIES AND SOCIAL SCIENCE

In addition to required Freshman Year courses and specified courses for each degree program, candidates for degrees in engineering must successfully complete 12 credits from the following:

- ?? THL 1050 (Christianity: Traditions and Transitions).
- ?? One 3-credit Theology course at the 2000 level or above.
- ?? Two additional 3-credit courses chosen from among the following:
  - Theology courses at the 2000 level or above
  - Any Philosophy course
  - EGR 2001 Engineering: The Humanistic Context (excluding Mechanical Engineering where this is a required course)
  - Any Peace and Justice course



## College of Engineering

- ETH 2050: College Ethics

### Electives

All students select their remaining humanities and social science electives from among the courses listed in this catalog and offered by the following departments.

<i>Humanities</i>	<i>Social Sciences</i>
?? Arab & Islamic Studies	?? Economics
?? Art History (except skills courses)	?? Geography
?? Classical Studies	?? Peace and Justice
?? Communication (except skills courses)	?? Political Science
?? English (Literature)	?? Psychology
?? History	?? Sociology
?? Honors Program (for eligible students only)	?? Women's Studies
?? Modern Languages (except speaking courses in native language)	
?? Philosophy	
?? Theatre (except skills courses)	
?? Theology (2000 and above)	

Courses primarily emphasizing skills (such as acting, painting, sculpting, public speaking, etc.) are not acceptable in all programs. Consult your depart

### Declaration of a Major

All engineering students are enrolled in a common freshman year curriculum. Prior to the end of their freshman year all engineering students are required to *declare their major field* of study, i.e., Chemical, Civil, Computer, Electrical, or Mechanical Engineering.

Engineering students who wish to change their major within the College of Engineering must make this request in writing to the Dean of Engineering. Engineering students who wish to change their major to an area outside of engineering must apply for admission to the Dean of the college offering that program.

## Degree Programs

### Bachelor of Chemical Engineering

The chemical engineer typically uses the principles of mathematics, chemistry, physics and engineering sciences to creatively solve technical and commercial problems arising in industries which manufacture products by chemical reactions. These solutions must respond to economic constraints as well as social, ethical and safety implications. The chemical engineer may also apply these principles in related fields where the management of chemical transformations is important, such as preservation of the environment, bio-engineering or the creation of new medical technology. Finally, the chemical engineer can apply understanding of fundamental principles to fields that interact indirectly with chemical technology, such as industrial management and patent law.

**Program Educational Objectives** - The overall educational objectives of the Bachelor of Chemical Engineering Program are:

- ?? To prepare our graduates to enter the chemical engineering profession immediately after receiving the bachelor's degree, as well as to develop the personal capabilities that allow them to enter a variety of other professions should they choose to do so.
- ?? To develop an *understanding of the scientific principles* underlying technology, upon which the practice of the profession of chemical engineering is based.
- ?? To develop the *technical skills* needed to practice the chemical engineering profession, at an entry level, immediately upon graduation, and to pursue an advanced degree in chemical engineering at some time after graduation if qualified.
- ?? To develop those *personal and interpersonal skills* that facilitate effective practice of the chemical engineering profession and lead to the opportunity for career success.
- ?? To develop *broadly educated, well-rounded graduates* as is consistent with the Augustinian tradition.
- ?? To prepare graduates whose capabilities will enable them to *continue to learn and grow professionally*, and who are able to take advantage of professional opportunities as they arise, to enhance their career.

## College of Engineering

The department has formulated specific educational outcomes that will achieve these overall educational objectives. For a detailed listing of these outcomes, please refer to the department website at: [www.engineering.villanova.edu/chem](http://www.engineering.villanova.edu/chem).

### Curricular Philosophy

The early years of the chemical engineering curriculum emphasize the basic principles of natural and engineering sciences. Later courses use these principles to develop skill in chemical engineering design - the solving of non-routine, open-ended problems requiring the exercise of judgment, and constrained by economic, safety, reliability or other requirements. Courses gradually develop the students' abilities, with the complexity of design experiences systematically increasing throughout the required courses in chemical engineering science, and culminating in the senior process design course.

Technical electives in the junior and senior years allow the student to tailor the program toward career goals. In the senior year, the student develops the ability to work independently by carrying out a chemical engineering project. All stages of the curriculum apply computers in various modes, ranging from programming personal computers for the solution of simple problems, through the use of computers for process monitoring and control, to the use of sophisticated software packages for process design.

The curriculum includes several technical electives, to be chosen from a list of approved courses under the guidance of a faculty member designated as the student's academic advisor. At least one of these electives must emphasize advanced chemical engineering fundamentals or design. The student may elect one such technical elective outside the Chemical Engineering Department, as described in the guidance manual. (A copy of the guidance manual which lists acceptable elective courses and describes the advising process is available from the ChE academic advisors or from the department, as well as on the ChE website: [www.engineering.villanova.edu/chem](http://www.engineering.villanova.edu/chem)).

### Program of Studies

Sophomore Year						
First Semester		Cr		Second Semester		Cr
CHE 2041	Chemical Process Calculations	4		CHE 2032	Chemical Engineering Thermodynamics I	3
CHM 3415	Physical Chemistry for Engineers I	3		CHE 2232	Fluid Flow Operations	3
CHM 3401	Physical Chemistry Lab I	1		CHE 2811	Professional Development I	1
MAT 2705	Differential Equations with Linear Algebra	4		CHE 2432	Modeling and Numerical Methods I	3

PHY 2402	Physics II: Electricity and Magnetism	3		CHM 3416	Physical Chemistry for Engineers II	3
Elective	Humanities/Social Science Requirement	3		CHM 3402	Physical Chemistry Lab II	1
				PHY 2403	Physics Lab for Engineering	1
				Elective	Humanities/Social Science Requirement	3

### Junior Year

<i>First Semester</i>		<i>Credits</i>		<i>Second Semester</i>		<i>Credits</i>
CHE 3031	Heat Transfer Operations	3		CHE 3032	Principles of Mass Transfer	3
CHE 3131	Chemical Engineering Thermodynamics II	3		CHE 3232	Dynamic Simulation and Control Applications	3
CHE 3132	Chemical Engineering Economics	3		CHE 3231	Modeling and Numerical Methods II	3
CHE 3911	Chemical Engineering Lab I	1		CHE 3922	Chemical Engineering Lab II	2
CHE 3821	Professional Development II	2		CHE 3822	Professional Development III	2
CHM 2211	Organic Chemistry I	3		CHM 2212	Organic Chemistry II	3
CHM 2201	Organic Chemistry Lab I	1		CHM 2202	Organic Chemistry Lab II	1
Elective	Humanities/Social Science Requirement	3				

### Senior Year

<i>First Semester</i>		<i>Credits</i>		<i>Second Semester</i>		<i>Credits</i>
CHE 4131	Process Design	3		Electives	Technical	9
CHE 4031	Chemical Reaction Engineering	3		Elective	Humanities/Social Science	3
CHE 4921	Chemical Engineering Lab III	2		Elective	Free	3
CHE 4831	Chemical Engineering Project	3				

## College of Engineering

CHE 4821	Professional Development IV	2			
Electives	Technical	6			

## Bachelor of Civil Engineering

Civil Engineers are involved in the planning, design, construction, and operation of facilities essential to modern life such as dams, bridges, highways, buildings, airports, harbors, river and shore protection, drinking water supplies, wastewater treatment, solid and hazardous waste management and disposal, offshore structures, and space platforms. Because these projects are often of a magnitude that affect large segments of the population, the responsibility of the civil engineer extends beyond mere physical facilities into the social, political, and economic welfare of those they serve.

*Mission:* Our mission is to provide our students with a high quality, contemporary, broad-based civil engineering education within a Judaeo-Christian, humanistic context preparing our students for professional practice, graduate study, and life-long learning.

**Program Educational Objectives** - Graduates of our Department will be prepared to:

- ?? Use their broad based civil engineering background to perform as entry-level engineers in general civil engineering or in environmental, geotechnical, structural, transportation, or water resources engineering.
- ?? Enter graduate school in the disciplines listed above or other closely related disciplines, as well as other areas such as business and law.
- ?? Continue the process of life-long learning as required for long-term personal and professional growth.
- ?? Recognize their professional and ethical responsibilities to society as members of the engineering professional community.
- ?? Use communication, computer, and teamwork skills to help themselves and their employers succeed.
- ?? Relate their personal and professional lives to the Judaeo-Christian, humanistic tradition.

The broad-based curriculum provides flexibility and meets student needs through a selection of electives. More information on the Civil Engineering program can be found at the Department website [www.engineering.villanova.edu/cee](http://www.engineering.villanova.edu/cee).

# Program of Studies

**Program of Studies - For students entering program in Fall 2002 or later**

<b>Sophomore Year</b>						
<i>First Semester</i>		<i>Credits</i>		<i>Second Semester</i>		<i>Credits</i>
CEE 2104	Mechanics: Statics & Dynamics	4		CEE 2103	Mechanics of Solids	3
CEE 2602	Civil Egr. Measurements	3		CEE 2311	Environmental Egr. Science	3
MAT 2500	Calculus III	4		MAT 2705	Differential Equations with Linear Algebra	4
PHY 2402	Physics II: Electricity and Magnetism	3		Elective	Humanities/Social Science Requirement	3
GLY 2805	Geology for Engineers	3		Elective	Free	3
<b>Junior Year</b>						
<i>First Semester</i>		<i>Credits</i>		<i>Second Semester</i>		<i>Credits</i>
CEE 3321	Water & Wastewater Treatment	3		CEE 3211	Transportation Engineering	3
CEE 3401	Structural Analysis	3		CEE 3412	Structural Design	3
CEE 3500	Fluid Mechanics	3		CEE 3511	Hydraulic Egr. & Hydrology	3
CEE 3704	CE Numerical & Statistical Analysis	3		CEE 3801	Soil Mechanics	3
CEE 3902	CE Materials	2		CEE 3901	Soil Mechanics Laboratory	1
CEE 3921	Environmental Egr. Laboratory	1		CEE 3911	Fluid Mechanics Laboratory	1
				CEE 3912	Structural Egr. Laboratory	1
				Elective	Humanities/Social Science Requirement	3

College of Engineering

<b>Senior Year</b>						
<i>First Semester</i>		<i>Credits</i>		<i>Second Semester</i>		<i>Credits</i>
CEE 4601	CEE Professional Practice	2		CEE 4606	CEE Capstone Design Project	3
CEE 4701	Economy and Risk	3		EGR 2001	Egr: Humanistic Context	3
Elective	CEE Senior Elective <sup>1</sup>	3		Elective	Social Science Elective	3
Elective	CEE Senior Elective <sup>1</sup>	3		Elective	Humanities Elective	3
Elective	CEE Senior Elective <sup>1</sup>	3		Elective	Free	3
Elective	Technical Elective <sup>2</sup>	3		Elective	Technical Elective <sup>2</sup>	3

<sup>1</sup>CEE Senior Electives include:

- CEE 4224 Transportation Facilities Design
- CEE 4331 Solid & Hazardous Waste
- CEE 4412 Computer-aided Structural Engineering
- CEE 4521 Water Resources Engineering Design
- CEE 4801 Foundation Design

<sup>2</sup>Technical Electives include

CEE 4235 Advanced Transportation Engineering and other courses defined as *Technical Electives* by the College of Engineering

**Program of Studies** - For students entering program before Fall 2002\*\*\*\*

**Sophomore Year**

<i>First Semester</i>		<i>Cr.</i>		<i>Second Semester</i>		<i>Cr.</i>
CEE 2101	Engineering Mechanics I - Statics	3		CEE 2102	Engineering Mechanics II – Dynamics	3
CEE 2602	Civil Engineering Measurements	3		CEE 2103	Mechanics of Solids	3
MAT 2500	Calculus III	4		GLY 2805	Geology for Engineers	3
PHY 2402	Physics II, Electricity and Magnetism	3		MAT 2705	Differential Equations with Linear Algebra	4
Elective	Humanities	3		ME 2950	Materials Testing	1
				ME 3100	Thermodynamics I	3

## Junior Year

<i>First Semester</i>		<i>Cr.</i>	<i>Second Semester</i>		<i>Cr.</i>
CEE 3111	Fluid Mechanics	3	CEE 3101	Soil Mechanics	3
CEE 3211	Transportation Engineering	3	CEE 3501	Environmental Engineering I	3
CEE 3401	Structural Mechanics	3	CEE 3511	Hydraulic Engineering and Hydrology	3
CEE 3704	CE Numerical and Statistical Analysis	3	CEE 3901	Soil Mechanics Laboratory	1
CEE 3911	Fluid Mechanics Laboratory	1	Elective	CEE Design Elective <sup>1</sup>	4
Elective	Humanities/Social Science Requirement	3	Elective	Humanities/Social Science Requirement	3

## Senior Year

<i>First Semester</i>		<i>Cr.</i>	<i>Second Semester</i>		<i>Cr.</i>
CEE 4605	Civil Engineering Design Project I	3	CEE 4606	Civil Engineering Design Project II	3
CEE 4701	Economy and Risk	3	Elective	CEE Elective <sup>3</sup>	3
Elective	CEE Design Elective <sup>2</sup>	4	Elective	Free	3
Elective	CEE Design Elective <sup>2</sup>	4	Elective	Humanities/Social Science Requirement	3
ECE 6020	Introduction to Electrical Systems	3	Elective	Social Science	3

<sup>1</sup>CEE students select one from the following design course sequences:

CEE 3224 Transportation Facilities Design - 3cr

CEE 3924 Transportation Facilities Design Laboratory - 1cr

or

CEE 3422 Structural Design - 4cr

<sup>2</sup>CEE students select two from the following design course sequences:

CEE 4522 Environmental Engineering II - 3cr

CEE 4922 Environmental Engineering Laboratory - 1cr

or

CEE 4523 Water Resources Engineering Design - 4cr

or

CEE 4821 Geological Engineering - 4cr

<sup>3</sup>CEE students select one from the following:

CEE 4225 Advanced Transportation Engineering - 3cr

CEE 4423 Computer-Aided Structural Engineering - 3cr

CEE 4723 Modeling of Civil Systems - 3cr

One of the Civil Engineering Design Course Sequences not selected previously - 4cr



## Bachelor of Computer Engineering

The objectives of the computer engineering program are to prepare graduates for successful professional careers in computer engineering and to nurture in them the skills required for career-long learning whether through informal self-study, continuing education, or formal advanced study in computer engineering or a related discipline.

**Program Educational Objectives** - The educational objectives for the computer engineering program are listed below.

- ?? Graduates will master, to the satisfaction of the faculty, the fundamentals of the discipline.
- ?? Graduates will have substantial experience in engineering design.
- ?? Graduates will develop and nurture skills for life-long learning and continuing professional development.
- ?? Graduates will be able to communicate effectively.
- ?? Graduates will have opportunities to explore the technological and social implications of their professional activities.

A more detailed description of these objectives is available.

The curriculum is structured to provide a thorough foundation in the fundamentals of computer engineering, electrical engineering and computer science. Design, as well as analysis, is emphasized throughout the curriculum, using a project-based structure to teach students how to learn on their own, work in teams, and synthesize new engineering solutions by using their knowledge and analytical skills. Great importance is placed on developing oral and written communication skills. The curriculum also provides opportunities for an increased awareness of the broader implications of technology and of the social responsibilities of the profession.

The design process is emphasized throughout all four years, and design projects are included in the laboratory courses. The sophomore and junior years include core courses in computer algorithms, digital system design, computer architectures, microprocessor systems, computer interfacing, and the C programming language. This provides a foundation for the senior year which includes electives and an in-depth design project. Students can tailor their senior year towards a variety of objectives by carefully choosing electives in computer engineering, the humanities, and other subjects. The Electrical and Computer Engineering Department provides these specialized areas: computer communications security, multimedia, fuzzy logic, neural networks, microcontrollers, software engineering, computer networks, and real-time digital signal processing.

Senior electives can also be used to complement the computer engineering requirements with studies in fields outside of the department. Possibilities include a computer science minor, a mathematics minor, and a business minor. Selection of specializations and study options require each student to assume an active and responsible role in the planning and decision making as the program unfolds. To aid in this, detailed information is available from the departmental office and can be discussed with the chairperson or the Computer Engineering program advisor.

### **Dual Degree Program Leading to a Bachelor of Computer Engineering and a Bachelor of Electrical Engineering**

Superior students may earn both the Bachelor of Computer Engineering and the Bachelor of Electrical Engineering degrees. The two degrees are awarded simultaneously upon completion of all requirements for both degrees. Because of the significant overlap between the two programs, it is possible to earn both degrees in four and a half years. Interested students should consult the ECE special programs advisor as early in their undergraduate studies as possible to obtain additional information.

### **5 Year Bachelor's/Master's Program**

A full-time student has the option of applying for admission to the 5 year Bachelor's/Master's Program. Admission to this program is contingent upon the student's achievement of an acceptable GPA at the end of the junior year. If admitted to the program, the student's technical electives in the senior year of the undergraduate program are fulfilled by taking appropriate graduate level courses. These courses will also count towards the degree requirements for the Master of Science in Computer Engineering. Graduate degree requirements are then completed during the fifth year of the program. Students are assigned a special program advisor to assist in appropriate course selection.

During the senior and fifth years, the student must meet all graduate engineering requirements. Upon completion of all requirements for both degrees, the student is simultaneously awarded the Bachelor of Computer Engineering and the Master of Science in Computer Engineering. A student who has completed all undergraduate requirements for the bachelor degree, but who withdraws from the 5 year Bachelor's/Master's program without completing the master degree requirements, will be awarded the degree Bachelor of Computer Engineering.

### **Minor - Computer Engineering**

The department offers a minor in computer engineering to students outside the department. The requirements include five required courses and two electives. The required courses are:

- ECE 2040: Fundamentals of Computer Engineering I
- ECE 2041: Fundamentals of Computer Engineering II (prerequisite ECE 2040)
- ECE 2050: Fundamentals of Electrical Engineering I
- ECE 2420: Engineering Programming and Applications
- ECE3445: Computer Architecture (prerequisite ECE 2041)

## College of Engineering

The two electives must be selected from the following list.

ECE 5240: Multimedia

ECE 5430: Microcomputer System Design (prerequisite ECE 2041)

ECE 5444: Introduction to Fuzzy Logic (prerequisite ECE 2409)

ECE 5445: Introduction to Neural Networks (prerequisite ECE 2409)

ECE 5450: Microcontrollers and Applications (prerequisite ECE 2041)

ECE 5477: Computer Communications Security

ECE 5484: Advanced Digital System Design (prerequisite ECE 3450)

ECE 5540: Digital Integrated Electronics (prerequisite ECE 3450)

ECE 5790: Digital Signal Processing (prerequisite ECE 3220 or ECE 3240)

ECE 5792: Real-Time Digital Signal Processing (prerequisite ECE 5790)

## Program of Studies -

### Sophomore Year

<i>First Semester</i>		<i>Cr.</i>	<i>Second Semester</i>		<i>Cr.</i>
CSC 2070	Algorithms and Data Structures: Accelerated	4	CSC 1300	Discrete Structures I	3
ECE 2040	Fundamentals of Computer Engineering I	4	ECE 2041	Fundamentals of Computer Engineering II	4
ECE 2050	Fundamentals of Electrical Engineering I	4	ECE 2051	Fundamentals of Electrical Engineering II	4
ECE 2409	Fundamentals of MATLAB	2	PHY 2402	Physics II: Electricity and Magnetism	3
MAT 2705	Differential Equations with Linear Algebra	4	Elective	Humanities/Social Science	3

### Junior Year

<i>First Semester</i>		<i>Cr.</i>	<i>Second Semester</i>		<i>Cr.</i>
CSC 1600	Operating Systems	3	CSC 4700	Software Engineering	3
CSC 1700	Design and Analysis of Algorithms	3	ECE 3240	Discrete Time Signals and Systems	4
ECE 3420	Expert Systems Programming	3	ECE 3450	Digital Electronics	3
ECE 3445	Computer Architecture	4	ECE 3720	Engineering Probability and Statistics	3
Elective	Humanities/Social Science	3	ECE 3971	Design Seminar - CPE	3

## Senior Year

<i>First Semester</i>		<i>Cr.</i>	<i>Second Semester</i>		<i>Cr.</i>
ECE 4470	Computer Networks	4	Electives	Technical Electives <sup>1</sup>	6
ECE 4971	Design Project – CPE	3	Electives	Free	6
Elective	Technical Electives <sup>1</sup>	6	Elective	Humanities/Social Science	3
Elective	Humanities/Social Science	3			

<sup>1</sup>Technical electives must be chosen from the approved list of computer engineering or computer science courses.

## Bachelor of Electrical Engineering

The objectives of the electrical engineering program are to prepare graduates for successful professional careers in electrical engineering and to nurture in them the skills required for career-long learning whether through informal self-study, continuing education, or formal advanced study in electrical engineering or a related discipline.

**Program Educational Objectives** - The educational objectives for the computer engineering program are listed below.

- ?? Graduates will master, to the satisfaction of the faculty, the fundamentals of the discipline.
- ?? Graduates will have substantial experience in engineering design.
- ?? Graduates will develop and nurture skills for life-long learning and continuing professional development.
- ?? Graduates will be able to communicate effectively.
- ?? Graduates will have opportunities to explore the technological and social implications of their professional activities.
- ?? A more detailed description of these objectives is available.

The curriculum is structured to provide a thorough foundation in the fundamentals of computer and electrical engineering. Design, as well as analysis, is emphasized throughout the curriculum, using a project-based structure to teach students how to work on their own, work in teams, and synthesize new engineering solutions by using their knowledge and analytical skills. Great importance is placed on developing oral and written communication skills. The curriculum also provides opportunities for an increased awareness of the broader implications of technology and of the social responsibilities of the profession.

The design process is emphasized throughout all four years, and design projects are included in the laboratory courses. The sophomore and junior years include core courses that provide a foundation for the senior year which includes electives and an in-depth

## College of Engineering

design project. Students can tailor their senior year towards a variety of objectives by carefully choosing electives in electrical engineering, the humanities, and other subjects. The Electrical and Computer Engineering Department provides these specialized areas: control systems, digital signal processing, communication electronics, optoelectronics, analog and digital electronics, microcontrollers, and power systems.

Senior electives can also be used to complement the electrical engineering requirements with studies in fields outside of the department. Possibilities include a computer engineering minor, a computer science minor, a mathematics minor, a physics minor, and a business minor.

Students in the electrical engineering program acquire a working knowledge of computers and their applications by studying algorithms, programming, and the design and interfacing of computers. The microcomputer laboratory program provides hands on experience with software and hardware interfacing techniques. Senior electives provide applications of computer-aided analysis and design, simulation, and real-time laboratory processing in areas such as systems, control, communications, signal processing, and microwave circuits. Selection of specializations and electives require each student to assume an active and responsible role in the planning and decision making as the program unfolds. To aid in this, detailed information is available from the departmental office and can be discussed with the chairperson or the Electrical Engineering advisor.

### **Dual Degree Program Leading to a Bachelor of Computer Engineering and a Bachelor of Electrical Engineering**

Superior students may earn both the Bachelor of Computer Engineering and the Bachelor of Electrical Engineering degrees. The two degrees are awarded simultaneously upon completion of all requirements for both degrees. Because of the significant overlap between the two programs, it is possible to earn both degrees in four and a half years. Interested students should consult the ECE special programs advisor as early in their undergraduate studies as possible to obtain additional information.

### **5 Year Bachelor's/Master's Program**

A full-time student has the option of applying for admission to the 5 year Bachelor's/Master's Program. Admission to this program is contingent upon the student's achievement of an acceptable GPA at the end of the junior year. If admitted to the program, the student's technical electives in the senior year of the undergraduate program are fulfilled by taking appropriate graduate level courses. These courses will also count towards the degree requirements for the Master of Science in Electrical Engineering. Graduate degree requirements are then completed during the fifth year of the program. Students are assigned a special program advisor to assist in appropriate course selection.

During the senior and fifth years, the student must meet all graduate engineering requirements. Upon completion of all requirements for both degrees, the student is simultaneously awarded the Bachelor of Electrical Engineering and the Master of Science

in Electrical Engineering. A student who has completed all undergraduate requirements for the bachelor degree, but who withdraws from the 5 year Bachelor's/Master's program without completing the master degree requirements, will be awarded the degree Bachelor of Electrical Engineering.

## Program of Studies

### Sophomore Year

<i>First Semester</i>		<i>Cr.</i>	<i>Second Semester</i>		<i>Cr.</i>
ECE 2040	Fundamentals of Computer Engineering I	4	ECE 2041	Fundamentals of Computer Engineering II	4
ECE 2050	Fundamentals of Electrical Engineering I	4	ECE 2051	Fundamentals of Electrical Engineering II	4
ECE 2420	Engineering Programming and Applications	3	ECE 2409	Fundamentals of MATLAB	2
MAT 2705	Differential Equations with Linear Algebra	4	MAT 2500	Calculus III	4
PHY 2402	Physics II: Electricity and Magnetism	3	PHY 2403	Physics Lab for Engineering	1

### Junior Year

<i>First Semester</i>		<i>Cr.</i>	<i>Second Semester</i>		<i>Cr.</i>
ECE 3220	Signal Processing	4	ECE 3550	Analog Electronics	4
ECE 3450	Digital Electronics	3	ECE 3690	Engineering Electromagnetics	4
ECE 3500	Electronic Materials and Devices	4	ECE 3770	Electrical Communications	4
ECE 3720	Engineering Probability and Statistics	3	ECE 3970	Design Seminar - EE	3
Elective	Humanities/Social Science	3	Elective	Humanities/Social Science	3

### Senior Year

<i>First Semester</i>		<i>Cr.</i>	<i>Second Semester</i>		<i>Cr.</i>
ECE 4290	Engineering System Models and Control	4	Electives	Technical Electives <sup>1</sup>	6
ECE 4970	Design Project - EE	3	Electives	Free	6
Elective	Technical Electives <sup>1</sup>	6	Elective	Humanities/Social Science	3
Elective	Humanities/Social Science	3			

<sup>1</sup>Technical electives must be chosen from the approved list of electrical engineering courses.

## Bachelor of Mechanical Engineering

Mechanical Engineering is concerned with applying the principles of solid mechanics, fluid mechanics, thermodynamics, heat transfer, material science, dynamics and control to the analysis and design of machines and systems of all types. In applying this technical knowledge, the mechanical engineer must consider economic constraints and the social and ecological implications of solutions imposed. The mechanical engineering curriculum offers the student an opportunity to pursue educational objectives within the framework of this broad theme.

**Mission Statement** The mission of the Department of Mechanical Engineering is to provide a sound, broad-based educational experience that prepares students for the societal and professional aspects of their lives. Students will be educated, competent, and socially responsible mechanical engineers who clearly possess the following characteristics:

- ?? Proficiency in the design of mechanical components and systems,
- ?? Proficiency in analyzing and solving fundamental engineering problems,
- ?? Proficiency in written, oral, and graphical communications,
- ?? Preparedness for employment, graduate studies, and continuing education,
- ?? A broad education that includes an understanding of professional and ethical responsibilities.

This mission statement is consistent with the goals in the strategic plan and the university mission statement.

### Program Educational Objectives

- ?? Have the skills and abilities needed for successful employment in the mechanical engineering and related professions.
- ?? Understand the fundamental scientific principles that underpin the mechanical engineering profession,
- ?? Possess the necessary communication and interpersonal skills to enable them to be successful in mechanical engineering and other professions.
- ?? Know the importance of life-long learning for enhancing their personal and professional growth, and their careers.
- ?? Be broadly educated, consistent with the tradition of St. Augustine.

The first two years of the mechanical engineering program are devoted to laying a foundation of mathematics, physical science, and the general engineering sciences. The junior and senior years are devoted primarily to mechanical engineering topics. The required courses span the field of mechanical engineering, and career/ME electives provide the opportunity to pursue specific areas of the discipline in greater depth. The student chooses three courses (9 credit hours) of technical electives plus an additional three credits of a career/free elective. The design process is emphasized throughout the program and culminates with a senior year project that requires a synthesis of basic principles learned in previous courses.

All mechanical engineering students are required to take at least one of the elective courses offered by the department, designated as the ME elective in the program of studies. Ordinarily students will take two or more such courses, designated career/ME electives and one other course, designated the career/free elective, which can be any three credit course. However, the career/ME and the career/free elective slots may be applied to a minor or concentration in Liberal Arts & Sciences or to a minor in Business. The specific courses must be selected in conjunction with the appropriate departmental office and the student's academic advisor. Requirements for a minor are set by the appropriate department. All concentrations and minors must be approved by the Chair of Mechanical Engineering. Any course which meets a mechanical engineering curriculum requirement and also a requirement for a concentration or minor, may be counted for both.

Throughout the curriculum the technical courses are balanced by a careful selection of humanities courses to ensure that the effects of technology on society are given due consideration in design.

A faculty advisor is assigned to each student at the beginning of his/her sophomore year to provide academic and career guidance for the remainder of the student's years in the program until graduation. The advisor should be consulted regarding such topics as career electives, minors or concentrations, and completion of degree requirements for graduation.

### **3+2 Bachelor's/Master's Program.**

Any full-time student with an acceptable GPA, normally greater than or equal to 3.00, at the start of the senior year, has the option of pursuing a 3+2 Bachelor's/Master's Program. In order to be considered for this program, the student, prior to the beginning of the senior year, must write a letter to the chairman requesting admission to the program, and must complete an application form for graduate studies in the College of Engineering. Students who are admitted to the program take their three career/ME electives from 7000 level ME courses during their senior year. These three courses also will be counted toward the requirements for a Master of Mechanical Engineering degree. During both the senior year and the fifth year, the admitted student must meet all graduate engineering requirements. Upon completion of all undergraduate degree requirements, the student receives his/her Bachelor of Mechanical Engineering degree, and in the fifth year when all required graduate work has been completed, the student receives a Master of Mechanical Engineering degree. All graduate courses must be taken at Villanova in order to be included in this program.



College of Engineering

**Program of Studies** - For students entering program in Fall 2002 or later

**Program of Studies**

**Program of Studies** - For students entering program in Fall 2002 or later

<b>Sophomore Year</b>						
<i>First Semester</i>		<i>Credits</i>		<i>Second Semester</i>		<i>Credits</i>
ME 2100	Engineering Mechanics I - Statics	3		ME 2113	Manufacturing Engineering	3
MAT 2500	Calculus III	4		CEE 2103	Mechanics of Solids	3
ME 2505	Mechanical Engineering Analysis & Design	4		MAT 2705	Differential Equations with Linear Algebra	4
PHY 2402	Physics II: Electricity and Magnetism	3		ME 2900	Mechanical Engineering Laboratory I	1
PHY 2403	Physics Lab for Engineering	1		ME 3100	Thermodynamics I	3
ME 2502	Professional Development Seminar	1		COM 1101	Business and Professional Communications	3
<b>Junior Year</b>						
<i>First Semester</i>		<i>Credits</i>		<i>Second Semester</i>		<i>Credits</i>
ME 3300	Materials Science I	3		ME 4101	Heat Transfer	3
ME3150	Introduction to Dynamics	3		ECE 6020	Introduction to Electrical Systems	3
ME 3900	Mechanical Engineering Laboratory II	1		ME 3200	Machine Design	3
ME 3401	Stress Analysis I	3		ME 5202	Vibrations	3
ME 3600	Fluids and Fluid Systems	3		Elective	Social Science Elective	3
Elective	Humanities/ Social Science Requirement	3		Elective	Humanities/Social Science Requirement	3

<b>Senior Year</b>						
<i>First Semester</i>		<i>Credits</i>		<i>Second Semester</i>		<i>Credits</i>
ME 4800	Design Seminar in Mechanical Engineering I	1		ME 4801	Design Seminar in Mechanical Engineering II	3
ME 3901	Mechanical Engineering Laboratory III	1		ME 4850	Thermal Fluid System Design	3
ME 4102	System Dynamics	3		Elective	Professional Development	3
EGR 2001	Engineering: The Humanistic Context	3		Electives	Career/ME Electives	3
Elective	Career/ Mechanical Engineering Elective	3		Elective	Career/ME or Free	3
Elective	ME Elective	3				

### **Program of Studies – For students entering program before Fall 2002**

#### **Sophomore Year**

<i>First Semester</i>		<i>Cr.</i>		<i>Second Semester</i>		<i>Cr.</i>
CEE 2101	Engineering Mechanics I Statics	3		CEE 2102	Engineering Mechanics II – Dynamics	3
MAT 2500	Calculus III	4		CEE 2103	Mechanics of Solids	3
ME 2500	Mechanical Engineering Analysis & Design I	3		MAT 2705	Differential Equations with Linear Algebra	4
PHY 2402	Physics II: Electricity and Magnetism	3		ME 2900	Mechanical Engineering Laboratory I	1
PHY 2403	Physics Lab for Engineering	1		ME 2501	Mechanical Engineering Analysis & Design II	3
CA 1100	Fundamentals of Public Speaking	3		ME 2113	Manufacturing Engineering	3
ME 2502	Professional Development Seminar	1				

## College of Engineering

### Junior Year

<i>First Semester</i>		<i>Cr.</i>	<i>Second Semester</i>		<i>Cr.</i>
ME 3300	Materials Science I	3	CEE 3111	Fluid Mechanics	3
ME 3500	Mechanical Engineering Analysis & Design III	3	ECE 6020	Introduction to Electrical Systems	3
ME 3900	Mechanical Engineering Laboratory II	1	ME 3200	Machine Design	4
ME 3401	Stress Analysis I	3	ME 5202	Vibrations	3
ME 3100	Thermodynamics I	3	ME 3101	Thermodynamics II	3
Elective	Humanities/Social Science Requirement	3	ME 3901	Mechanical Engineering Laboratory III	1

### Senior Year

<i>First Semester</i>		<i>Cr.</i>	<i>Second Semester</i>		<i>Cr.</i>
ME 4800	Design Seminar in Mechanical Engineering I	1	ME 4801	Design Seminar in Mechanical Engineering II	3
ME 4101	Heat Transfer I	3	Elective	Humanities/Social Science Requirement	3
ME 4102	System Dynamics	3	Elective	Professional Development <sup>2</sup>	3
EGR 2001	Engineering: The Humanistic Context	3	Electives	Career/ME Electives	6
Elective	Social Science <sup>1</sup>		Elective	Career/ME or Free <sup>3</sup>	3
Elective	ME Elective	3			

<sup>1</sup>See Humanities and Social Science Electives

<sup>2</sup>Select one of the following: ME 6621, PHI 1600, PHI 2150, PHI 3820, or PHI 3825.

<sup>3</sup>This is a career elective for those students pursuing a concentration as described above; for all other students it serves as a free elective.

## Special Programs and Options

### Dual Degree Programs, Minors and Options

The College of Engineering provides the flexibility for its students to pursue various program additions and options. These include a dual degree program leading to a Bachelor of Arts degree; a dual degree program leading to a Bachelor of Computer Engineering and a Bachelor of Electrical Engineering; a five year program leading to a Bachelor of Computer Engineering and a Master of Science in Computer Engineering; a five year program leading to a Bachelor of Electrical Engineering and a Master of Science

in Electrical Engineering; and a five year program leading to a Bachelor of Mechanical Engineering and a Master of Mechanical Engineering; academic minors in Business, Chemistry, Computer Engineering, Computer Science, Mathematics, and Physics; the Honors Program; and the ROTC Programs. See details below or in the appropriate departmental listings.

### **Bachelor of Arts - Dual Degree Program**

Under this program it is possible for undergraduate engineering students to earn a Bachelor of Arts degree in addition to a bachelor ' s degree in engineering. Depending on the student ' s engineering major, the student must successfully complete 14 to 17 additional courses beyond those required for the engineering degree. Engineering students wishing to enter this Dual Degree Program must write a letter to the Dean of Engineering requesting admission into the program.

### **Business Minor**

Students should contact the Dean's Office in the College of Commerce and Finance regarding this program.

### **Computer Engineering Minor**

Students may earn a minor in computer engineering by successfully completing seven courses: ECE 2040, ECE 2041, ECE 2050, ECE 2420, ECE 3445, and two courses from the following list: ECE 5240, ECE 5430, ECE 5444, ECE 5445, ECE 5450, ECE 5477, ECE 5484, ECE 5540, ECE 5790, ECE 5792.

Pre-requisite courses must be satisfied.

## **Academic Policies and General Information**

Unless otherwise noted, the College of Engineering follows the general university academic policies and regulations listed in the University section of this *Catalog*. *It is the responsibility of the student to know and comply with all academic policies and regulations of the University and of the College of Engineering. Such policies may change without prior notice.* Policies specific to the College of Engineering follow:

### **Academic Standing**

In order to remain in good academic standing, undergraduate engineering students must maintain a cumulative Grade Point Average (GPA) of at least 2.00 and a cumulative Technical Grade Point Average (TGPA) of at least 2.00. Technical courses are defined as all engineering, science, and mathematics courses.

## Advanced Placement Credit

Information on advanced placement credit is found at [www.engineering.villanova.edu/prospective/ap](http://www.engineering.villanova.edu/prospective/ap).

### ADVISING

During the freshman year a student is encouraged to learn more about the engineering profession in order to make a more informed choice of a major field of study. Assistance necessary to arrive at this decision (which is made at the end of the freshman year) is provided by the College of Engineering in the following ways:

- ?? As a freshman, a student is assigned to an engineering advisor, who provides career planning advisement and when appropriate, referrals. In addition, the College of Engineering sponsors Fall and Spring Seminars which inform freshmen students about career opportunities available in each major field of engineering.
- ?? Academic advisement for freshmen, i.e. class scheduling and course adjustments, is provided by the Assistant Dean of Engineering.
- ?? Advising for upper class engineering students is provided by each of the engineering departments for the students who are majoring in the program(s) offered by the department.

### AUDIT

A student may elect to audit a course to reinforce and strengthen his/her current knowledge or to explore new areas without the pressure of tests and grades. No academic credit is earned for auditing a course. However, the audited course is noted on the student's official record. Permission to audit a course must be obtained from the student's advisor.

### AWARDS AND HONORS

Full-time engineering students who achieve a semester Grade Point Average of 3.25 or higher qualify for the Dean's List in the College of Engineering.

The Dean's Award for Academic Achievement is presented to engineering seniors in recognition of outstanding academic performance in their undergraduate studies in the College of Engineering. Seniors with a cumulative Grade Point Average of 3.50 or more, after seven semesters are eligible for this award.

The Dean's Award for Meritorious Service is presented to engineering seniors in recognition of exceptional dedication and service unselfishly given to the College of Engineering over an extended period of time. The quality and consistency of the service to the College are recognized by means of this award.

In order to recognize and encourage excellence in scholarship, chapters of the following national honorary engineering societies are maintained by the college: Tau Beta Pi, for all engineers; Chi Epsilon, for Civil Engineers; Eta Kappa Nu, for Electrical Engineers and Computer Engineers; and Pi Tau Sigma, for Mechanical Engineers.

## **BANKRUPTCY POLICY**

A freshman engineering student may request to declare academic bankruptcy in any required course in the freshman engineering curriculum, and repeat the course with a new start on the grade earned for that course. The grade earned in the first attempt for any such "bankrupted" course will remain on the transcript, but only the grade from the second attempt at that course will be used in computing the future cumulative and technical grade point average.

The following restrictions apply to this policy:

1. This option applies only to freshman engineering students, defined as those students who have earned fewer than 36 credits toward an engineering degree at Villanova.
2. This option applies only to those courses designated in the University Catalog as requirements for the freshman year of studies in engineering.
3. This option may be exercised only one time per course, but there is no limit on the number of different courses in the freshman curriculum for which this option may be employed.
4. Once this option is exercised and the grade previously earned for any specified course is declared "bankrupt," this decision may not be revoked and therefore the original grade may not be reinstated.
5. The student must agree that the course for which the policy is exercised must be retaken at Villanova, and must be completed by the end of the next semester of the normal academic year (i.e., a fall course must be completed in the following spring semester, and a spring course must be completed in either the following summer or the following fall semester).

## **COMPUTING**

### **College and University Computing.**

The campus is networked with high-speed ETHERNET connections which allow students access to the World Wide Web (WWW) and Internet networks. In addition to the several public computing sites located around the campus, the Computer-Aided Engineering (CAE) Centers provide workstations specifically dedicated to meeting the computing needs of engineering students. Access to these workstations is provided 24 hours a day, 7 days a week. The workstations provide network access as well as microcomputer capabilities, using Windows, and UNIX operating systems.

## College of Engineering

### **Departmental Computing**

There are more than 100 microcomputer workstations located in engineering classrooms, laboratories, and the four engineering departments.

The **Chemical Engineering** Department makes available a number of personal computers for student use in carrying out classroom assignments. It has also dedicated several personal computers to data acquisition and control in laboratory experiments. Chemical Engineering students utilize a dedicated departmental intranet of personal computers to run packaged software for simulation of process systems, including AspenTech 's ASPEN-PLUS. The departmental computer laboratory also provides a wide range of special-purpose software prepared by the department faculty in the sciences of material and energy balances, thermodynamics, process control, fluid flow and heat/mass transfer.

The **Civil and Environmental Engineering** Department ' s computer facilities include personal computers and associated printers and plotters. A variety of software packages including MATLAB, ANSYS, STAAD-III, HEC-RAS, HEC-HMS, HCS, KERN, and AUTOCAD are used in the curriculum. Student exposure to computer-based applications includes spreadsheet and economic analysis, structural design and analysis of buildings and bridges, slope stability, stream water quality modeling and waste load allocations, sensitivity and matrix analysis of civil engineering systems, generation of hydrographs, culvert hydraulics, modeling of river systems, and transportation system planning and simulation of traffic operations.

The **Electrical and Computer Engineering** Department utilizes Sun file servers with Sun workstations, which are available in the Advanced Computer Systems Laboratory. In addition the department has PC's, CAE workstations and Microcontroller Development Systems. The department software includes UNIX, SMP, ILS, HP ECE Design Center software, VHDL CAD Tools, MATLAB, SIMULINK, Electronics Workbench, and PSpice. This software is used for digital signal processing, real-time control and robotics, microwave measurement, and the design of analog and digital circuits and systems.

The **Mechanical Engineering** Department has personal computers that are equipped with data acquisition systems and software for graphing, designing, and calculating. Software includes MATLAB, FLUENT, Mathcad, ANSYS, AUTOCAD, PCDEFORM™, DADS, Working Model 3D™ and other applications programs used for finite element analysis, heat transfer and fluid flow, and multi-body dynamic analysis.

### **INTERNATIONAL STUDIES**

The College of Engineering, recognizing the continued changes globally in both the learning and practicing of the skills of engineering, encourages all its majors to consider studying in an overseas university some time during their four years at Villanova. In enhancing language and communication skills, in addition to taking courses in engineering where appropriate, Villanova Engineers will strengthen their own liberal arts program so integral to a Villanova Engineering degree.

For more information contact your department chairperson or the International Studies Office, Geraghty Hall, 1st floor (phone 610-519-6412).

## **LABORATORY FACILITIES**

Dedication of the Center for Engineering Education and Research (CEER) took place in June 1998. The multi-million dollar facility provides leading edge technological support for teaching and research in the College of Engineering.

The 88,400-square-foot structure houses 30 instructional and research laboratories, a computer-aided engineering center, an interdisciplinary student projects laboratory, 12 student group study rooms, and a multi-media lecture hall seating 140. The building also includes student advising rooms, and conference rooms.

The **Chemical Engineering** Department maintains modern laboratory facilities to support the Bachelor of Chemical Engineering curriculum. Experiments in the three Chemical Engineering Laboratory courses range from the demonstration of fundamental principles in bench-scale or pilot plant equipment, to hands-on experience with fully integrated, industrial scale process equipment. In addition, the department maintains extensive general-purpose laboratory capabilities for those students who carry out an experimental investigation as part of their senior Independent Study project.

The **Civil and Environmental Engineering** Department is committed to "hands-on" education in its experimental, computational, and design laboratories. Facilities are currently dedicated to instruction and research capabilities in materials (soils, concrete, and steel), the environment, geology, structures, measurements, fluid mechanics and hydraulics.

The **Electrical and Computer Engineering** Department laboratory facilities are available to serve as important components of study in specialized areas as well as for core studies. Laboratories are currently in place for instruction and research in Control Systems, Digital Systems and Microprocessors, Electronics, Signal Processing, Intelligent Systems, Solid State Devices, Microwaves, Microcontrollers, Advanced Electronics, Advanced Computer Systems, Antenna Anechoic Chamber, Antenna Research, Communications, and Student Projects.

The **Mechanical Engineering** Department laboratories provide an environment for students to reinforce their understanding of the fundamental principles of mechanical engineering and apply that knowledge in experimental analysis and problem-solving. Laboratories currently available include Manufacturing Processes, Thermodynamics, Engine Testing, Materials Testing and Material Science, Vibration, Stress, Heat Transfer, Fluid Mechanics, and Wind Tunnel.

## **REGISTRATION OPTIONS**

Qualified undergraduate engineering students are permitted and encouraged to enroll in more challenging courses than those specified in their standard curriculum, provided that they obtain approval from their department chairperson and other appropriate individuals where necessary, as indicated below.



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Required and elective courses in the humanities and social sciences may be taken through the **Honors Program** for those students who qualify. Application should be made directly to the Director of the Honors Program.

Undergraduate students wishing to enroll in an engineering **graduate course** must have written approval from their department chairperson and the chairperson of the department offering the course. Permission will normally be granted only to seniors who have a cumulative Grade Point Average of 3.0 or higher. Permission to enroll in graduate courses offered by other Colleges within the University must be obtained from the Dean of that College as well as the chairperson of the department offering the course and the student 's department chairperson.

### **SATISFACTORY/UNSATISFACTORY GRADE POLICY**

Upperclass engineering students may elect to take, on a Satisfactory/Unsatisfactory basis, one course per semester which meets all of the following criteria: 1) it is not specifically designated by course number in the curriculum of the student 's major; 2) it is not being given by the department in which the student is majoring; 3) it is not designated as a Technical Elective in the curriculum of the student 's major; and 4) permission to take the course has been specifically granted by the chairperson of the department in which the student is majoring.

To take a course on a Satisfactory/Unsatisfactory basis, the student must first register for the course by the normal procedure. After registration has been completed, the student must complete a Satisfactory/Unsatisfactory form (supplied by the Registrar 's Office); this form must be signed by the student 's department chairperson.

Other pertinent information can be found under the "Grading System" policies in the University section of this *Catalog*.

### **SCHOLASTIC LOADS AND OVERLOADS**

The individual engineering majors are comprised of appropriately sequenced course groupings referred to as "regular semester course loads." Students enrolled in the College of Engineering may take up to four credits, or one course overload, in any given semester provided that (1) a freshman has permission from the Assistant Dean of Engineering, or (2) an upperclassman has approval from his advisor and chairperson.

### **TECHNICAL ELECTIVES**

Students who are required to select technical electives as part of their departmental program are required to select these electives from among the courses listed in this *Catalog* and offered by the following departments: Astronomy, Biology, Chemistry, Chemical Engineering, Civil and Environmental Engineering, Computing Sciences, Electrical and Computer Engineering, Mathematical Sciences, Mechanical Engineering,

and Physics. The selection must be done with the advice and approval of the student's advisor and chairperson.

## **TRANSFER OF CREDIT**

With recommendation of their department chairperson, and approval of the Dean, engineering students are permitted to earn course credit at other schools. In order to initiate a request to do this, the student must obtain and complete a Course Elsewhere Form, available in the Office of the Dean of Engineering. A complete description of the substitute course content in the form of a copy of the other institution's official course catalog must be attached to this form. The student should allow 7-10 days for final action to be taken on the request. After that time, the student making the request should contact the Dean's Office to determine the outcome.

Students who have completed approved courses elsewhere must request that institution to forward a transcript to the Office of the Dean of Engineering. *NOTE*: only courses in which a grade of "C" (or the equivalent) or better is received will be transferred for credit. Grades of courses taken elsewhere are *not included* in the calculation of the Grade Point Average (GPA) or Technical Grade Point Average (TGPA) at Villanova University.

College-level work done prior to high school graduation may be awarded transfer credits upon receipt of evidence that the course was/is taken beyond the minimum requirements for high school graduation, according to the curriculum requirements of the school. In addition, all other University admission requirements must be fulfilled.

## **WITHDRAWAL FROM COURSES**

Engineering student requests for authorized withdrawal from a course without penalty (WX) will be granted automatically until the date listed in the academic calendar. After that date the student must present a valid reason for the request, such as insufficient information to determine standing in the course, (i.e., grades on tests and assignments), or serious personal or medical problems. The Dean of Engineering will decide whether or not to grant these requests based on the information supplied by the student and recommendations from the faculty member teaching the course and, in the case of upperclass students, the chairperson of the department in which the student is majoring. The Dean will inform the student of his decision and the reason for it.

## **WITHDRAWAL FROM THE UNIVERSITY**

Engineering students who decide to withdraw voluntarily from the university must complete and submit a withdrawal form to the Dean of the College of Engineering. Withdrawal forms are available in the Dean's Office. After the form has been submitted, the student may also be interviewed by an administrator in the College of Engineering.

## **STUDENT ORGANIZATIONS**

In order to encourage close contact between our engineering students and practicing professional engineers, and to assist students in establishing their engineering identity, the College of Engineering maintains student chapters of the following major engineering

## College of Engineering

professional societies: American Institute of Chemical Engineers (AIChE), American Society of Civil Engineers (ASCE), Institute of Electrical and Electronics Engineers (IEEE), American Society of Mechanical Engineers (ASME), and the International Society of Pharmaceutical Engineers (ISPE). These groups, with the cooperation and support of the faculty and practicing professional engineers, organize and sponsor meetings, guest speakers, and field trips of interest to engineering students.

The Villanova chapter of the Society of Women Engineers promotes the social growth and professional development of women in all fields of engineering. VUMES (Villanova University Minority Engineers & Scientists) promotes the social growth and professional development of minorities in the fields of engineering.

The broader professional and social interests of all engineering students are served by the Villanova University Engineering Student Council. Membership in this organization is open to all undergraduate engineering students.

## Departments

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### Chemical Engineering

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<b>Chair:</b>	Dr. C. Michael Kelly
<b>Professors:</b>	Joye, Kelly, Punzi
<b>Associate Professors:</b>	Ritter, Skaf
<b>Assistant Professors:</b>	W. Kelly, Muske, Weinstein
<b>Office:</b>	217 Chemical Engineering Annex, tel. 610-519-4950
<b>Website:</b>	<a href="http://www.engineering.villanova.edu/chem">www.engineering.villanova.edu/chem</a>
<b>Courses:</b>	<a href="http://catalog.villanova.edu/courses/che.html">catalog.villanova.edu/courses/che.html</a>

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### Civil and Environmental Engineering

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<b>Chair:</b>	Dr. Ronald Chadderton
<b>Professors:</b>	Chadderton, Christensen, Mathers, Schuster
<b>Associate Professors:</b>	Lynch, Traver
<b>Assistant Professors:</b>	Dinehart, Glynn, Gross, Suri, Yost
<b>Office:</b>	139 Tolentine Hall, tel. 610-519-4960
<b>Website:</b>	<a href="http://www.engineering.villanova.edu/cee">www.engineering.villanova.edu/cee</a>
<b>Courses:</b>	<a href="http://catalog.villanova.edu/courses/cee.html">catalog.villanova.edu/courses/cee.html</a>

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# Electrical and Computer Engineering

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<b>Chair:</b>	Dr. S. S. Rao
<b>Professors:</b>	Amin, Buckley, Rao, Zygmunt
<b>Associate Professors:</b>	Bukowski, Caverly, DiMeo, Hoorfar, Kozikowski (Emeritus), Kresch, Mobasser, Perry, Peyton-Jones, Singh
<b>Assistant Professors:</b>	Jupina, Konyk, McKeough, Mercedes
<b>Instructor:</b>	Char
<b>Office:</b>	411 Tolentine Hall, tel. 610-519-4970
<b>Website:</b>	<a href="http://www.engineering.villanova.edu/ece">www.engineering.villanova.edu/ece</a>
<b>Courses:</b>	<a href="http://catalog.villanova.edu/courses/ece.html">catalog.villanova.edu/courses/ece.html</a>

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# Mechanical Engineering

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<b>Chair:</b>	Dr. Gerard Jones
<b>Professors:</b>	Jones, McAssey, McLaughlin, Whitman
<b>Associate Professors:</b>	Ashrafiuon, Chun, Jen, Kroos, Nataraj, Radhakrishnan
<b>Assistant Professors:</b>	Fleischer, Harrington, Koffke, O'Brien, Santhanam
<b>Instructor:</b>	Fulmer
<b>Industrial Professor:</b>	Casey
<b>Office:</b>	111 Tolentine Hall, tel. 610-519-4980
<b>Website:</b>	<a href="http://www.engineering.villanova.edu/me">www.engineering.villanova.edu/me</a>
<b>Courses:</b>	<a href="http://catalog.villanova.edu/courses/me.html">catalog.villanova.edu/courses/me.html</a>

College of Nursing

# College of Nursing

**M. Louise Fitzpatrick, Ed.D.,** Dean

**Rose M. O=Driscoll, M.S.N.,** Assistant Dean

**M. Frances Keen, DNSc,** Director of Undergraduate Program

**Office:** St. Mary's Hall, first floor, tel. 610/519-4900

**Website:** [www.nursing.villanova.edu](http://www.nursing.villanova.edu)

**Course descriptions:** [www.catalog.villanova.edu/courses/nur.html](http://www.catalog.villanova.edu/courses/nur.html)

## Faculty

**Professors:** Fitzpatrick, Sharts-Hopko, Manfredi

**Associate Professors:** Beletz, Brown, Copel, Dolen,  
Haynor, Keen, Ott, Smeltzer, Weingarten

**Assistant Professors:** Bradley, Costello, Crumlish, DeSilets, Dowdell,  
Erickson, Fetter, Frain, Keech, McGinn, McGovern,  
O=Driscoll, Pizzi, Ritchie, Schiller, Smith,

Sullivan, Todd, Willens, Zamerowski, Zawacki

**Clinical Assistant Professors:** Capriotti, McKenna, Wimmer

**Instructors:** Bruderle

**Adjunct Professor:** Wildgust

"The health care of a complex and technologically advanced society requires professional nurses who are liberally educated, clinically competent, compassionate and ethically motivated. In responding to these objectives, the College of Nursing is a tangible expression of Villanova's mission, values and commitment to human service."

## History

Villanova University first responded to society's need for baccalaureate-prepared nurses in 1932 when it offered a program of study leading to a Bachelor of Science in Nursing Education. This commitment was expanded in 1953 to create a College of Nursing that now offers a generic BSN program, a BSN completion program for registered nurses, an MSN program, and a Continuing Education Program.

## College of Nursing

Baccalaureate nursing education prepares individuals for professional nursing practice in a variety of health-care settings and for continuous personal and educational growth, including entrance into graduate education in nursing. A liberal education is integrated with the ideals, knowledge, and skills of professional nursing practice under the direction of well-qualified faculty.

The College of Nursing is approved by the State Board of Nursing of the Commonwealth of Pennsylvania. Upon completion of the undergraduate program, graduates are eligible to take the licensing examination (NCLEX) for professional registered nurses. This license is transferable within the United States nationally by state. The undergraduate and graduate programs are both fully accredited by the National League for Nursing Accreditation Commission and the Commission on Collegiate Nursing Education. The Nurse Anesthesia concentration in the graduate program is accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs. The Continuing Education Program is accredited as a provider of Continuing Education in Nursing by the American Nurses Credentialing Center, Commission on Accreditation.

### **Contact Information:**

American Nurses Credentialing Center  
600 Maryland Avenue, SW  
Suite 100 West  
Washington, DC 20024-2571  
202/651-7000  
1-800-284-CERT (2378)  
[www.nursingworld.org/ancc/](http://www.nursingworld.org/ancc/)

Commission on Collegiate Nursing  
Education  
One Dupont Circle, NW, Suite 530  
Washington, DC 20036  
Phone: (202) 463-6930  
Fax: (202) 785-8320  
[www.aacn.nche.edu/  
Accreditation/index.htm](http://www.aacn.nche.edu/Accreditation/index.htm)

Commonwealth of Pennsylvania  
Department of State Bureau of Professional  
and Occupational Affairs  
State Board of Nursing  
P.O. Box 2649  
Harrisburg, PA 17105-2649  
Phone: (717) 783-7142  
Fax: (717) 783-0822  
[http://www.dos.state.pa.us/bpoa/  
nursing@pados.dos.state.pa.us](http://www.dos.state.pa.us/bpoa/nursing@pados.dos.state.pa.us)

Council on Accreditation of Nurse  
Anesthesia Educational Programs  
222 South Prospect Avenue  
Park Ridge, Illinois 60068-4001  
Phone: (847) 692-7050  
Fax: (847) 692-6968  
[www.aana.com/](http://www.aana.com/)

National League for Nursing Accreditation  
Commission  
61 Broadway  
New York, NY 10006  
Phone: (212) 363-5555 x153  
Fax: (212) 812-0390  
[www.nlnac.org/index.html](http://www.nlnac.org/index.html)

## Mission

The College of Nursing is a tangible expression of Villanova University's mission, tradition, and commitment to human service. As a major school of nursing under Catholic auspices, it carries responsibility for the education of nurses within the framework of Christian beliefs and values and the heritage of the Order of St. Augustine. The academic programs in the College of Nursing are directed to interpretation of nursing as a healing ministry emanated by love and demonstrated through service and the care of others. As a healing art as well as an applied science and practice discipline, nursing as taught at Villanova University, emphasizes the concern for spiritual health as well as that of mind and body. Curricula reflect the integration of these elements and their application in clinical practice and concern for others regardless of race, ethnicity or religion. The College of Nursing educates individuals for service to a diverse society which includes all sectors and strata of the population; as such, graduates are prepared to assume roles in all settings where health care is delivered.

Within this context, nursing draws its worth and spirit from motives based on love of one's fellow men and women who are made in the image and likeness of God. As a social service to the community, nursing responds to the needs of the sick, poor and disabled, and promotes wellness as the pre-eminent goal of nursing care. The practice of nursing within a Christian environment requires that those who nurse recognize and respect the needs of each person and that they teach while they nurse in order to assist their patients and the community to achieve the highest possible level of wellness of body, mind, and spirit.

The College of Nursing, consistent with the mission of Villanova University, assumes responsibility for the education of individuals who will be prepared to provide a vital service to society and who are liberally educated, clinically competent, compassionate and ethically motivated. The college is committed to providing high quality education in the liberal arts and sciences and expert preparation in the knowledge and clinical skills of professional nursing to qualified individuals who must be prepared and empowered to confront the health care demands of a complex and technologically advanced society.

The College views itself as an important locus of education, research and organizational leadership within nursing's professional and educational communities. It views with great seriousness its prominent role with the constellation of collegiate nursing programs under Catholic auspices.

The College awards the baccalaureate degree in nursing (BSN) and provides basic preparation in nursing to those who are studying for the first professional degree in the field. Such students include high school graduates with no prior college experience, registered nurses who were prepared in hospital or junior college programs and who have not yet attained the baccalaureate, college graduates with degrees in other disciplines who have made a later decision to study nursing, and mature adults who are studying for their first college degree.

The Graduate Program awards the master's degree in nursing (MSN) and provides preparation and leadership development in selected areas of advanced nursing practice, development of research skills and knowledge of health policy. In addition, course options



## College of Nursing

prepare individuals for positions as administrators of nursing and health services, case managers, clinical teachers, faculty, nurse practitioners, and nurse anesthetists.

The Program in Continuing Education is committed to providing short courses, conferences, workshops and symposia for nurses, other health professionals and the public-at-large on topics related to health care. Some of these programs are developed to update the knowledge of practicing nurses while others provide an academic arena for the sharing and critique of papers and ideas relevant to current issues or trends in health care.

The College of Nursing's emphasis on education in values and ethical principles is a pervasive and central theme and emanates from the Catholic and Augustinian tradition of the University. The faculty are expected to serve as role models and mentors for the professional development of students in the exercise of their academic responsibilities.

## Degrees and Programs

The College awards the baccalaureate degree in nursing (BSN) and provides basic preparation in nursing to those who are studying for the first professional degree in the field. Such students include high school graduates with no prior college experience, registered nurses who were prepared in hospital or junior college programs and who have not yet attained the baccalaureate, college graduates with degrees in other disciplines who have made a later decision to study nursing, and mature adults who are studying for their first college degree.

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## Degree Requirements

### **Bachelor of Science in Nursing Curriculum** (136 credits)

#### **FRESHMAN**

<i>Fall Semester</i>	<i>credits</i>	<i>Spring Semester</i>	<i>credits</i>
CHM 1131	3	CHM 1134	3
CHM 1103	1	CHM 1108	1
CHS 1000	3	CHS 1001	3
NUR 1101	2	NUR 1103	2
PSY 1000 or SOC 1000	3	SOC 1000 or PSY 1000	3
THL 1050 or PHI 1050	3	PHI 1050 or THL 1050	3
		ENG 1050	3

Villanova University

<b>SOPHOMORE</b>			
BIO 1205	4	BIO 1206	4
BIO 1181	3	NTR 2120	3
NUR 2104	2	NUR 2106	2
NUR 2105	1	NUR 2107	2
PSY 2200	3	MAT 1250	3
Elective	3	Soc. Studies Elective*	3
*Must be selected from the areas of History, Political Science, or Economics in consultation with the student's major adviser.			
<b>JUNIOR</b>			
NUR 3112	6	NUR 3116	6
NUR 3113	6	NUR 3117	6
NUR 3108	3	NUR 3110	3
NUR 3030	3	PHI 2115	3
<b>SENIOR</b>			
NUR 4101	6	NUR 4102	6
NUR 4103	6	NUR 4107	6
NUR 4130	2	NUR 4110	5
THL Elective**	3		

\*\*2000 level or above is recommended

## Program Requirements

Entrance physical examination, selected diagnostic tests, as well as designated immunizations, are required of all nursing students. Additional health screening tests may be required by the various agencies utilized for clinical experience in nursing courses.

Students are required to be certified in Basic Cardio-pulmonary Resuscitation prior to enrolling in NUR 2106 and 2107. Continuing re-certification is the responsibility of the student throughout the remainder of the program.

All materials concerning health examinations, diagnostic tests, immunizations, health screening and cardio-pulmonary resuscitation are course requirements for the following courses: 2107, 3113 (Spring Semester Offering) and 4103. They must be on file in the College of Nursing by the end of the Spring final examination period or prior to the first day of class in the *first semester* of enrollment.

All sophomore, junior and senior students are required to participate in a battery of standardized tests to assess nursing knowledge prior to graduation. The cost is assumed by the students.

Registered nurse students must furnish evidence of malpractice liability insurance.

# Academic Policies and Information

Unless otherwise noted, the College of Nursing follows the general university academic policies and regulations listed in the University section of this *Catalog*. *It is the responsibility of the student to know and comply with all academic policies and regulations of the University and of the College of Nursing and to abide by the professional standards established by the College. Such policies may change without prior notice. Note: if a student withdraws from the College of Nursing and is readmitted at a later date, the requirements in effect at time of readmission will be applied. Policies and regulations specific to Nursing students include the following:*

## Academic Advising

Every student entering the College of Nursing is assigned a faculty adviser. It is the responsibility of the student to contact his/her adviser prior to each registration period and if he/she is experiencing any academic difficulty. Each student must take responsibility to meet with his/her adviser on an ongoing basis. Advisers are available during posted office hours or by appointment.

## Academic Grievance Procedure

If a student has a grievance within a nursing course, he/she is advised to speak with the individual teaching the course. If the problem is not resolved at this level, it may be taken to the Course Leader, Program Director, and Dean in that order.

## Academic Policies

Students are expected to abide by the policies and professional standards established by the College of Nursing. The College of Nursing reserves the right to change program requirements without prior notice to reflect advances in the professional field. If a student withdraws from the College of Nursing and is readmitted at a later date, the requirements in effect at the time of readmission will be applied.

- ≡≡ A grade of "C" or better must be attained in all nursing courses for progress in the nursing major.
- ≡≡ Only one nursing course may be repeated in the curriculum prior to dismissal from the program.
- ≡≡ A required course may be repeated once prior to dismissal from the program.
- ≡≡ Students must complete, in sequence, the required lower division courses, with a Q.P.A. of 2.5 in order to advance to junior level courses.
- ≡≡ The College of Nursing reserves the right to place on probation or withdraw any student whose performance is deemed unsatisfactory.
- ≡≡ Students whose primary language is not English will be encouraged to bring translation dictionaries to their examinations and be given untimed tests.
- ≡≡ International students, who are in the generic and BSN program or RN completion program but who are not ex-patriates residing permanently or working in the

United States and will not sit for NCLEX but return to their countries, may have the progression policies suspended, on a case by case basis, by action of the Dean of the College of Nursing and upon formal recommendation of the Program Director.

☞☞ Preparation for Registered Licensing Examination:

- a. For the purpose of continuously preparing nursing students in the baccalaureate program leading to initial licensure as registered nurses for the comprehensive licensing examination (NCLEX-RN), standardized tests developed for this purpose will be administered and evaluated as part of the final course grades beginning in the sophomore year (or its equivalent) at the student's expense.
- b. All senior nursing students (or the equivalent) are required to demonstrate successful achievement on a designated predictive NCLEX-RN readiness assessment examination prior to graduation. This must also be successfully completed as a prerequisite to certification by the College as part of the application process for the NCLEX-RN examination.

## Academic Probation and Dismissal

**Probation.** A student is placed on academic probation in the College of Nursing when:

- ☞☞ A required course is failed.
- ☞☞ A grade less than C is earned in science or nursing courses.
- ☞☞ The QPA is below 2.0 in any given semester.

**Dismissal.** Students are permitted two semesters of probationary status prior to dismissal from the program. A dismissal from the College may be appealed in writing. Detailed instructions for appeal are outlined in the dismissal letter.

In circumstances involving those students who have entered Villanova University through the Academic Advancement Program, satisfactory progress of the student will be determined by the Academic Standing Committee and/or Dean of the College in which the student is matriculated. In the event that, due to poor high school preparation, additional time is necessary for the student to complete the requirements towards graduation, the student will be viewed as being in a five-year program. Satisfactory progress will be viewed accordingly.

## Admission

**Regular Students.** All applicants for full-time or part-time study must meet the entrance requirements for admission to the University as listed in this *Catalog*.

**Transfer Students** Transfer students with a 2.5 Q.P.A. are considered for admission to the College of Nursing on a limited basis. Please see the section on ATransfer Students@ in the general University section of this *Catalog*. Further inquiries should be directed to the College of Nursing.

**Adult Students/Second Career Applicants.** The College of Nursing welcomes applications from adults who wish to begin preparing for a career in nursing. These include individuals who possess undergraduate and/or graduate degrees in other fields as well as those adults

entering college for the first time. Part-time study is possible during the introductory level of the program. Full-time study is required during the clinical portion of the program. All applicants must meet the entrance requirements for admission to the University. In addition, the College offers an accelerated curriculum for individuals with a bachelor's degree in another discipline. Applicants must demonstrate superior academic achievement in prior course work to be eligible for this program. Further inquiries should be directed to the College of Nursing.

**Registered Nurse Applicants.** Graduates from diploma and associate degree nursing programs are eligible for admission. Requirements for admission include: transcripts from all academic institutions and proof of registered professional nurse licensure. Applicants should apply for admission through the Office of Admissions of the University.

Through a series of nursing examinations and clinical validation, a registered nurse student may demonstrate current nursing knowledge earning 45 credits in nursing. Specific policies and procedures may be obtained through the College of Nursing. Credit by examination is available through the College of Arts and Sciences for non-nursing courses. See the section on Registered Nurses, below.

## Admission to Closed Sections of Courses

Students will **not** be permitted to enroll in closed sections. Exceptions to this rule will be made only by the Undergraduate Program Director or Assistant Dean and only when a student must enroll in the specific section in order to complete requirements which are necessary for progression in the program.

## Graduate Course Registration for Undergraduate Students

A junior or senior with a 3.00 cumulative quality point average wishing to enroll in a graduate course must have the written approval of the Dean of the College of Nursing before submitting a request to the Dean of the Graduate School (see Undergraduate Regulations for course numbering).

## International Studies

The College of Nursing, in conjunction with the Office of International Studies, is pleased to offer a variety of opportunities for a Nursing major to study in an overseas university during her/his course of studies.

The College of Nursing has established a year-long study abroad program with the University of Manchester, Manchester, England. Students in this program spend their entire sophomore year in England. The courses transfer to Villanova as the sophomore year of the nursing curriculum and students graduate on time with their classmates.

The program requires some changes in the freshman course of study; any freshman who is interested should contact the Director of the Undergraduate Nursing Program or his/her academic adviser as early as possible. A nursing major may also participate in any of the summer or semester study abroad programs approved by the University and administered by the Office of International Studies. However, since these are not nursing programs, students

who participate need to change their course of study and may graduate later than their graduation class. Interested students should see the detailed discussion International Studies in the Villanova University section of this *Catalog* or contact the Office of International Studies, St. Augustine Center, Room 415, (phone 610-519-6412).

## Withdrawal from a Course (WX)

After the Friday following mid-term break, students seeking withdrawals from courses without penalty ("WX") must present to the Dean a written request with valid reasons for the request, such as serious personal or medical problems, and recommendations from the instructor of the course. The Dean of the College is the final authority for granting or refusing the exception on the basis of the documentation and recommendations submitted. Students who do not have a justifiable cause to withdraw from a course without academic penalty may still withdraw from the course and receive a grade of "W." Withdraw from a course may alter a student's degree completion date.

# BSN Program for Registered Nurse Students

Registered nurse students achieve advanced standing in the undergraduate program through transfer of applicable college credits and through successful completion of required validation exams in nursing\* and optional challenge exams in selected liberal education courses. Each of these mechanisms is described below.

## Requirements

All registered nurse students are expected to have the following on file prior to enrollment in Nursing 3000 and 3005:

- ✂✂ Entrance Health Examination and Laboratory Studies.
- ✂✂ Current CPR Certification including resuscitation and choking measures for in fant, child, and adult with one person and two-person rescue procedures, and review of an Automated External Defibrillator.
- ✂✂ Current Pennsylvania R.N. License.
- ✂✂ Current Malpractice Insurance Certificate.

## Transfer of Liberal Education Course Credit.

Up to 64 credits in applicable liberal education courses may be transferred from accredited colleges or universities. A grade of AC@ or better must have been earned, and courses must be evaluated as equivalent to appropriate Villanova courses.

## Credit by Examination (Liberal Education Courses)

Selected liberal education courses may be challenged through the University's Credit by Examination Program. RN students may challenge up to 12 credits in liberal education in

accord with the policies and procedures of that program. Information is available from faculty advisers.

## Advisement

RN students are assigned a faculty adviser when admitted to the College and are expected to consult with the adviser on a regular basis.

## Excel sior Validation Exams in Nursing

Four of the five tests are owned and administered by Excelsior College. Within the immediate area, these tests are offered at 6 different colleges. There are six test sessions each year, scheduled between October and August. Registration materials and study guides are available from Excelsior College (Tel. 518/464-8631; Address: 7 Columbia Circle, Albany, NY 12203-5159, www.excelsior.edu).

The four required Excelsior exams are:

- ≪≪ Professional Strategies in Nursing (#426)
- ≪≪ Maternal-Child Nursing, Baccalaureate (#457)
- ≪≪ Adult Nursing (#554)
- ≪≪ Health Restoration, Area II (#477)

The passing score for each of these exams is a standard score of 45. Each exam may be repeated once, if necessary. All four Excelsior exams must be passed to earn 27 credits in nursing at Villanova. The exams are NOT required for admission to the College, however. Scores are valid for 5 years.

The fifth exam is incorporated within the first required nursing course at Villanova (NUR 3000), and is entitled Clinical Validation Exam. It assesses foundational clinical nursing skills, and is designed and implemented by Villanova Nursing faculty. It may be repeated once if necessary, and must be passed to earn 20 additional credits in nursing, and to progress in the program.

### COURSE/CREDIT REQUIREMENTS (136 credits)

Physical Sciences/Math	(25 crs)	Nursing	(71 crs)
Anatomy & Physiology	(6-8 crs)	Excelsior Exams and/or	
Organic/Biochemistry	(3-4 crs)	AAS Nursing Credit Transfer	(27 crs)
Microbiology	(3-4 crs)	NUR 3110*	(3 crs)
Nutrition	(3 crs)	NUR 3000/3005	(4 crs)
Statistics	(3 crs)	Clinical Validation Exam	(20 crs)
Electives	(3 crs)	NUR 4102	(6 crs)
NUR 4107	(5 crs)		
NUR 4110	(6 crs)		
Humanities	(21 crs)	Social/Behavioral Sciences	(12 crs)
English/Literature	(3 crs)	General Psychology	(3 crs)
Philosophy-Health		Developmental Psychology	(3 crs)

Care Ethics	(3 crs)	Introductory Sociology	(3 crs)
Religious Studies	(6 crs)	Elective	(3 crs)
Humanities Elective	(9 crs)		
Free Electives	(6 crs)		

*NOTE:* BSN candidates take NUR 3110; MSN candidates may take NUR 8904 after completing a course in statistics

## Facilities for Instruction and Practice

The University assumes full responsibility for providing the instruction throughout the entire program. (*Students are responsible for their own transportation to and from the various facilities utilized for the practice of nursing.*) Community based practice of nursing will most likely require individual means of transportation for agency and home visiting. During the professional portion of the curriculum, theory and laboratory are directed by faculty members. Among the agencies used for student experience are the following:

- Albert Einstein Medical Center, Philadelphia, PA
- Alfred I. DuPont for Children, Wilmington, D
- Belmont Center for Comprehensive Treatment, Philadelphia, PA
- The Bryn Mawr Hospital, Bryn Mawr, PA
- Children's Hospital of Philadelphia, Philadelphia, PA
- Crozer-Chester Medical Center, Chester, PA
- Delaware County Memorial Hospital, Drexel Hill, PA
- Graduate Hospital, Philadelphia, PA
- Holy Redeemer Nazareth Visiting Nurse Agency, Philadelphia, PA
- Hospital of the University of Pennsylvania, Philadelphia, PA
- Jefferson Home Health, Bryn Mawr, Pa
- Lankenau Hospital, Philadelphia, PA
- Learning Resource Center, College of Nursing
- Little Flower Manor, Darby, PA
- Main Line Rehabilitation and Nursing Center, Paoli, PA
- Medical College of Pennsylvania, Philadelphia, PA
- Mercy Fitzgerald Hospital, Darby, PA
- Mercy Hospital of Philadelphia, PA
- Montgomery Hospital, Norristown, PA
- Pennsylvania Hospital, Philadelphia, PA
- Presbyterian Hospital Home Health, Philadelphia, PA
- St. Christopher's Hospital for Children, Philadelphia, PA
- St. Ignatius Nursing Home, Philadelphia, PA
- St. Joseph's Villa, Flourtown, PA
- Saunders' House, Wynnewood, PA
- Thomas Jefferson University Hospital, Philadelphia, PA



## College of Nursing

Veterans Administration Medical Center, Philadelphia, PA  
Visiting Nurse Association, Philadelphia, PA

Selected school systems, day-care centers, community health centers, senior citizen centers, and industries are also used.

### Health and Wellness Concentration

The Health and Wellness Concentration encompasses an understanding of the concepts of healthy living and nutrition and the knowledge of the changing health care system. The knowledge obtained in this concentration can be applied to studies in the areas of social sciences, business and psychology. Requirements for the minor include NUR 2200, NTR 2120 and NUR 7080. Students then choose one of the following courses to complete the requirement: NUR 4800, NUR 4802, NUR 7040, NUR 7081, NUR 7082, NTR 7120. The concentration requirement is 12 credits and is open to all non-nursing majors. Students must have junior status to take the 7000 level courses.

# Part-Time Studies

**James R. Johnson, M.S.**, Director  
**Suzanne F. Allen, M.Ed.**, Assistant Director

## History and Objectives

For more than 80 years, the Division of Part-Time Studies has fulfilled the educational needs of thousands of men and women who were unable to or did not wish to pursue a regular full-time day program. Among those it serves are: high school graduates who are unable to undertake a regular full-time day program but wish to undertake or complete an unfinished baccalaureate degree program; professionals who seek to update and expand their knowledge and skills; college graduates who lack undergraduate requirements for admission to graduate or professional school or who are seeking initial secondary school certification or additional endorsements for secondary school certification; high school graduates who do not qualify for acceptance as degree candidates but who seek the opportunity to prove themselves as non-matriculated students with the chance to matriculate upon the successful completion of a stipulated number of courses; and men and women of all ages who are simply interested in taking courses to enrich their personal lives. Senior citizens (age 65 and over) are eligible to enroll in undergraduate courses for personal enrichment only, but they are not charged for tuition. They may register AFTER the drop/add period, which is the first week of the semester, in courses in which the enrollment limit has not been reached.

Part-Time Studies provides comprehensive advising services at registration time and throughout the year to assist students in planning their educational careers and academic schedules. Each semester begins with an orientation for all new students to acquaint them with the general regulations and services of the Part-Time Studies division and the University. The University Counseling Center and the Career Services Office provide additional services to the Part-Time Studies student.

Although Part-Time Studies mainly serves the part-time student, it is possible, with permission, for a student to take a full-time course load. Even on a part-time basis, however, a Part-Time Studies student can complete a baccalaureate program in five to six years. With permission of the Director or academic advisor, Part-Time Studies students may enroll in day classes.

Requirements for admission, advancement, and graduation are the same as those prevailing in the full-time undergraduate colleges. As a result, matriculated students may transfer from Part-Time Studies to one of the full-time colleges without loss of credit. Indeed,

## Part-time Studies

many high school graduates begin their degree programs in Part-Time Studies and subsequently transfer to the appropriate day college. Conversely, students who, usually for financial reasons, are obliged to discontinue as full-time students, are able to continue their studies as part-time students in Part-Time Studies.

The degrees pursued in Part-Time Studies are Villanova University degrees, in every respect commensurate with those offered by the full-time colleges of the University. The business programs are accredited by the American Assembly of Collegiate Schools of Business, and the computer science program by the Computer Science Accreditation Commission of the Computing Sciences Accreditation Board.

## Admission

Application forms for admission to part-time undergraduate study may be obtained from the Director, Part-Time Studies, Villanova University, 800 Lancaster Avenue, Villanova, Pennsylvania 19085.

Students seeking admission into degree programs (matriculated status) must submit complete records from all secondary schools and institutions of higher learning previously attended. Students seeking postgraduate status must submit transcripts showing degree and graduation date or a copy of the diploma from their baccalaureate degree institution. Students applying for non-matriculated (non-degree program) status must submit secondary school records indicating graduation or proof of receipt of a state equivalency diploma. *To avoid delay, address all material to Part-Time Studies.* Applicants for matriculated status are requested to have a set of complete records on file at least four weeks prior to registration in order to be evaluated in advance of enrollment. Registration as a non-matriculated student is suggested in those cases where transcripts are delayed.

Secondary school requirements for entrance to a specific curriculum are outlined in the University section of this *Catalog*. The requirement for non-matriculated status is proof of graduation from an accredited secondary school or proof of receipt of a General Educational Development Diploma.

Applicants for matriculation in a degree program will be evaluated on their previous academic records in high school and college, if applicable. Those who are not initially accepted as matriculated students (candidates in a degree program) may be accepted as non-matriculated students. Students will retain non-matriculated status until completion of at least 18 credit hours at Villanova at which time they will be re-evaluated for matriculation.

Students attending other institutions who are in good standing and have permission to take undergraduate courses at Villanova may do so as may high school seniors with strong academic backgrounds who have permission from their guidance counselor or principal. Senior citizens, those age 65 or older, may enroll in undergraduate courses for personal enrichment only without the payment of tuition. Information on the application procedures for these particular categories may be obtained from the Part-Time Studies office.

## Readmission

A student who has not attended classes in Part-Time Studies for two years or longer is considered an inactive student. To be readmitted, a PTS application form, from the PTS office in 107 Vasey Hall, must be completed. When the form is received, the record will be reviewed, and a letter sent to the applicant indicating readmission status.

## Degrees Offered

Villanova University offers the following programs of study for the Bachelor=s Degree which may be completed through Part-Time Studies: Accountancy, Business Administration, Communication, Computer Science, Information Science, Education (Secondary Education, Teacher Certification), English, Liberal Arts, History, and Human Services.

In addition to the Bachelor=s degree, the following programs are available: Associate of Arts, Accountancy Certificate, Business Administration Certificate, and Secondary Teacher Certification.

## Degree Requirements

To qualify for the Bachelor=s degree, a student must complete successfully the requirements for the degree as described in this *Catalog*. Villanova University reserves the right to change program requirements without prior notice.

The Baccalaureate degree is awarded and a student is graduated when the curriculum prescribed by the University for one or more of the various degree programs has been satisfied. In addition to the curricular requirements, candidates for graduation must meet the following requirements:

- ≪≪ A minimum of 40 courses and 2 labs (varies according to major).
- ≪≪ A minimum of 122 credits (varies according to major).
- ≪≪ A minimum final cumulative quality point average of 2.0.
- ≪≪ A minimum of half of all courses required for the degree earned at Villanova.
- ≪≪ A minimum of half of the core requirements earned at Villanova.
- ≪≪ A minimum of half of the requirements for the major degree program earned at Villanova.
- ≪≪ The final 30 credits (senior year) must be earned at Villanova.

Detailed information on all the following degree programs may be found in the specific College and Department sections of this *Catalog*; additional specific information may be obtained from the Part-Time Studies office.

## Bachelor of Arts/Bachelor of Science

Students in the Bachelor of Arts program in Part-Time Studies may major in Communication, Education, English, History, Human Services, or Liberal Arts. The degree requirements may be found under the departmental listings contained in this *Catalog*. Within

## Part-time Studies

the Bachelor of Arts degrees, minors are available in Business, Communication, Computer Science, Education, English, History, Human Services, Philosophy, Political Science and Sociology.

The Core Curriculum of the College of Liberal Arts and Sciences is applicable to these majors offered in Part-Time Studies: Bachelor of Arts in Liberal Arts, Communication, English, History, and Human Services; and Bachelor of Science in Computer Science, Education, and Information Science. A description of the Core Curriculum may be found in the College of Liberal Arts and Sciences section of this *Catalog*.

For the Bachelor of Arts Degree in Liberal Arts, Liberal Arts with a Business Minor, Communication, English, History, and Human Services, 40 courses and a minimum of 122 credits are required.

For the Bachelor of Science in Computer Science, 41 courses and a minimum of 129 credits are required. For the Bachelor of Science in Information Sciences, 40 courses and a minimum of 124 credits are required.

For the Bachelor of Science in Education, course and credit requirements vary according to the subject area of certification. The twelve subject areas available for certification are: Biology, Chemistry, Communication, English, French, General Science, German, Latin, Mathematics, Physics, Social Studies, and Spanish. Required courses in some subject areas, including student teaching, are available during day times only. *Day classes are billed at the day tuition rates.*

## Associate of Arts

The Associate of Arts Degree program is designed for students who are not seeking a baccalaureate degree but still wish to follow a specific curriculum. The Associate of Arts Degree program may be completed in half the time it normally takes to complete the baccalaureate program. The program requires 20 courses and a minimum of 60 credits. At least half of the credits (30) must be taken at Villanova. A 2.0 cumulative QPA is required to attain the A.A. Students completing the program with a 2.0 average may continue toward the Bachelor of Arts without loss of credit.

Subject	Credits
ENG 1050, Advanced Literature <sup>1</sup>	6
Foreign Language 1121, 1122	6
HIS 1050, Advanced History I	6
MAT 1210, 1220, 1230, 1235; or	
CSC 1010, 1020, 1030, 1040	6
PHI 1050, Advanced Philosophy <sup>1</sup>	6
THL 1050, Advanced Theology <sup>1</sup>	6
ETH 2050	3
Humanities Elective <sup>2</sup>	3
Social Science Electives <sup>3</sup>	6
Free Electives	12

<sup>1</sup>Advanced courses in these subjects must be numbered 2000 and above.

<sup>2</sup>Humanities Electives: Art History, Classical Studies, Communication, English, History, Modern Languages, Philosophy, Theology and Religious Studies, Theatre.

<sup>3</sup>Social Science Electives: Economics, Geography, Political Science, Psychology, Sociology.

## Bachelor of Science in Accountancy

The B.S. in Accountancy requires a minimum of 41 courses and 123 credits. Details are to be found in the College of Commerce and Finance Section of this *Catalog*.

## Bachelor of Science in Business Administration

The B.S. in Business Administration requires a minimum of 41 courses and 123 credits. The following courses are required.

### FRESHMAN YEAR

<i>Courses</i>	<i>credits</i>	<i>Courses</i>	<i>Credits</i>
DIT 1006	3	ENG 1010	3
ECO 1001, 1002	6	MAT 1330, 1335	6
PHI 1050	3	CHS 1000, 1001	6
BL 1090	3		
<b>SOPHOMORE YEAR</b>			
ACC 1101, 1102	6	DIT 2010	3
Social Science <sup>1</sup>	3	HISTORY <sup>2</sup>	3
COM 1101	3	THL 1050	3
ENG 1050	3	Free Elective	6
ETH 2050	3		

<sup>1</sup>Social Science: choose from Geography, Sociology, Political Science, Psychology.

<sup>2</sup>History: choose from any course in the department.

### JUNIOR YEAR

FIN 1113	3	Major Courses	6
MGT 1102	3	Natural Science <sup>3</sup>	3
DIT 1141	3	Non-business Electives <sup>4</sup>	6
MKT 1137	3		
ECO 3109	3		

<sup>3</sup>Natural Science: choose from AST, BIO, CHM or PHY with corresponding lab.

<sup>4</sup>Accounting majors take a third required accounting course during the junior year in place of a non-business elective course.

## Part-time Studies

### SENIOR YEAR

Humanities <sup>5</sup>	3	THL Elective	3
Major courses <sup>6</sup>	12	Social/Natural Science <sup>7</sup> /History Elective	3
MGT 3301	3	Free Electives	6

<sup>5</sup>Humanities: choose from Art History, Classical Studies, English, Modern Languages, Philosophy or Theatre.

<sup>6</sup>Accounting majors: it is recommended that BL 2185 be substituted for one free elective.

<sup>7</sup>Choose from Geography, Political Science, Psychology, Sociology, the Natural Sciences, or History.

## Certificate Programs

Several certificate programs are available through Part-Time Studies. Certificate programs are designed for individuals who already have bachelor=s degrees but wish to develop expertise in a particular area. The following programs are available:

**Accountancy Certificate.** The Accountancy Certificate is designed to allow individuals who possess bachelor=s degrees in liberal arts or other non-business majors to acquire expertise in accounting. Besides providing an educational opportunity for persons interested in securing careers in accounting in a diversity of environments in industry, business and government, the program also meets the needs of individuals who work in smaller businesses or who are self-employed and need knowledge of accounting practices to make critical business decisions. The certificate requires 24 accounting credits which the state of Pennsylvania currently mandates as the minimum requirement to sit for the CPA examination.

*To be eligible for this certificate, a student must possess a bachelor=s degree from an institution accredited by the appropriate regional accrediting association.* Eight courses must be completed: ACC 1101, 1102, 2310, 2320, 2430, 2450, 2460, and 2470. Students are required to have any prerequisite courses necessary (indicated in the course description) for any particular course in the certificate program. A maximum of 2 courses (6 credits) will be allowed in transfer. No other course substitutions will be allowed.

**Business Administration Certificate.** The Business Administration Certificate provides business-related knowledge and skills and is especially useful to individuals with bachelor=s degrees in liberal arts or other non-business majors who wish to acquire expertise in business areas. The program also meets the needs of individuals who work in smaller businesses or who are self-employed. *To be eligible for this certificate, a student must possess a bachelor=s degree from an institution accredited by the appropriate regional accrediting association.*

Eight courses must be completed: four specifically required and four electives from the approved list of electives, which represent more advanced treatments of the required courses.

Students are required to have any prerequisite courses necessary (indicated under the course description) for any particular course in the certificate program. A maximum of 2 courses (6 credits) will be allowed in transfer. No other course substitutions will be allowed.

The *required courses* are: ACC 1101, 1102; ECO 1001 or 1002; MGT 1102;

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The *elective courses* must be chosen from the following:

ACC 2310, 2320, 2340, 2430, 2450, 2460, 2470,

BL 1090, 2135, 2150, 2170, 2185

DIT 1141, 2006, 2010,

ECO 1001 or 1002 (the one not taken for the required course) 2110, 3106,

FIN 1113, 2323

MGT 2153, 2155

MKT 2220, 2225, 2277, 2280

## Secondary Teacher Certification

Students who possess a Bachelor=s degree and want to pursue Teacher Certification on a part-time or full-time basis should apply through the Office of Part-Time Studies. The twelve subject areas which can be pursued at Villanova are: Biology, Chemistry, Communication, English, French, General Science, German, Latin, Mathematics, Physics, Social Studies, and Spanish. Details on Secondary Teacher Certification can be found in the College of Liberal Arts and Sciences section of this catalog.

## Continuing Studies

The Office of Continuing Studies offers a great variety of non-credit educational opportunities. These offerings range from one day seminars to eight, twelve, and twenty-five week programs. Many are offered on Villanova=s campus; others are delivered off-campus, at convenient Delaware Valley corporate training sites. Some of the programs offered include: Alcohol and Drug Counseling; Paralegal Education; Marketing Communications; Management Courses; Human Resource Management; Fund Raising; Payroll Administration; Commercial Real Estate; American Society of Training and Development Seminars; Project Management Training; and Microsoft Certified Systems Engineer Training.

Many of these programs lead to or prepare one for professional certification. For information on any of these programs or for a complete listing of all offerings, contact the Office of Continuing Studies (610/519-4310), 102 Vasey Hall.

## Non-Matriculated and Postgraduate Students

A student may enroll in Part-Time Studies without seeking a degree. Such students are classified as *non-matriculated students* or *postgraduate students*.

Postgraduate students are students who have already earned a bachelor=s degree and are not seeking a second degree but merely taking undergraduate courses. These students are free to enroll in day or evening classes at Villanova through Part-Time Studies. Available space in day classes, however, may restrict their curricular options.

Non-matriculated students have not yet earned a bachelor=s degree but seek to take college courses for a variety of reasons. Such students include those who:

- ⚡ Want to take college courses to develop a particular expertise or for purposes of personal enrichment.
- ⚡ Have applied for degree status but with current academic records have not been accepted. Such students may need to remedy deficiencies or establish their academic



## Part-time Studies

qualifications before applying or reapplying for degree programs. The conditions to be met before their records will be reevaluated are specified in the letter from the PTS Admissions Office.

- ✂✂ Have applied for degree status, but the credentials presented have been inadequate to enable the Admissions Committee to render a positive decision. These students are generally advised to pursue, as non-matriculated students, the program for which they requested admission, and to compile at least 18 credits, thus demonstrating their ability to complete the program requirements. After the students complete the 18 credits, they may request reevaluation.

Non-matriculated students or postgraduate students who wish to change to matriculated status must apply and complete the appropriate request form in the Part-Time Studies office. Students will be responsible to see that the PTS Admissions Committee has all necessary credentials for consideration of their requests (See the section on Admission, above).

Generally, non-matriculated students are urged to request degree status if possible rather than accumulate a large number of credits without any specific goals. Thirty credits should be taken as a guide in this regard.

Non-matriculated and postgraduate students must maintain good academic standing by carrying at least a 2.00 cumulative quality point average.

## Flexible Enrollment Options

### Fastforward at Villanova

Villanova's FastForward courses are designed to help adult students move forward quickly toward graduation. These courses are scheduled on seven Saturdays, either in the morning or afternoon, for a class period of 3 2 hours, and will be supplemented with on-line instruction. FastForward 1 is held from late August till the middle of October, FastForward 2 from mid-October to mid-December, FastForward 3 from mid-January through late February, and FastForward 4 from March to late April. FastForward courses may also be available on weekday evenings.

Each course can be completed in only half a semester but is a complete three-credit class with fewer on campus class hours.

### Variable Course Load

Students can vary the number of courses taken each semester, depending on their professional and personal demands. An average course load for many part-time students is two per semester. By utilizing our FastForward courses, students may take a total of four courses in a semester: two during the regular semester, and one in each of the FastForward sessions. Students who take four courses in fall, four in spring, and two in the summer, will complete ten courses per year (the same amount as a full-time day student).

## Evenings/Weekends

Students can choose classes that meet one night a week for 14 weeks, on Saturdays for seven weeks with additional online instruction (FastForward), or on Friday nights and Saturdays (one credit psychology seminars).

## Summer Session

Students who wish to quicken the pace of their degree program can continue studies year-round by attending summer classes. Villanova offers an eight-week summer evening session that runs from the end of May through the end of July.

## Distance Education

Because technology is an integral part of the modern college classroom, Villanova University also offers classes via Internet and video during Summer Session as well as during the academic year.

# Academic and Student Policies and Information

With the exceptions and specifications listed below, students in Part-Time Studies are governed by the same regulations and policies that apply to students in the four undergraduate Villanova Colleges. See the general University section and the individual college sections of this *Catalog* for further information on all the following. *NOTE: it is the responsibility of the student to know and observe all academic policies and regulations. Such policies may change without prior notice.*

## Academic Standing

To qualify for a bachelor's degree, a candidate must earn a cumulative quality point average of at least 2.00. Part-Time Studies students who wish to take courses in the day sessions must also maintain a 2.00 cumulative quality point average. A student's record will be submitted to the Academic Standing Committee for appropriate action (ranging from probation to dismissal) if the average has fallen below 2.0. If a student is placed on probation their course load may be restricted, and they must achieve a specified grade point average in that semester in order to continue to be eligible for enrollment.

## Address Changes

Important mailings are sent to students throughout the academic year. It is essential that all students keep the PTS office informed of any change in their permanent home address and/or mailing address. Otherwise, we cannot be responsible for students not receiving material through the mail. Change of Address forms are available in the PTS office, 107 Vasey Hall. Students must also check their Villanova e-mail account for information from the Registrar and other offices.

## Advanced Academic Credit

In addition to the provisions for advanced academic credit listed in each College=s section of this *Catalog*, Part-Time Studies students may gain credit by examination by means of the College Level Examination Program (CLEP) administered through the College Entrance Examination Board. Credit is awarded for the CLEP Subject Examinations and NOT for the General Examinations. The credit must be applicable to the student=s program.

CLEP credits are considered transfer credits. A maximum of 60 transfer credits, which could include CLEP credits and credits from other colleges or universities, may be accepted toward a degree program.

A score of 60 or higher on an approved Subject Examination will be considered for credit. For further information, students should contact the Part-Time Studies office.

## Advising

The Director and Assistant Director of Part-Time Studies are responsible for academic advising. They are available during evening or daytime hours. Appointments in the office or via telephone may be arranged through the Part-Time Studies office (610/519-4300).

Accountancy	Mr. James Johnson/Ms. Suzanne Allen
Accountancy Certificate	Ms. Suzanne Allen
Business Administration	Mr. James Johnson/Ms. Suzanne Allen
Business Administration Certificate	Ms. Suzanne Allen
Communication	Dr. Terry Nance
Computer Science	Dr. Daniel Hardt/Dr. Lillian Cassel
Education, Teacher Certification	Dr. Connie Titone
English, Liberal Arts, History	Mr. James Johnson/Ms. Suzanne Allen
Human Services	Dr. Ken Davis
Non-Matriculated and Assoc. of Arts	Mr. James Johnson/Ms. Suzanne Allen
Postgraduates	Mr. James Johnson/Ms. Suzanne Allen

Each student is assigned an academic advisor who may be contacted for assistance in making those decisions that affect academic goals. The student should consult with an advisor at least once a semester to insure proper course selection and advancement in his program. *Note: Although advisors will do all they can to assist students, the students themselves are responsible for securing accurate and timely information about policies and procedures affecting their academic programs, for understanding the requirements of degree programs they choose, for planning for the orderly fulfillment of those requirements, and for keeping accurate records of their academic progress and transactions.* Additional information and policies may be found in the University section and in the individual college sections of this *Catalog*.

## Auditing

Students who are not working for college credits may enroll for audit status with the consent of the Director of Part-Time Studies and the student's academic advisor. Additional information may be found in other sections of this catalog.

## Change of Degree Program

A student who wishes to change degree programs must request the change on a form available in the Part-Time Studies office.

## Class Status

Matriculated students (those who have been accepted into a bachelor's degree program) with under 30 credits *completed* are considered Freshmen; with 30-59 credits, Sophomores; with 60-89 credits, Juniors; and with 90 credits or more, Seniors.

## Dean's List

To be included on the Dean's List, a student must be matriculated in a degree program, must achieve a 3.5 GPA, and must carry at least 6 credits per semester, none of which can be a satisfactory/unsatisfactory course. Letters of congratulations are mailed to each student who achieves this high honor. If a student so desires a letter can also be sent to his or her employer. The Dean's List pertains to the fall and spring semesters.

## Drop and Add

Students may make changes in their schedules during the ADrop and Add@ period –the first five class days of each semester. To eliminate a course, add a course, or both, a student must obtain a Adrop and add form@ in the PTS office, complete the information, and secure the academic adviser's signature. To change only evening courses, the student may leave the form in the PTS office. To change day courses, students must take the completed and signed form to the Registrar's Office or on-line, via Novasis. The Registrar's Office then will send a revised copy of the schedule. If the information is not accurate, the student should contact the PTS office for assistance. *NOTE:* In order not to be charged for a class, it must be dropped officially from the schedule *before* the start date of classes listed in the Academic Calendar.

## Financial Planning

Villanova offers several easy-payment options to our students as well as payment by Discover, Visa or MasterCard. Students may also elect to use the deferred payment plan, for a small fee, whereby they pay their tuition in scheduled increments over the course of the semester.

Another valuable resource for students can be their employers, many of whom will pay tuition for their employees who attend Villanova. Students who are employed either full or part-time should check their company's policy and take advantage of that benefit if it is available to them.

## Part-time Studies

A list of scholarships, local and national, for adult part-time students is available in the PTS office.

### Graduation Application

A student who expects to receive a degree is required to make official application for the degree no later than November 1 for May completion, April 1 for September completion, and August 1 for December completion. A prospective graduate card can be obtained from the Part-Time Studies Office. *This is an extremely important procedure.* The student's advisor will review his or her record and verify the completion of all graduation requirements.

### Parking

Parking permits may be purchased at walk-in registration or at the Department of Public Safety (Farrell Hall, 824 Lancaster Avenue). Further information is available from the University Parking Office (610/519-6990). All students who utilize Villanova parking lots must have a current parking permit.

### Personal Safety

Students are requested to report all *Crimes* and *Emergencies* immediately to the Department of Public Safety (610/519-4444). Individuals who desire an escort or other assistance should call 610/519-6979.

### Registration

All new students who have been accepted by Part-Time Studies and currently enrolled students in good standing are eligible for registration. It is the student's responsibility to see that they select courses in accordance with the requirements of their program and in consultation with their academic advisor.

Students are encouraged to register early, whether in person, via Novasis, by mail, or by *Fax*. Further information may be obtained from the fall or spring brochures or contact the Part-Time Studies office.

### Student Programs

During the course of both the fall and spring semesters, Part-Time Studies offers programs to help students become acquainted with the resources on campus and to aid in the transition to academic life. In the past the following programs have been scheduled: Orientation, Campus Tour, College Survival Skills (study skills workshop), Library Tour, and Career Services workshops. New programs can be added as the need arises. Suggestions are always welcome. Information on various programs is available from the PTS office.

### Student Activities

Villanova offers approximately 150 different student organizations which fall under the jurisdiction of the Office of Student Development, located in 214 Dougherty Hall, 610/519-4210. For information on the various groups, visit or contact that office. PTS students are allowed to participate in any activity on campus except a varsity level sport.

## Villanova University

The *NiteLine*, the newspaper published for PTS students, serves as a vehicle for disseminating news of interest to the Part-Time Studies student body.

### Transfer of Credits

Transfer provisions are described under AAdmissions@ in the University section of this *Catalog*. Applications for transfer into Part-Time Studies should be made in the Part-Time Studies Office.

PTS students who wish to take courses at other institutions should seek the approval of the Director or Assistant Director of PTS as to the particular institution they wish to attend and as to the particular course(s) they wish to take.

### University Senate

The University Senate, an advisory group to the University President and the Board of Trustees, includes representation from Part-Time Studies. Junior class standing is a requirement for eligibility to serve as the Part-Time Studies representative. Students who may be interested in serving in the Senate should contact the Director, Part-Time Studies.

### Withdrawal from a Course

After the drop/add period, which is the first week of classes, any student who is unable to complete a course and wishes to terminate attendance in that course must do so through the official withdrawal procedure. *Discontinuance of attendance or notice to the instructor does not constitute official withdrawal.*

Students are required to notify the Part-Time Studies office promptly, either in writing or by completing the appropriate form in the Part-Time Studies office. A phone call to the PTS office is not acceptable. If the student withdraws in person, the date on the form will be considered the official withdrawal date. If the student withdraws via letter, the postmark date on the letter will be considered the official withdrawal date.

After the last date for Authorized Withdrawal (the Friday after mid-term break), a student may petition for withdrawal without penalty only for valid reasons. To do so, a student must submit a signed Request for Authorized Withdrawal, signed by the professor and/or laboratory instructor, along with the standard form for the Dean=s review.

If a student is granted the Authorized Withdrawal, the course remains on his transcript but the designation WX will appear in the grade column. WX signifies that the withdrawal was approved, and there is no grade given or calculated for that course. A student who leaves class without officially withdrawing will continue to incur absences and will receive the final grade of Y (unauthorized withdrawal) which is calculated as an F in the grade point average.

# Full-time Faculty

- EDMUND J. DOBBIN, O.S.A., 1987; A.B., 1958, Villanova University; M.A., 1962, Augustinian College; M.S., 1964; S.T.L., 1968, The Catholic University of America; S.T.D., 1971, University of Louvain (Belgium). *President; Professor, Theology and Religious Studies*
- TEMERSHAH AHMADI, 2001; B.S., 1988, California State University, Hayward; M.S., 1993, Ph.D., 1996, University of California, Los Angeles. *Assistant Professor, Chemistry*
- CHIJI AKOMA, 2001; B.A., 1988, University of Calabar, Nigeria; M.A., 1991, University of Ibadan, Nigeria; Ph.D., 1998, Binghamton University. *Assistant Professor, English*
- GLEN ALEXANDRIN, 1970; B.A., 1958, University of Alberta; Ph.D., 1967, Clark University. *Assistant Professor, Economics*
- CAROL AMBRUSTER, 1987; B.S., 1971, Northeastern University; Ph.D., 1984, University of Pennsylvania. *Assistant Professor, Astronomy and Astrophysics*
- SEEMEE ALI, 2001, B.A., 1989, Austin; M.A., 1998, Ph.D., 2000, University of Dallas. *Post Doctoral Fellow, Core Humanities*
- MOENESS G. AMIN, 1984; B.S.E.E., 1976, Cairo University, Egypt; M.S.E.E., 1980, University of Petroleum and Minerals, Saudi Arabia; Ph.D., 1984, University of Colorado. *Professor, Electrical and Computer Engineering*
- JAMES W. ARRISON, 1992; B.S., 1983, Villanova University; Ph.D., 1990, University of Pennsylvania. *Assistant Professor, Physics*
- DEBRA A. ARVANITES, 1983; B.S., State University of New York, 1977; M.B.A., 1979; Ph.D., 1982, Rensselaer Polytechnic Institute. *Assistant Professor, Management*
- THOMAS ARVANITES, 1989; B.A., 1977, M.A., 1979, Ph.D., 1986, State University of New York at Albany. *Associate Professor, Sociology*
- CHERYL C. ASHER, 1984; B.A., 1977, Boston College; Ph.D., 1981, University of Pennsylvania. *Assistant Professor, Economics*
- CHARLES E. ASHLEY, 1988; B.S., 1981, University of Toledo; M.S., 1983, Rensselaer Polytechnic Institute; Ph.D., 1986, Rensselaer Polytechnic Institute. *Assistant Professor, Mathematical Sciences*
- HASHEM ASHRAFIUN, 1988; B.S., 1982, M.S., 1984, Ph.D., 1988, State University of New York at Buffalo. *Associate Professor, Mechanical Engineering*
- FELIX B. ASIEDU, 1997; B.S., 1986, Swarthmore College, M.A., 1994, Ph.D., 1997, University of Pennsylvania. *Post Doctoral Fellow, Core Humanities*
- EARL D. BADER, 1968; B.A., 1963, Ohio State University; M.A., 1965, Ph.D., 1969, Indiana University. *Assistant Professor, English*
- WILBER W. BAKER, 1968; A.B., 1956, Grinnell College; M.S., 1959, Iowa State University; Ph.D., 1964, Oregon State University. *Associate Professor, Biology*
- RONALD A. BALSAMO, 1998; B.S., 1984, Delaware Valley College; M.S., 1986, Washington State University; Ph.D., 1994, University of California, (Riverside). *Assistant Professor, Biology*
- ANIL K. BAMEZAI, 2002; B.S., 1979, M.S., 1982, Jammu University; Ph.D., 1987, All India Institute of Medical Sciences. *Assistant Professor, Biology*

## Full-time Faculty

- HAE-KYONG BANG, 1997; B.A., 1983, Ewha Women's University; M.A., 1986, University of Texas at Austin; Ph.D., 1993, Michigan State University. *Assistant Professor, Marketing*
- DAVID M. BARRETT, 1990; B.A., 1973, University of Notre Dame; M.A., 1985, University of Essex (England); Ph.D., 1990, University of Notre Dame. *Associate Professor, Political Science*
- NOAH P. BARSKY, 1998; B.S./M.S., 1992, Pennsylvania State University; Ph.D., 1998, University of Connecticut. *Assistant Professor, Accountancy*
- THOMAS L. BARTLOW, 1968; B.S., 1963, State University of New York at Albany; M.S., 1966, Ph.D., 1969, State University of New York at Buffalo. *Assistant Professor, Mathematical Sciences*
- JOSEPH BASSO, 1999; B.A., 1984, M.A. 1988, Rowan University; Ph.D., 1992, Texas A&M University; *Assistant Professor, Communication.*
- AARON M. BAUER, 1988; B.S., 1982, Michigan State University; Ph.D., 1986, University of California, Berkeley. *Professor, Biology*
- JOSEPH W. BAUSCH, 1993; B.S., 1985, University of Evansville; Ph.D., 1990, University of Southern California. *Assistant Professor, Chemistry*
- ROBERT E. BECK, 1966; B.S., 1963, Harvey Mudd College; M.A., 1965, Ph.D., 1969, University of Pennsylvania. *Professor, Computing Sciences*
- ELAINE E. BELETZ, 1983; B.S.N., Fairleigh Dickinson University, 1970; M.A., New York University, 1974, M.Ed., 1978; Ed.D., 1979, Columbia University. *Associate Professor, Nursing*
- MARILYN R. BELKIN, 1992, B.A., 1970, M.S., 1974, Carnegie-Mellon University. *Assistant Professor; Mathematical Sciences*
- GUSTAVO BENAVIDES, 1989; B.A., 1971, Universidad de San Marcos (Lima); M.A., 1977, Ph.D., 1982, Temple University. *Associate Professor, Theology and Religious Studies*
- EILEEN BERENS, 1990; B.A., 1957; Immaculata College; M.A. 1968, Temple University, *Assistant Professor, Communication*
- JAMES M. BERGQUIST, 1963; B.A., 1955, University of Notre Dame; M.A., 1956, Ph.D., 1966, Northwestern University. *Professor Emeritus, History*
- CAROL A. BESSEL, 1995; B.S., 1988; Ph.D., 1993, State University of New York at Buffalo. *Associate Professor, Chemistry*
- MICHAEL BERTHOLD, 1987; B.A., 1977, Cornell University; M.A., 1979, Ph.D., 1987, Harvard University. *Associate Professor, English*
- MORGAN BESSON, 1984; B.S., 1975, Villanova University; M.A., 1979, Boston University; Ph.D., 1986, Lehigh University. *Assistant Professor, Physics*
- JOSEPH BETZ, 1966; B.S., 1961, St. Joseph's University; M.A., 1964, University of Chicago; M.A., 1966, Villanova University; Ph.D., 1973, University of Chicago. *Professor, Philosophy*
- EMILY M. BINNS, 1977; A.B., 1963, College of Chestnut Hill; M.A., 1966, Ph.D., 1969, The Catholic University of America. *Professor, Theology and Religious Studies*
- WILLIAM J. BIRDSALL, 2000; B.S., 1966, University of Maine; Ph.D., 1971, Pennsylvania State University, *Professor, Chemistry*
- SCOTT BLACK, 1999; B.A., 1988, McGill University; M.A., 1995, Ph.D., 1999 The Johns Hopkins University. *Assistant Professor, English*



PAMELA BLEWITT, 1976; B.A., 1967, University of Rochester; M.A., 1969, Teachers College, Columbia University; Ph.D., 1977, University of Rochester. *Professor, Psychology*

P. GREG BONNER, 1985; A.B., 1968, Boston College; M.A., 1974, Ph.D., 1984, Temple University. *Associate Professor, Marketing*

JAMES P. BORDEN, 1986; B.A., 1979, East Stroudsburg University; M.B.A., 1981, Carnegie-Mellon University; Ph.D., 1986, Drexel University. *Associate Professor, Accountancy*

SHERYL PERLMUTTER BOWEN, 1987; B.A., 1978, Pennsylvania State University; M.A., 1982, University of North Carolina; Ph.D., 1986, University of Massachusetts. *Associate Professor, Communication*

PATRICIA K. BRADLEY, 1997; B.S.N., 1977, Temple University; M.S.N., 1986, Ph.D., 1998, University of Pennsylvania. *Assistant Professor, Nursing*

SARAH VAUGHAN BRAKMAN, 1993; B.A., 1986, Mount Holyoke College; M.A., 1990, Ph.D., 1994, Rice University. *Assistant Professor, Philosophy*

REBECCA J. BRAND, 2002; B.A., 1996, Vassar College; M.S., 1998, University of Oregon; Ph.D., 2002, University of Oregon. *Assistant Professor, Psychology*

WAYNE G. BREMSER, 1974; B.S., 1965, M.B.A., 1966, Drexel University; Ph.D., 1974, University of Pennsylvania. *Professor, Accountancy*

WALTER BROGAN, 1986; B.A., 1968, Catholic University; M.A., 1973, Northern Illinois University; Ph.D., 1981, Duquesne University. *Professor, Philosophy*

VICTOR D. BROOKS, JR., 1974; B.A., 1968, La Salle College; M.S., 1969, Ed.D., 1974, University of Pennsylvania. *Professor, Education and Human Services*

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ELIZABETH BRUDERLE, 1990; B.S.N., 1988, Neumann College; M.S.N., 1990, Villanova University. *Instructor, Nursing*

KEVIN BUCKLEY, 1997; B.E.E., 1976, M.S.E.E., 1980, Villanova University; Ph.D., 1986, University of Southern California. *Professor, Electrical and Computer Engineering*

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MICHAEL E. BURKE, 1967; A.B., 1964, Holy Cross College; M.A., 1967, Ph.D., 1971, Duke University. *Associate Professor Emeritus, History*

DONALD X. BURT, O.S.A., 1967-72, 1982; A.B., 1952, Villanova University; M.A., 1955, Ph.D., 1960, The Catholic University of America. *Professor Emeritus, Philosophy*

THOMAS W. BUSCH, 1964; B.A., 1960, St. Joseph's College (Indiana); M.A., 1962, Ph.D., 1966, Marquette University. *Professor, Philosophy*

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RICHARD G. CANNULI, O.S.A., 1979; B.F.A., 1973, Villanova University; M.F.A., 1979, Pratt Institute. *Professor, Theatre*

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- THERESA CAPRIOTTI, 1995; B.S.N., 1978, State University of New York; D.O., 1983, New York College of Osteopathic Medicine; M.S.N., 1995, N.P., 1999, Villanova University. *Clinical Assistant Professor, Nursing*
- JOHN D. CAPUTO, 1968; B.A., 1962, La Salle College; M.A., 1964, Villanova University; Ph.D., 1968, Bryn Mawr College. *David R. Cook Endowed Chair, Professor, Philosophy*
- FRED J. CARRIER, 1966; B.A., 1952, Coe College; M.A., 1958, Northwestern University; Ph.D., 1968, University of Wisconsin. *Professor Emeritus, History*
- JOHN M. CARVALHO, 1986; B.A., 1976, University of California; M.A., 1979, Ph.D., 1987, Duquesne University. *Associate Professor, Philosophy*
- MICHELLE CASARIO, 1991; B.A., 1984, Elizabethtown College; M.A., 1987, Ph.D., 1991, Northeastern University. *Assistant Professor, Economics*
- ROBERT J. CASEY, 1985; B.M.E., 1944, Villanova University; M.S.M.E., 1951 University of Pennsylvania. *Industrial Professor, Mechanical Engineering*
- LILLIAN N. CASSEL, 1987; B.A., 1968, M.S., 1973, Ph.D., 1987, University of Delaware. *Professor, Computing Sciences*
- EDUARD G. CASILLAS, 1999; B.A., 1982, Bradley University, Ph.D., 1996, The Johns Hopkins University, *Assistant Professor, Chemistry*
- ANTHONY H. CATANACH, JR., 1998; B.B.A., 1975, M.A. 1991, University of New Mexico; Ph.D., 1994, Arizona State University. *Associate Professor, Accountancy*
- ROBERT H. CAVERLY, 1997, B.S.E.E., 1976, M.S.E.E., 1976, North Carolina State University; Ph.D., 1983, The Johns Hopkins University. *Associate Professor, Electrical and Computer Engineering*
- ANGELA M. CERINO, 1980; B.A., 1972, J.D., 1976, Temple University. *Assistant Professor, Business Law*
- RONALD A. CHADDERTON, 1981; B.S.C.E., 1968, M.S.C.E., 1974, Bucknell University; Ph.D., 1976, Carnegie-Mellon University; P.E. (PA). *Edward A. Daylor Endowed Chair, Professor and Chair, Civil and Environmental Engineering.*
- ARTHUR B. CHAPPELL, O.S.A., 1988; B.S., 1964, Villanova University; M.A., 1970, Augustinian College; M.A., 1972, Catholic University of America; S.T.L., 1986, S.T.D., 1987, Pontificia Universitas a S. Thoma Aq. in Urbe (Rome, Italy). *Assistant Professor, Theology and Religious Studies*
- EDWARD S. CHAR, 1998; B.E.E., 1996, M.S.E.E., 1998, Villanova University; *Instructor, Electrical and Computer Engineering.*
- PEGGY E. CHAUDHRY, 1991; B.S., 1980; University of Wisconsin-Stout; M.B.A., 1985, University of Wisconsin-LaCrosse; Ph.D., 1992, University of Wisconsin-Madison. *Assistant Professor, Management*
- SOHAIL S. CHAUDHRY, 1991; B.Sc.M.E., 1974, Mosul University; M.S., 1977, M. Phil., 1979, Ph.D., 1985, Columbia University. *Professor, Decision and Information Technologies*
- CHARLES L. CHERRY, 1968; A.B., 1964, Loyola College; M.A., 1966, Ph.D., 1968, The University of North Carolina. *Professor, English*
- YINLIANG CHI, 1986; B.A., 1957, Shanghai College of Finance and Economics; M.A., 1961, East China University. *Assistant Professor, Classical and Modern Languages and Literatures*

STEVEN CHIACCHIERE, 1988; 1983, B.S., Pennsylvania State University; 1987, M.A., Villanova University. *Instructor, Mathematical Sciences*

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THOMAS F. CHUBB, 1993; B.A., 1985, LaSalle University; M.A., 1993, Villanova University. *Instructor, Biology*

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ALVIN A. CLAY, 1955; B.S., 1951, Villanova University; M.B.A., 1957, Drexel University. *Dean-Emeritus, College of Commerce and Finance; Professor, Accountancy*

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WALTER E. CONN, 1978; A.B., 1962, Providence College; M.A., 1966, Boston College; Ph.L., 1966, Weston College; Ph.D., 1973, Columbia University. *Professor, Theology and Religious Studies*

LINDA CARMAN COPEL, 1985; B.S.N., 1977, University of Delaware; M.S.N., 1980, University of Texas at Arlington; M.S. in Marriage and Family Therapy, 1988, Texas Woman's University; Ph.D., 1984, Texas Woman's University. *Associate Professor, Nursing*

MARCIA COSTELLO, 1984; B.S., 1977, University of Rhode Island; M.S., 1980, Framingham State College; Ph.D., 1995, Temple University. *Assistant Professor, Nursing*

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JOHN A. COUGHLAN, 1996, A.B., 1952, Villanova University; M.A., 1958, Ph.D., 1965, Catholic University of America. *Visiting Professor, Economics*

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CHRISTINE M. CRUMLISH, 1989; B.S.N., 1974, Villanova University; M.S.N., 1978, University of Pennsylvania; Ph.D., 1989, New York University. *Assistant Professor, Nursing*

RAYMOND L. CUMMINGS, 1949; A.B., 1948, Villanova University; M.A., 1952, Georgetown University; Ph.D., University of Pennsylvania, 1964. *Professor Emeritus, History.*

ROBERT L. CURRY, 1991; A.B., 1979, Dartmouth College; M.Sc., 1981, Ph.D., 1987, The University of Michigan. *Associate Professor, Biology*

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- CHRISTOPHER T. DALY, 1999, B.A., 1982, St. Joseph's University; M.S., 1986, The College of William and Mary; Ph.D., 1994, Oxford University. *Post Doctoral Fellow, Core Humanities*
- MIRELA DAMIAN-IORDACHE, 2002; M.S., 1993 Polytechnic University of Bucharest; M.S., 1996, University of Iowa; Ph.D., 2000, University of Iowa. *Assistant Professor, Computing Sciences*
- PAUL DANOVE, 1994; B.S., 1974, University of New Orleans; M.Div., 1986, S.T.L., 1990, Jesuit School of Theology at Berkeley; Ph.D., 1991, Graduate Theological Union. *Associate Professor, Theology and Religious Studies*
- KENNETH M. DAVIS, 1972; B.S., 1966, M.S., 1967, Eastern Illinois University; Ed. D., 1972, Northern Illinois University. *Associate Professor, Education and Human Services*
- ALICE A. DEANIN, 1983; S.B., 1975, Massachusetts Institute of Technology; M.S., 1977, University of Illinois; Ph.D., 1983, University of Maryland. *Assistant Professor, Mathematical Sciences*
- ROBERT H. DeFINA, 1989; B.A., 1975, Rutgers University; M.A., 1977, Ph.D., 1979, Washington University. *Joseph A. Murphy Endowed Chair in Commerce and Finance; Professor, Economics*
- STERLING F. DELANO, 1970; B.S., 1965, Villanova University; M.A., 1967, Northeastern University; Ph.D., 1974, Southern Illinois University. *Professor, English*
- JOSE R. DE LA VEGA, 1961; Doctor in Chemistry, 1948, University of Havana (Cuba). *Professor Emeritus, Chemistry*
- LAURENCE E. DEWARF, 1995, B.S., 1987, 1989, University of Arizona; M.S., 1992, University of Wyoming. *Instructor, Astronomy & Astrophysics*
- WILFRED F. DELLVA, 1987; B.A., 1974, M.B.A., 1976, Ph.D., 1980, University of Oklahoma. *Associate Professor, Finance*
- ANDREA L. DeMASKEY, 1992; B.A., 1980, M.B.A., 1982, D.B.A., 1987, Kent State University. *Associate Professor, Finance*
- ROBERT P. DERSTINE, 1972; B.S., 1967, M.B.A., 1969, Drexel University, Ph.D., 1973, State University of New York at Buffalo. *Professor, Accountancy*
- LYNORE DeSILETS, 1980; B.S.N., 1964, Case Western Reserve University; M.S.N., 1978, University of Pennsylvania; Ed.D., 1990, Temple University. *Assistant Professor, Nursing*
- MARY E. DESMOND, 1977; B.A., 1963, Marquette University; M.A., 1971, Ph.D., 1973, University of Colorado. *Professor, Biology*
- ROBERT DeVOS, 1966; B.S., 1963, St. Peter's College; M.A., 1965, University of Pennsylvania; Ph.D., 1972, Lehigh University. *Associate Dean, College of Arts and Sciences; Professor, Mathematical Sciences*
- ANGELA J. DIBENEDDETTO, 1995; B.S., 1982, State University of New York (Binghamton); Ph.D., 1989, Cornell University. *Assistant Professor, Biology*
- MARY DiLUCIA, 2000, B.A., 1990, University of Pennsylvania; Ph.D., 1998, Harvard University. *Post Doctoral Fellow, Core Humanities*
- SAMUEL A. DiLULLO, 1983; B.S., 1968; J.D., 1972, Villanova University. *Assistant Professor, Business Law*
- FRANK N. DiMEO, 1982; B.S.E.E., 1959, Drexel Institute of Technology; M.S.E.E., 1960, Northwestern University; Ph.D., 1969, University of Pennsylvania. *Associate Professor, Electrical and Computer Engineering*
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ALAN J. DONZIGER, 1967; B.S., 1964, M.B.A., 1966, Temple University; Ph.D., 1972, Bryn Mawr College. *Associate Professor, Economics*

JOHN A. DOODY, 1969; B.A., 1965, La Salle College; Ph.D., 1974, University of Notre Dame. *Robert M. Birmingham Endowed Chair; Associate Dean for the Core Curriculum; Professor, Philosophy;*

MARK JOSEPH DOORLEY, 1997; B.A., 1984, St. Alphonsus College; M.Div., 1988, Washington Theological Union; Ph.D., 1994, Boston College. *Assistant Professor, Ethics Program.*

ELIZABETH B. DOWDELL, 1997; B.S.N., 1984, Vanderbilt University; M.S., 1987, Boston University; Ph.D., 1993, University of Pennsylvania. *Assistant Professor, Nursing.*

DANIEL E. DOYLE, O.S.A., 1996; B.A., 1975, Villanova University; M.S., 1978, Loyola University; M.A., 1985, Washington Theological Union; S.T.L., 1991, S.T.D., 1996, Institutum Patristicum Augustinianum. *Assistant Professor, Theology and Religious Studies*

WILLIAM G. DRISCOLL, 1933; B.S.C.E., 1932 Villanova University; M.S., 1938, University of Pennsylvania; D.Sc., 1977, Villanova University. *Professor Emeritus, Physics*

JOHN H. DURNIN, 1972; B.A., 1963, Western Oregon State College; M.S., 1966, University of Utah; Ph.D., 1971, University of Pennsylvania. *Associate Professor, Education and Human Services*

HARRY DWYER, 2002; B.S., 1977, University of Texas at El Paso; M.S., 1983, Syracuse University; Ph.D., 1991, Cornell University. *Associate Professor, Electrical and Computer Engineering*

RICK ECKSTEIN, 1990; B.A., 1982, Marietta College; M.A., 1984, Ph.D., 1990, State University of New York at Stony Brook. *Associate Professor, Sociology*

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JOHN R. EDWARDS, 1966; B.S., 1959, Illinois Wesleyan University; Ph.D., 1964, University of Illinois. *Professor, Chemistry*

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KAIL C. ELLIS, O.S.A., 1983; B.S., 1962, LeMoyné College; M.A., 1968, Augustinian College; M.A., 1969, Villanova University; Ph.D., 1979, The Catholic University of America. *Dean, College of Liberal Arts and Sciences; Director, Institute for Contemporary Arab and Islamic Studies; Associate Professor, Political Science*

JAMES M. EMIG, 1983; B.A., 1975, Catawba College; M.B.A., 1977, University of North Carolina at Greensboro; Ph.D., 1987, Texas A & M University. *Associate Professor, Accountancy*

MINE ENER, 1996; B.A., 1986, Macalester College; M.A., 1993, Ph.D., 1996, University of Michigan. *Assistant Professor, History*

## Full-time Faculty

- EDWARD J. ENRIGHT, O.S.A., 1992; A.B., 1970, Villanova University; S.T.B., 1973, S.T.L., 1974, S.T.D., 1991, The Catholic University of America. *Assistant Professor, Theology and Religious Studies*
- ISABELLA L. ERICKSON, 1978; B.S., 1974, M.S., 1978, Adelphi University; Ph.D., 1988, University of Pennsylvania. *Assistant Professor, Nursing*
- JOHN J. FARRELL, O.S.A., 1993; B.A., 1955, Villanova University; M.A., 1962, Villanova University; Ph.D., 1972, Catholic University. *Associate Professor, Economics*
- TIMOTHY G. FEEMAN, 1986; B.A., 1978, Brandeis University; M.S., 1980, Ph.D., 1984, University of Michigan. *Professor, Mathematical Sciences*
- MARILYN S. FETTER, 1990; B.S., 1975 Chestnut Hill College; B.S.N., 1978, Thomas Jefferson University; M.S.N., 1979, Ph.D., 1984, University of Pennsylvania. *Assistant Professor, Nursing*
- JOHN H. FIELDER, 1969; B.S., 1962, Tulane University; Ph.D., 1970, University of Texas at Austin. *Professor, Philosophy*
- EDWARD GARCIA FIERROS, 2002; B.A., 1990, The University of Texas at San Antonio, M.S., 1994, The University of Massachusetts at Boston; Ph.D., 1999, Boston College. *Assistant Professor, Education and Human Services*
- EDWARD L. FITZPATRICK, 1997, B.S., 1978, Ohio State University; M.S., 1981, Ph.D., 1994, University of Wisconsin-Madison. *Associate Professor, Astronomy and Astrophysics*
- M. LOUISE FITZPATRICK, 1978; Diploma, The Johns Hopkins University, 1963; B.S.N., 1966, The Catholic University of America; M.A., 1968, Ed.M., 1969, Ed.D., 1972, Teachers College, Columbia University. *Dean, College of Nursing; Professor, Nursing*
- WILLIAM M. FITZPATRICK, 1983; B.S., 1974, M.B.A., 1977, Ph.D., 1986, University of Maryland. *Assistant Professor, Management*
- AMY FLEISCHER, 2000; B.S.M.E., 1991, M.S.M.E., 1996, Ph.D., 2000, University of Minnesota. *Assistant Professor, Mechanical Engineering*
- WILLIAM M. FLEISCHMAN, 1982; B.A., 1959, Ph.D., 1967, Lehigh University. *Professor, Computing Sciences and Mathematical Sciences*
- CHARLES L. FOLK, 1989; B.A., 1981, Gettysburg College; M.A., 1985, Ph.D., 1987, The Johns Hopkins University. *Professor, Psychology*
- MARITA E. FRAIN, 1980; B.S.N., 1969, Villanova University; Ed.M., 1973, Teachers College, Columbia University. *Assistant Professor, Nursing*
- JOHN D. FRIEDE, 1972; B.S., 1963, St. Benedict's College; M.S., 1965, University of New Mexico; Ph.D., 1970, University of Minnesota. *Assistant Professor, Biology*
- HOWARD M. FULMER, 1999, B.A., 1976, Temple University. *Instructor, Mechanical Engineering*
- BERNARD J. GALLAGHER, III, 1971; B.S., 1967, St. Joseph's University; M.B.A., 1969, M.A., 1970, Ph.D., 1972, University of Pennsylvania. *Professor, Sociology*
- MARC S. GALLICCHIO, 1989; B.A., 1975, Temple University; M.A., 1977, The Pennsylvania State University; Ph.D., 1986, Temple University. *Professor, History*
- RUSSELL M. GARDNER, 1982; B.S., 1969, M.A., 1971, California State University; Ph.D., 1975, Indiana University School of Medicine. *Professor, Biology*
- VEJAY GEHLOT, 2002; B.E., 1982, Birla Institute of Technology & Science; M.E., 1984, Indian Institute of Science; Ph.D., 1982, University of Pennsylvania. *Assistant Professor, Computing Sciences*

JOSEPH GEORGE, JR., 1959; A.B., 1951, A. M., 1952, Ph.D., 1959, Boston University. *Professor Emeritus, History*

JAMES N. GIORDANO, 1983; B.A., 1972, La Salle College; M.A., 1974, University of Notre Dame; M.A., 1978, Ph.D., 1982, Indiana University. *Associate Professor, Economics*

ROBERT M. GIULIANO, 1982; B.S., 1976, Pennsylvania State University; Ph.D., 1981, University of Virginia. *Professor, Chemistry*

ALAN D. GLUCHOFF, 1981; B.S., 1975, Massachusetts Institute of Technology; M.A., 1977, Ph.D., 1981, University of Wisconsin-Madison. *Associate Professor, Mathematical Sciences*

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DON GOELMAN, 1968; B.A., 1964, Ph.D., 1971, University of Pennsylvania. *Associate Professor, Computing Sciences*

EDWIN L. GOFF, 1970; B.A., 1967, Vanderbilt University; M.A., 1968, Ph.D., 1974, Boston College. *Associate Dean for the Honors Program and Undergraduate Grants and Awards, Associate Professor, Philosophy*

MARK GRAHAM, 2000, B.A. 1988, St. Ambrose University, M.A., 1992, St. Mary's Seminary, Ph.D., 2000, Boston College. *Assistant Professor, Theology and Religious Studies*

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ROBERT L. GROB, 1963; B.S., 1951, Steubenville College; M.S., 1954, Ph.D., 1955, University of Virginia. *Professor Emeritus, Chemistry*

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LOWELL S. GUSTAFSON, 1986; B.A., 1977, North Park College; M.A., 1981, Ph.D., 1984, University of Virginia. *Associate Professor, Political Science*

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## Full-time Faculty

- JEFFREY W. HAHN, 1971; B.A., 1966, University of Pennsylvania; M.A., 1969, Ph.D., 1971, Duke University. *Professor, Political Science*
- MASAKO HAMADA, 1989; B.A., 1970, Shirayuri Women's College (Tokyo); M.S., 1985, University of Pennsylvania. *Assistant Professor, Classical and Modern Languages and Literatures*
- LOUIS HAMILTON, 2000, B.A., 1991, Villanova University; M.A., 1994, University of Virginia; Ph.D., 2000, Fordham University. *Post Doctoral Fellow, Core Humanities*
- MICHAEL HANBY, 2001, B.S., 1989, University of Colorado; M.Div., 1996, Duke University; Ph.D., 2001, University of Virginia. *Post Doctoral Fellow, Core Humanities*
- LANCE HANNON, 1999, B.A., 1993, State University of New York, at Genesco, M.A., 1995, Ph.D., University of Connecticut. *Assistant Professor, Sociology*
- FREDERICK W. HARTMANN, 1965; B.A., 1962, Lehigh University; M.A., 1963, University of Pennsylvania; Ph.D., 1968, Lehigh University. *Professor, Mathematical Sciences*
- MARK A. HAUCK, 2002; B.S., 1984, M.A., 1990, Kutztown University. *Visiting Instructor, Communication*
- PATRICIA M. HAYNOR, 1992; B.S.N., 1967, Fairleigh-Dickinson University; M.S.N., 1969, University of Pennsylvania; D.N.Sc., 1989, Widener University. *Associate Professor, Nursing*
- JEAN L. HECK, 1983; B.S., 1974, University of North Florida; M.B.A., 1977, Ph.D., 1983, University of South Carolina. *Associate Professor, Finance*
- NANCY N. HECK, 1991, B.A., 1978, Furman University; M.B.A., 1980, University of South Carolina. *Instructor, Finance*
- WM. RAY HEITZMANN, 1969; B.S. in Ed., 1964, Villanova University; M.A.T., His. and Soc. Sc., 1966, The University of Chicago; Ph.D., 1974, University of Delaware. *Professor, Education and Human Services*
- CHARLES H. HELMETAG, 1964; B.A., 1957, University of Pennsylvania; M.A., 1959, University of Kentucky; Ph.D., 1968, Princeton University. *Professor, Classical and Modern Languages and Literatures*
- CATHERINE C. HELWIG, 1999; B.A., 1963, Chestnut Hill College; M.S., 1997, Villanova University. *Instructor, Computing Sciences*
- KEITH G. HENDERSON, 1999, B.S., 1986, M.S., 1988, The Pennsylvania State University; Ph.D., 1996, University of North Carolina. *Assistant Professor, Geography*
- HEATHER J. HICKS, 1996; B.A., 1989, Dartmouth College; M.A., 1993, Ph.D., 1996, Duke University. *Associate Professor, English*
- KENNETH M. HILTEBEITEL, 1986; B.S., 1965, Elizabethtown College; Ed.M., 1968; M.B.A., 1972, Temple University; Ph.D., 1985, Drexel University. *Associate Professor, Accountancy*
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- MARY LU HILL-MONACO, 1997, B.A., 1984, Villanova University; M.A., 1986, New York University; Ph.D., 1993, University of Delaware. *Assistant Professor, Core Humanities*
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- KEI-PENG JEN, 1983; B.E., 1975, Feng-Chia University; M.S., 1979, Tennessee Technological University; Ph.D., 1983, Tennessee Technological University. *Associate Professor, Mechanical Engineering*
- JOHN R. JOHANNES, 1995; B.S., 1966, Marquette University; A.M., 1968, Ph.D., 1970, Harvard University. *Vice President for Academic Affairs; Professor, Political Science*
- JEFFREY JOHNSON, 1986; B.A., 1969, Rice University; M.A., 1973; Ph.D., 1980, Princeton University. *Associate Professor, History*
- BRIAN J. JONES, 1976; B.A., M.A., 1972, Ph.D., 1979, University of Pennsylvania. *Professor, Sociology*
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- DANIEL JOYCE, 1980; B.S., 1973, University of Notre Dame; M.A., 1979, Villanova University; Ph.D., 1986, Temple University. *Associate Professor, Computing Sciences*
- DONALD D. JOYE, 1981; B.S.E., 1967, Princeton University; M.S., 1969, Ph.D., 1972, Lehigh University. *Professor, Chemical Engineering*
- MERCEDES JULIA, 1987; B.A., 1978, M.A., 1980, Ph.D., 1987, University of Chicago. *Professor, Classical and Modern Languages and Literatures*
- RICHARD N. JULIANI, 1977; B.A., 1960, University of Notre Dame; M.A., 1964, Rutgers The State University; Ph.D., 1971, University of Pennsylvania. *Professor, Sociology*
- MARK. A. JUPINA, 1990; B.S., 1985, M.S. 1988, Ph.D., 1990, The Pennssylvannia State University. *Assistant Professor, Electrical and Computer Engineering*
- BEVERLY B. KAHN, 1994; B.S., 1972, West Chester University; M.A., 1975, Villanova University; Ph.D., 1994, Temple University. *Assistant Professor, Education and Human Services*
- ERIC KARSON, 2002; B.S., 1978, Western Michigan University; M.B.A., 1984, Michigan State University; M.S., 1991, University of Colorado; Ph.D., 1998, Florida Atlantic University. *Assistant Professor, Marketing*
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- ELIZABETH KEECH, 1978; B.S.N., 1966, Villanova University; M.S.N., 1978, Ph.D., 1991, University of Pennsylvania. *Assistant Professor, Nursing*
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- MAGHAN KEITA, 1988; B.A., 1972, Oberlin College; M.A., 1975, Cleveland State University; Ph.D., 1988, Howard University. *Associate Professor, History*
- DONALD B. KELLEY, 1965; B.A., 1960; Wheeling College; M.A., 1962, University of Mississippi; Ph.D., 1965, Tulane University. *Professor Emeritus, History*
- C. MICHAEL KELLY, 1969; B.S., 1966, M.S., 1967, Ph.D., 1970, Michigan State University. *Professor, Chemical Engineering*
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- DENNIS R. KUHN, 1979; A.B., 1969, Georgetown University; J.D., 1973, The American University; LL.M., 1979, Georgetown University. *Associate Professor, Business Law*
- SARVESH KULKARNI, 2002; B.E., 1994, University of Bombay; M.S., 1998, Ph.D., 2002, University of Texas at Dallas. *Assistant Professor, Electrical and Computer Engineering*
- JOHN E. KURTZ, 1996; A.B., 1987, University of California (Berkeley); M.A., 1991, Ph.D., 1994, Vanderbilt University. *Associate Professor, Psychology*
- HELEN K. LAFFERTY, 1987; B.S., 1971, M.S., 1974, Youngstown State University; Ph.D., 1980, University of Pittsburgh. *University Vice President; Assistant Professor, Education and Human Services*
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- STACY LANDRETH, 2002; B.A., 1994, University of Louisiana-Lafayette; M.S., 1997, Ph.D., 2002, Louisiana State University. *Assistant Professor, Marketing*
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- ANANY LEVITIN, 1982; B.S., 1970, M.S., 1973, Moscow State University; Ph.D., 1979, Hebrew University of Jerusalem; M.S., 1983, University of Kentucky. *Professor, Computing Sciences*
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GERALD M. LONG, 1978; A.B., 1969, M.A., 1971, University of Detroit; Ph.D., 1978, Stanford University. *Dean, Graduate Studies, Professor, Psychology*

JOYCE F. LONGMAN, 1968; B.A., 1960, M.A., 1965, College of William and Mary; Ph.D., 1976, Temple University. *Associate Professor, Mathematical Sciences*

THOMAS A. LOSONCY, 1967; B.A., 1961, Sacred Heart Seminary; M.A., 1963, University of Detroit; Ph.D., 1972, University of Toronto. *Associate Professor, Philosophy*

JOSEPH LOYA, O.S.A., 1979; B.S., 1972, Cleveland State University; M.A., 1978, Washington Theological Union; M.A., 1979, John XXIII Ecumenical Institute, New York; Ph.D., 1986, Fordham University. *Associate Professor, Theology and Religious Studies*

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PAUL J. LUPINACCI, 2000; B.S., 1995, Villanova University; M.S., 1997, Temple University; Ph.D., 2000, Temple University. *Assistant Professor, Mathematical Sciences*

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- LINDA MALIK, 1965; B.A., 1955, Syracuse University; M.A., 1958, Columbia University; Ph.D., 1966, The America University. *Associate Professor, Sociology*
- FRANK P. MALONEY, 1977; B.S., 1972, University of South Carolina; Ph.D., 1977, University of Florida. *Associate Professor, Astronomy and Astrophysics*
- CLAIRE MANFREDI, 1985; B.S.N., 1962, M.A., 1966, Ed.M., 1970, Ed.D., 1976, Columbia University. *Professor, Nursing*
- WEN MAO, 1995, B.A., 1990, Shanghai Maritime Institute; M.A., 1992, Ph.D., 1994, Virginia Polytechnic Institute. *Assistant Professor, Economics*
- ROBERT A. MARANTO, 2000, B.S., 1980, University of Maryland; Ph.D., 1989, University of Minnesota. *Assistant Professor, Political Science*
- OSVALDO MARRERO, 1984; B.S., 1966, University of Miami; Ph.D., 1970, University of Miami; M.P.H., 1979, Yale University. *Professor, Mathematical Sciences*
- CHARLES H. MARSTON, 1982; M.E., 1953, Stevens Institute of Technology; M.S.M.E., 1959, Sc.D., 1962, Massachusetts Institute of Technology; P.E.(PA). *Professor Emeritus, Mechanical Engineering*
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- LEWIS J. MATHERS, 1960; B.C.E., 1957, Marquette University; M.S.H.E., 1960, Washington State University; Ph.D., 1966, The Pennsylvania State University; P.E. (PA). *Professor, Civil and Environmental Engineering*
- EDWARD J. MATHIS, 1966; B.A., 1963, Iona College; M.A., 1966, Ph.D., 1971, State University of New York at Buffalo. *Professor, Economics*
- JOHN O. MATTHEWS, 1986; B.E.E., 1965, Villanova University; M.B.A., 1973, Duquesne University; Ph.D., 1985, Temple University. *Assistant Professor, Finance*
- JOHN J. MATULIS, JR., 2001; A.B., 1967, University of Pennsylvania; M.A., 1971, Syracuse University; M.S., 1980, Syracuse University. *Instructor, Computing Sciences*
- PHILIP A. MAURONE, 1972; B.S., 1966, St. Joseph's University; M.S., 1968, Ph.D., 1971, Northeastern University. *Professor, Physics*
- EDWARD V. McASSEY, JR., 1967; B.M.E., 1956, M.M.E., 1959, Polytechnic Institute of Brooklyn; Ph.D., 1968, University of Pennsylvania. *Associate Dean; James R. Birle Endowed Chair of Energy Technology; Professor, Mechanical Engineering*
- JAMES J. McCARTNEY, O.S.A., 1989; A.B., 1966, Villanova University; M.A., 1971, Augustinian College; M.S., 1972, The Catholic University of America; Ph.D., 1981, Georgetown University. *Associate Professor, Philosophy*
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- JOHN A. O'LEARY, 1997. B.A., 1982, Rutgers College; M.A., 1985, UCLA; Ph.D., 2001, Temple University. *Assistant Professor, Communication.*
- GERARD T. OLSON, 1988; B.A., 1973, M.B.A., 1980, La Salle University; M.A., 1982, Temple University; Ph.D., 1988, Drexel University. *Associate Professor, Finance*
- JOHN M. OLSON, 1992; B.A., 1977, Stanford University; M.S., 1983, Ph.D., 1990, University of Michigan. *Associate Professor, Biology*
- DANIEL J. O'MARA, 1976; B.S., 1962, Villanova University; M.B.A., 1971, Fordham University. *Associate Professor, Accountancy*
- THOMAS B. OMMEN, 1978; A.B., 1964, Stanford University; M.A., 1966, Catholic University of America; Ph.D., 1973, Marquette University. *Associate Professor, Theology and Religious Studies*
- ELSA YED OMRAN, 1983; B.A., 1964, Ain Shams University, Cairo; M.A., 1974, University of Newcastle on Tyne, United Kingdom; Ph.D., 1983, Georgetown University. *Associate Professor, Classical and Modern Languages and Literatures*
- JOSEPH A.J. ORKWISZEWSKI, 1972; B.A., 1965, La Salle College; M.S., 1967, Villanova University; Ph.D., 1971, Bryn Mawr College. *Professor, Biology*
- WILLIAM J. O'NEILL, 1965; B.S. in Econ., 1962, Villanova University; M.S., 1992, Columbia University. *Assistant Professor, Marketing*
- HUGH ORMSBY-LENNON, 1985; B.A., 1970, King's College, Cambridge; M.A., 1974, Ph.D., 1977, University of Pennsylvania. *Associate Professor, English*
- RACHEL SARAH O'TOOLE, 2001; B. A., 1992, University of Wisconsin, Madison; M.A., 1996, Ph.D., 2001, University of North Carolina – Chapel Hill. *Assistant Professor, History*
- BARBARA B. OTT, 1993; B.S.N., 1978, California State College; M.S.N., 1981, Catholic University; Ph.D., 1986, Texas Woman's University. *Associate Professor, Nursing*
- MICHAEL S. PAGANO, 1999; B.S., 1984 Fordham University, M.B.A. 1997, Ph.D., 1999, Rutgers University. *Assistant Professor, Finance*
- GEORGIA PAPAETHYMIU-DAVIS, 1999; B.A., 1970, Barnard University; Ph.D., 1974, Columbia University. *Assistant Professor, Physics*
- MARY-ANGELA PAPALASKARI, 1988; B.S., 1979, Lakehead University; M.S., 1982, University of Alberta; Ph.D., 1989, Edinburgh University. *Assistant Professor, Computing Sciences*
- BENEDICT A. PAPARELLA, 1955; B.S., 1950, Georgetown University; M.A., 1951, Ph.D., 1955, The Catholic University of America. *Professor Emeritus, Philosophy*
- JULIA B. PAPARELLA, 1955; B.S.N.Ed., 1954, M.S.Ed., 1956, University of Pennsylvania; M.S.L.S., 1975, Villanova University. *Associate Professor Emeritus, Nursing*
- PAUL PASLES, 1999; B.A., 1990, University of Pennsylvania; M.A., 1994 Temple University; Ph.D., 1997, Temple University. *Assistant Professor, Mathematical Sciences*
- GAETANO N. PASTORE, 1962; A.B., 1960, M.A., English, 1962, M.A., French, 1967, Villanova University; Ph.D., 1979, Rutgers University. *Associate Professor, Classical and Modern Languages and Literatures*
- SATYA R. PATTNAYAK, 1990; B.A., 1975, Utkal University (India); M.A., 1978, M. Phil., 1979, Jawaharlal Nehru University (India); M.A., 1985, M.A., 1987, Ph.D., 1990, Vanderbilt University. *Associate Professor, Sociology*

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- JOHN A. PEARCE II, 1995; B.B.A., 1969, Ohio University; M.B.A., 1970, University of Pittsburgh; Ph.D., 1976, Pennsylvania State University. *College of Commerce and Finance Chair in Strategic Management and Entrepreneurship, Professor, Management*
- JEFFREY N. PELESH, 1991; B.S., 1980, M.B.A., 1987, Villanova University. *Assistant Professor, Accountancy*
- CHARLES PERKINS, 1998, B.A., 1974, Southern Illinois University, M. S., 1979, Ph.D., 1984, University of Illinois. *Assistant Professor, Chemistry*
- CARMEN PERAITA, 1993; Licenciatura in Spanish Philosophy, Universidad Complutense de Madrid (Spain); Ph.D., 1991, University of California at Santa Barbara. *Associate Professor, Classical and Modern Languages and Literatures*
- RICHARD J. PERRY, 1980; B.S., 1974, M.S., 1977, Ph.D., 1981, Drexel University. *Associate Professor, Electrical and Computer Engineering*
- JAMES PEYTON-JONES, 2000; 1985, B.A., Oxford University, 1990, Ph.D. Sheffield University. *Associate Professor, Electrical and Computer Engineering*
- ALAIN J. PHARES, 1977; B.S., 1964, Saint Joseph University (Lebanon); M.S., 1968, D.Sc., 1971, University of Paris; Ph.D., 1973, Harvard University. *Professor, Physics*
- JOSEPH G. PIGEON, 1987; B.S., 1972, M.S., 1976, Villanova University; Ph.D., 1984, Temple University. *Professor, Mathematical Sciences*
- ELISE ROBINSON PIZZI, 1993; B.S.N., 1972, Temple University; M.S.N., 1977, N.P., 1996, University of Pennsylvania. *Assistant Professor, Nursing*
- SALVATORE POETA, 1987; B.A., 1974, M.A., 1976, Brooklyn College; Ph.D., 1982, University of Pennsylvania. *Associate Professor, Classical and Modern Languages and Literatures*
- GAILE M. POHLHAUS, 1987; B.A., 1961, College of Saint Elizabeth; M.A., 1965, Boston College; M.A., 1977, Villanova University, Ph.D., 1987, Temple University. *Assistant Professor, Theology and Religious Studies*
- BRUCE POLLACK-JOHNSON, 1990; B.A., 1975, Brandeis University; M.A., 1979, Temple University; M.S., 1980, Ph.D., 1983, University of Pennsylvania. *Associate Professor, Mathematical Sciences*
- HARRIET POWER, 1994; B.A. 1972, University of Michigan; M.F.A., 1989, University of Iowa. *Associate Professor, Theatre*
- BOHDAN PROCKO, 1949; B.S., 1945, Albright College; M.A., 1946, Columbia University; Ph.D., 1964, University of Ottawa. *Professor Emeritus, History.*
- BERNARD P. PRUSAK, 1969; B.A., 1959, Seton Hall University; S.T.B., 1961, S.T.L., 1963, Gregorian University; J.C.B., 1965, J.C.L., 1966; J.C.D., 1967, Lateran University (Rome). *Professor, Theology and Religious Studies*
- FRANK A. PRYOR, III, 1997; B.A., 1994, University of Massachusetts; M.A., 1996, Villanova University. *Instructor, Political Science*
- VITO L. PUNZI, 1980; B.S., 1972, Polytechnic Institute of Brooklyn; M.S., 1974, Ph.D., 1979, Polytechnic Institute of New York; P.E. (PA). *Professor, Chemical Engineering*
- GEORGE T. RADAN, 1960; B.A., 1945, Ph.D., 1948, Pazmany Peter University of Budapest (Hungary); AÉM, 1967, Sorbonne/École du Louvre (Paris). *Professor Emeritus, Art History*

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HEIDI M. ROSE, 1993; B.S., 1985, Northwestern University; M.A., 1989, Emerson College; Ph.D., 1992, Arizona State University. *Associate Professor, Communication*

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- JOANNA ROTTÉ, 1983; B.A., 1966, Ph.D., 1983, City University of New York. *Professor, Theatre*
- JOSEPH RUCKER, 1999, 1988, B.S., Haverford College, 1995, Ph.D., University of California at Berkeley. *Assistant Professor, Chemistry*
- ALEXANDER RUDHART, 1954; J.D., 1952, Ph.D., 1962, University of Vienna. *Professor Emeritus, History*
- MICHAEL P. RUSSELL, 1992; B.S., 1980, M.S., 1984, San Diego State University; Ph.D., 1990, University of California, Berkeley. *Associate Professor, Biology*
- LOUISE A. RUSSO, 1993; B.S., 1983, Villanova University; Ph.D., 1987, Pennsylvania State University College of Medicine. *Assistant Professor, Biology*
- JOSEPH G. RYAN, O.S.A., 1997; B.A., 1979, Catholic University; M.A., 1987, Washington Theological Union; Ph.D., 1997, American University. *Assistant Professor, History*
- PETER M. SANCHEZ, 1982; B.S., 1963, M.B.A., 1966, Penn State University; D.B.A., 1973, Kent State University. *Professor, Marketing*
- SRIDHAR SANTHANAM, 1989; B.Tech., 1984, Indian Institute of Technology; M.S., 1986, Ph.D., 1989, Arizona State University. *Associate Professor, Mechanical Engineering*
- JOHN E. SANTOMAS, 1994, B.A., 1988, M.A., 1990, Villanova University. *Instructor, Mathematical Sciences*
- MICHAEL J. SCANLON, O.S.A., 1992; B.A., 1960, Villanova University; S.T.L., 1964, S.T.D., 1969, The Catholic University of America. *Josephine C. Connelly Endowed Chair of Christian Theology, Professor, Theology and Religious Studies*
- JOSEPH T. SCHICK, 1990, B.S., 1982, Villanova University; M.S., 1984, Ph.D., 1987, Drexel University. *Assistant Professor, Physics*
- ROSEMARY SCHILLER, 1970; B.S.N., 1966, M.S.N., 1970, University of Pennsylvania. *Assistant Professor, Nursing*
- DAVID SCHINDLER, 2002; B.A., 1992, The University of Notre Dame; M.A., 1997, Ph.D., 2001, The Catholic University of America. *Assistant Professor, Philosophy*
- DENNIS J. SCHMIDT, 1994; B.A., 1974 Bucknell University; M.A., 1976, Ph.D. 1980, Boston College. *Professor, Philosophy*
- SALLY J. SCHOLZ, 1994; B.A., 1989, University of Portland; M.A., 1991, Ph.D., 1993, Purdue University. *Associate Professor, Philosophy*
- DEBORAH L. SCHUSSLER, 2002; B.S., 1993, Indiana University; M.Ed., 1997, Middle Tennessee State University; Ed.D., 2002, Vanderbilt University. *Assistant Professor, Education and Human Services*
- JAMES J. SCHUSTER, 1958; B.C.E., 1957, M.C.E., 1961, Villanova University; Ph.D., 1964, Purdue University; P.E. (DE, NJ, PA). *Professor, Civil and Environmental Engineering*
- MIRIAM SELIKTAR, 1985; B.S., 1979, Haifa University; M.S., 1981, Ph.D., 1986, Drexel University. *Assistant Professor, Mathematical Sciences*
- BARRY S. SELINSKY, 1988; B.S., 1980, Lebanon Valley College; Ph.D., 1984, State University of New York at Buffalo. *Associate Professor, Chemistry*
- LISA SEWELL, 1998; B.A., 1984, University of California (Berkeley); M.A. 1988, New York University. *Assistant Professor, English*

- DAVID R. SHAFFER, 1999; B.S., 1987, Ohio State University; M.B.A., 1992, Ohio University; Ph.D., 1999, University of Kansas. *Assistant Professor, Finance*
- DONNA SHAI, 1983; B.A., 1965, University of Pennsylvania; Postgraduate Dip. Soc. Anth. (oxon), 1966, St. Hilda's College, Oxford; Ph.D., 1976, Hebrew University of Jerusalem; M.A., 1981, Ph.D., 1984, University of Pennsylvania. *Associate Professor, Sociology*
- NANCY C. SHARTS-HOPKO, 1986; B.S.N., 1976, Indiana University; M.A., 1978, Ph.D., 1983, New York University. *Professor, Nursing*
- DONALD E. SHAW, 1969; B.S., 1962, M.A., 1963, Ph.D., 1967, University of Toronto. *Associate Professor, Physics*
- COLLEEN SHEEHAN, 1986; B.S., 1977, Eisenhower College; M.A., 1979, Ph.D., 1986, Claremont Graduate University. *Associate Professor, Political Science*
- PAUL E. SHELDON, 1966; B.S., 1963, Tufts University; M.A., 1965, Ph.D., 1966, Princeton University. *Assistant Professor, Psychology*
- VINCENT B. SHERRY, 1980; B.A., 1970, Notre Dame University; M.A., 1974, Ph.D., 1979, University of Toronto. *Professor, English*
- LAUREN E. SHOHET, 1995; B.A., 1986, Oberlin College; B.Mus., 1987, Oberlin Conservatory, M.A., 1990, Ph.D., 1994, Brown University. *Assistant Professor, English*
- RALPH C. SHURER, O.S.A., 1959; A.B., 1951, M.S., 1957, Villanova University. *Assistant Professor, Biology*
- LEONARD C. SHYLES, 1989; B.A., 1971, M.S., 1975, City University of New York at Brooklyn College; Ph.D., 1981, Ohio State University. *Associate Professor, Communication*
- JAVAD SIAH, 1984; B.S., 1976, M.S., 1978, Pahlavi University (Iran); Ph.D., 1984, University of Pennsylvania. *Assistant Professor, Physics*
- PRITPAL SINGH, 1984; B.S., 1978, University of Birmingham; M.A.S., 1981, Ph.D., 1984, University of Delaware. *Associate Professor, Electrical and Computer Engineering*
- EDWARD M. SION, 1975; B.A., 1968, M.A., 1969, University of Kansas; Ph.D., 1975, University of Pennsylvania. *Professor, Astronomy and Astrophysics*
- JANICE C. SIPIOR, 1990; B.S., 1980, Canisius College; M.B.A., 1982, Ph.D., 1988, State University of New York at Buffalo. *Associate Professor, Decision and Information Technologies*
- DOROTHY W. SKAF, 1988; B.S.E., 1983, Princeton University; M.S.E., 1985, Ph.D., 1988, University of Pennsylvania; P.E. (PA). *Associate Professor, Chemical Engineering*
- SUZANNE C. SMELTZER, 1996; 1964, St. Elizabeth's Hospital School of Nursing, B.S.N., 1967, St. Louis University; M.S., 1973, Texas Woman's University; Ed.D., 1981, University of Rochester. *Associate Professor, Nursing*
- THOMAS W. SMITH, 1993, B.S., 1986, Georgetown University; M.A., 1988, Catholic University; Ph.D., 1993, University of Notre Dame. *Associate Professor, Political Science*
- NORMAN SOONG, 1987; B.A., 1962, The National Taiwan University; M.S., 1964, Ph.D., 1968, University of Florida; M.S., 1975, University of Pennsylvania. *Associate Professor, Computing Sciences*
- MICHAEL S. SPRITZER, 1966; B.S., 1960, Polytechnic Institute of Brooklyn; M.S., 1962, Ph.D., 1965, University of Michigan. *Associate Professor, Chemistry*

## Full-time Faculty

- DAVID J. SPROWS, 1962; B.S., 1960, West Chester University; M.A., 1962, Villanova University; Ph.D., 1971, University of Pennsylvania. *Professor, Mathematical Sciences*
- JACK STAGLIANO, O.S.A., 1994, B.S., 1966, M.A., 1970, B.F.A., 1980, Villanova University; M.F.A., 1987, Bard College. *Assistant Professor, Theatre*
- PAUL STEEGE, 2000; B.A., 1992, Princeton University; A.M., 1994, Ph.D., 1999, University of Chicago. *Assistant Professor, History*
- PHILIP J. STEPHENS, 1980; B.S., 1972, University of London, Queen Mary College; Ph.D., 1977, University of Aberdeen. *Professor, Biology*
- LAWRENCE S. STEPELEVICH, 1964; B.A., 1954, University of Albuquerque; M.A., 1957, Ph.D., 1963, The Catholic University of America. *Professor Emeritus, Philosophy*
- SUSAN STINER, 1988; B.A., 1967, Notre Dame of Maryland; J.D., 1977, University of Nebraska Law College; LL.M., 1986, Temple University. *Assistant Professor, Accountancy*
- DAVID E. STOUT, 1988; B.S., 1973, La Salle College; M.B.A., 1978, Ph.D., 1982, University of Pittsburgh. *Professor, John M. Cooney Professorship, Accountancy*
- HARRY R. STRACK, 1968; B.A., 1963, M.A., 1965, University of Pennsylvania; Ph.D., 1974, University of Iowa. *Associate Professor, Political Science*
- JAY D. STRIEB, 1963; A.B., 1961, Temple University; M.A., 1962, University of Pennsylvania; Ph.D., 1972, Bryn Mawr College. *Assistant Professor, Physics*
- STEPHEN A. STUMPF, 2000; B.S., 1971 Rensselaer Polytechnic Institute; M.B.A., 1972, University of Rochester; M.Phil., 1978, New York University; Ph.D., 1978, New York University. *Professor, Management*
- ROBERT STYER, 1983; B.A., 1977, University of Pennsylvania; Ph.D., 1981, Massachusetts Institute of Technology. *Associate Professor, Mathematical Sciences*
- MARK SULLIVAN, 1987; B.A., 1971, College of the Holy Cross; M.A., 1973, Ph.D., 1981, Bryn Mawr College, N.P., 1998, Rutgers University. *Assistant Professor, History*
- MAUREEN SULLIVAN, 1978; B.S.N., 1967, M.S.N., 1978, University of Pennsylvania; Ph.D., 1995, Temple University. *Assistant Professor, Nursing*
- ROMINDER P. S. SURI, 1994; B.S., 1990, Institute of Technology, Varanasi, India; M.S., 1992, Ph.D., 1995, Michigan Technological University, P.E. (MD) *Associate Professor, Civil and Environmental Engineering*
- ROBERT F. SWEENEY, 1964; B.S., 1953, M.S., 1955, Ph.D., 1960, Pennsylvania State University; P.E. (PA). *Professor Emeritus, Chemical Engineering*
- CHARLES R. TAYLOR, 1992; B.G.S., 1984, University of Michigan; M.B.A., 1987, Ph.D., 1992, Michigan State University. *Associate Professor, Marketing*
- KENNETH B. TAYLOR, 1985, B.S., 1972, Miami University; M.S.B.A., 1973, Denver University; M.S., 1976, University of Wyoming; Ph.D., 1980, SUNY Stony Brook. *Assistant Professor, Economics*
- KISHOR H. THANAWALA, 1967; B.A., 1955, M.A., 1957, Ph.D., 1961, University of Bombay. *Professor, Economics*
- DEBORAH A. THOMAS, 1980; A.B., 1965, Brown University; M.A., 1966, Duke University; Ph.D., 1972, University of Rochester. *Professor, English*

JOSEPH E. THOMPSON, 1969; B.A., 1961, St. Joseph's College; M.A., 1969, Ph.D., 1977, The Catholic University of America. *Professor, Political Science*

CONNIE TITONE, 2001; B.S., Louisiana State University, 1971; M.A., 1983, Louisiana Tech University; Ed.D., 1995, Harvard University. *Associate Professor, Education and Human Services*

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THOMAS C. TOPPINO, 1974; B.S., 1968, M.A., 1972, Ph.D., 1974, University of New Mexico. *Professor, Psychology*

SUZANNE C. TOTON, 1978; B.A., 1970, M.A., 1972, Temple University; Ed.D., 1978, Columbia University Teachers College. *Associate Professor, Theology and Religious Studies*

ROBERT TRAVER, 1988; B.S.C.E., 1978, Virginia Military Institute; M.C.E., 1982, Villanova University; Ph.D., 1988, The Pennsylvania State University; P.E.(PA,VA). *Associate Professor, Civil and Environmental Engineering*

CARLOS ALBERTO TRUJILLO, 1990; M.A., 1974, Universidad de Chile; Ph.D., 1993, University of Pennsylvania. *Associate Professor, Classical and Modern Languages and Literatures*

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- BARBARA E. WALL, O.P., 1970-76, 1984; B.A., 1968, Fordham University; M.A., 1970, Ph.D., 1979, Marquette University. *Special Assistant to the President for Mission; Associate Professor, Philosophy*
- MICHAEL G. WALSH, 1986; B.A., 1970, University of Pennsylvania, J.D., 1975, Wake Forest University. *Associate Professor, Business Law*
- BURKE T. WARD, 1977; A.B., 1969, Villanova University; J.D., 1975, Seton Hall Law School; LL.M., 1978, New York University. *Associate Professor, Accountancy*
- DARLENE F. WEAVER, 2001, 1991, B.A., Carnegie Mellon University, 1993, M.A.R., Yale Divinity School, 1998. *Assistant Professor, Theology and Religious Studies*
- JACQUELINE F. WEBB, 1993; B.S., 1979, Cornell University; Ph.D., 1988, Boston University. *Associate Professor, Biology*
- ELAINE H. WEBSTER, 1986; B.A., 1965, Marywood College; M.Ed., 1970, Rutgers University. *Assistant Professor, Decision and Information Technologies*
- CAROL TOUSSIE WEINGARTEN, 1985; B.A., 1970, Barnard College of Columbia University; M.S., 1972, New York Medical College; M.A., 1976, Ph.D., 1986, New York University. *Associate Professor, Nursing*
- STEPHEN G. WEINRACH, 1972; B.S., 1965, M.Ed., 1967, Temple University; Ph.D., 1972, University of Toledo. *Professor, Education and Human Services*
- RANDY D. WEINSTEIN, 1998; B.S., 1993, University of Virginia; Ph.D., 1998, Massachusetts Institute of Technology. *Assistant Professor, Chemical Engineering*
- CAROL A. WEISS, 1998; A.B., 1964, Brandeis University; M.Ed., 1969, Northeastern University; Ph.D., 1990, University of Pennsylvania. *Director, Villanova Institute for Teaching and Learning; Associate Professor, Instructional Development*
- ANDREA L. WELKER, 1999; B.S.C.E., 1991, M.S.C.E., 1993, Drexel University; Ph.D., 1998, University of Texas. *Assistant Professor, Civil and Environmental Engineering.*
- WILLIAM J. WERPEHOWSKI, 1980; B.A., 1975, Princeton University; M.A., 1977, M.Phil., 1978, Ph.D., 1981, Yale University. *Professor, Theology and Religious Studies*
- ROBERT N. WEST, 1994, B.S., 1976, Bentley College; M.B.A., 1981, Boston University; Ph.D., 1988, University of Southern California. *Assistant Professor, Accountancy*
- CRAIG M. WHEELAND, 1990; B.A., 1979, The University of South Carolina at Aiken; M.P.A., 1981, The University of South Carolina; Ph.D., 1989, The Pennsylvania State University. *Associate Professor, Political Science*
- ALAN M. WHITMAN, 1988; B.S.M.E., 1958, M.S.M.E., 1959, Ph.D., 1965, University of Pennsylvania; P.E.(PA). *Professor, Mechanical Engineering*
- R. KELMAN WIEDER, 1984; B.A., 1974, Amherst College; M.A., 1978, University of Missouri-Columbia; Ph.D., 1982, West Virginia University. *Professor, Biology*
- RAYMOND G. WILKE, 1962; B.S., 1958, M.S., 1962, University of Wisconsin. *Assistant Professor, Communication*



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Associate Director .....SHAWN T. TRACY, O.S.A., M.A.

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Associate Director ..... JOYCE ZAVARICH, M.A.

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Associate Director for Affirmative Action..... LINDA V. MURRAY, C.P.A., B.S.

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Counselor/ Tutor Coordinator, Academic Advancement

Program (AAP)/ACT 101 ..... PATTY ABDALLA, M.ED.

Director of International Students and

Human Services ..... STEPHEN McWILLIAMS, M.A.

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Director, Training and Organization Development ..... DANE C. HEWLETT, M.S.

Director, Research, Data, and Analysis ..... NURIT FRIEDMAN, B.A

Director, Survey Research, ..... KATHLEEN L. NAZAR, M.R.P.



**AAH 1000 Introduction to Art** The elements of art: form, color, line, design, materials, and techniques. For students who would like to improve their ability to understand painting, sculpture, and architecture. (3 cr) Last Offered: Fall 2002, Spring 2002.

**AAH 1100 Intro To Art** The elements of art: form, color, line, design, materials, and techniques. For students who would like to improve their ability to understand painting, sculpture, and architecture. (3 cr) Last Offered: Fall 2001, Spring 2001, Fall 2000, Spring 2000.

**AAH 1101 His West Art: Ancient - Med** Architecture, sculpture, and painting in the West from ancient times through medieval and High Gothic periods. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Fall 2000.

**AAH 1102 His West Art: Renaiss - Cont** The history of the visual arts in the West from the Early Renaissance to the present. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**AAH 1330 Contemporary Cinema** (3 cr) Last Offered: Fall 1997.

**AAH 1903 Internship Elective** An internship in an elective area of concentration. (3 cr) Last Offered: Fall 2002, Fall 1997.

**AAH 2000 Ancient Art** The artistic contributions of the ancient societies of Egypt, the Aegean, Greece and Rome, placed within appropriate cultural contexts. (3 cr) Last Offered: Fall 2002, Fall 2001, Summer 2001, Spring 2000.

**AAH 2001 Medieval Art** The development of Western art from the death of Jesus to 1300 A.D. with emphasis on the Catholic Church as the main patron of painting, sculpture, and architecture during the Middle Ages. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Summer 1999.

**AAH 2002 Renaissance Art** New trends and forms in European Art from 1300 to 1600; an examination of leading artists, their lives and works: Giotto, Leonardo Da Vinci, Michelangelo, among others. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 1995.

**AAH 2003 Age of Rembrandt & Bernini** Major works of European painting, sculpture, and architecture from the seventeenth through mid-eighteenth centuries. Special emphasis on how historical events affected the production of artistic monuments. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 1999, Fall 1997.

**AAH 2004 Modern Art** An examination of the visual arts since 1900 that emphasizes their historical roots and present social significance. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**AAH 2006 American Art** The history of painting, sculpture, and architecture in America from the colonial period to modern times. (3 cr) Last Offered: Summer 2002, Spring 2002, Spring 2000.

**AAH 2007 Hist. of Western Architecture** Development of architectural styles from the Gothic to the contemporary, with emphasis on the modern period. (3 cr) Last Offered: Fall 2002, Fall 2001, Summer 2001, Summer 2000.

**AAH 2008 Spirit of the Renaissance** The relationship of painting, sculpture, architecture, and graphic arts from the rise of the Sieneese and Florentine School to the end of the Venetian school. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999.

**AAH 2993 Internship** (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**AAH 3001 Women in Art** Themes and images of women in the visual arts as an expression of the needs, desires and attitudes of society; and a study of women artists from ancient times to the present, with regard to how being female may, or may not, have affected their work. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 1999.

**AAH 3002 Art of Philadelphia** Philadelphia's unique contribution to American painting, sculpture, and architecture, from the early Swedish and Welsh settlers of the Delaware Valley, to Andrew Wyeth and Robert Venturi. (3 cr) Last Offered: Summer 2002, Spring 2001, Fall 1999, Spring 1999.

**AAH 3003 Romantic to Post-Impress** Nineteenth century painting and sculpture in Europe and America, focusing on Cezanne, Courbet, Delacroix, Goya, Eakins, Homer, Manet, Monet, Rodin and West. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001.

**AAH 3007 The Art of Ireland** The visual arts in Ireland concentrating on the Golden Age from the 5th to the 9th Century: architecture of the early monastic settlements, manuscript illumination and its influence, and the cultural impact of the Irish forms of monasticism. (3 cr) Last Offered: Fall 2002, Summer 2002, Summer 2001, Fall 2000.

**AAH 3009 Topics in Art History** Selected themes or periods in the history of art examined in depth. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**AAH 3010 Art Historical Methodology** A survey of the various types of art history which have been practiced over the centuries, including connoisseurship, iconography, the social history of art, Feminist art history, Postmodern art history, semiotics, and Deconstructionist art history. (3 cr) Last Offered: Spring 2002, Fall 2000.



**AAH 4000 Senior Thesis** Independent research projects under the guidance of a department faculty member. Passing grade depends on student thesis acceptable to two faculty members. (3 cr) Restrictions: Restricted to AAH Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**AAH 4001 American Architecture** Seminar on architecture and city planning in the United States from colonial times to the present. (3 cr) Last Offered: Spring 2001, Fall 1996, Fall 1995, Spring 1995.

**AAH 4003 Spec Topics: Ancient-Medieval** Seminar on selected topics in ancient or medieval art as announced. Topics will vary depending on the instructor. (3 cr) Last Offered: Summer 1998, Fall 1997, Spring 1997, Fall 1996.

**AAH 4004 Spec Top: Renais-Baroque** Seminar on architecture, painting, sculpture and art theories of the Renaissance or Baroque as announced. Topics will vary depending on the instructor. (3 cr) Last Offered: Fall 1999, Spring 1997.

**AAH 4005 Picasso and Friends** Seminar on the 20th century's most famous artist, with discussion of friends such as Braque, Apollinaire, Gertrude Stein, and Erik Satie. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1998, Spring 1997. Prerequisites: AAH 2004.

**AAH 4007 Special Topics** Seminar on advanced topics in modern painting, sculpture, and architecture. This course will cover European and American art of the period from 1750 to the present day. Reports and research paper required. Pre-requisite: AAH 2004 or permission of instructor (3 cr) Last Offered: Fall 1998, Spring 1998, Fall 1996, Fall 1995.

**AAH 5515 Independent Research** An intensive research project under individual direction. Permission of chairperson required. Restricted to AAH Majors. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002.

**ACC 1001 Comp Apps and Acctg** Introduction to various financial accounting concepts and terms, transaction analysis, financial statements, and ratio analysis. Students gain a working knowledge of communication software, database software, and presentation software, and an advanced knowledge of spreadsheet software. Internet searches, Web-page design, and computer technology to address various financial and managerial accounting project. (3 cr) Last Offered: Summer 2002, Spring 2002, Fall 2001, Summer 2001.

**ACC 1002 Adv Computer Apps and Acctg** (3 cr) Last Offered: Fall 2000, Spring 2000.

**ACC 1101 Prin of Financial Accounting** Understanding business by being able to understand the financial statements. Accounting concepts, transaction analysis, analytical procedures, valuation and allocation, revenue recognition and expense matching, and

cash flow analysis - operating, investing, and financing. Includes appropriate use of technology. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: ACC 1001.

**ACC 1102 Prin of Managerial Accounting** How management accounting information can be used to help firms achieve strategic goals and profitability objectives. Use of an entrepreneurial perspective to examine how managers apply risk measurement and management techniques to business planning and control systems. Case-based learning to help students develop communication, technology, and teamwork. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: ACC 1001 or ACC 1002 and ACC 1101.

**ACC 2310 Intermediate Accounting I** Intensive study and application of GAAP for asset valuation, income measurement, and financial statement presentation for business organizations, and the processes through which these principles evolve. Coverage of topics essential to preparing, reading, understanding, interpreting and using financial statements. Extensive reliance on case method. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: ACC 1101.

**ACC 2320 Intermediate Accounting II** Continues the intensive study and application of GAAP for asset valuation, income measurement, and financial statement presentation begun in ACC 2310. Selected accounting and consulting issues. Correction of financial statements, income taxes, pensions, segment reporting, cash-flow disclosures, debt issuance and amortization, leases, and investments. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Summer 2001. Prerequisites: ACC 2310.

**ACC 2420 International Accounting** (3 cr)

**ACC 2430 Auditing** Auditing standards employed in verification of and reporting on financial statements, evaluation of controls, statistical sampling, substantive testing, legal liability and professional responsibilities, and professional standards of ethics. Includes written and oral group case assignments and application of computer technology. Restricted to Accounting majors and minors. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Summer 2001. Prerequisites: ACC 2320.

**ACC 2450 Advanced Accounting** Theories and techniques used for specialized accounting problems, with emphasis on business combinations, consolidations, multinational corporations, not-for-profit entities partnerships, and issues related to solvency and liquidation and financial fraud. Restricted to Accounting majors and minors. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Summer 1999. Prerequisites: ACC 2310.

**ACC 2460 Federal Income Tax** An introduction to federal income taxation with primary emphasis on the tax implications of business transactions. Objectives of the course are to explore tax-policy issues and to develop a basic understanding of federal income tax laws, income tax planning, and the impact of taxes on business decisions.

Restricted to Accounting majors and minors with Senior standing. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**ACC 2470 Cost Accounting** Introduction to modern cost accounting systems and the accounting information needs of managers, including: costing approaches (job-order process, standard, and absorption); cost behavior analysis; differential costs for decision-making; activity-based costing (ABC) and activity-based management (ABM); performance evaluation; and, issues related to quality. Group work and case analysis (both oral and written) required. Writing enhanced course. Restricted to Accounting majors and minors with Senior standing. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001. Prerequisites: ACC 1102 or HON 1102.

**ACC 2480 Advanced Taxes** Advanced federal income tax problems and issues as they pertain to individuals, partnerships, corporations, and estates and trusts. Emphasis on tax planning, including use of appropriate computer software. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: ACC 2460.

**ACC 2490 Advanced Cost Accounting** (3 cr)

**ACC 3430 Accounting Internship** Employment with approved accounting firms and business organizations; varied work experience with appropriate training, instruction, and supervision. Paper required. Restricted to Accounting majors and minors with junior or senior standing, a minimum GPA of 2.5, and approval of the Accounting Internship Director. Satisfactory/Unsatisfactory only. (3 cr) Last Offered: Spring 2002, Fall 2001, Summer 2001, Spring 2001.

**ACC 3500 Ind Study: Accounting** (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**AER 1011 Air Force Today I** The military as a profession, including: civilian control of U.S. Armed Forces, functions and organization of the U.S. Air Force, organization and operations of U.S. strategic offensive forces. (1 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**AER 1012 Leadership Lab** (0 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**AER 1021 Evol of USAF: US Air Force II** The U.S. general purpose and defensive forces including: Mission and organization of the major U.S. Air Force Commands and separate operating agencies, major functions and conduct of joint service military operations. Air defense, detection systems, close air support, and air superiority. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**AER 1022 Leadership Lab** (0 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000.

**AER 1031 The Air Force Way I** Aerospace power from balloons and dirigibles through the employment of U.S. air power in World War II. The military theory of aerospace power employment. (1 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**AER 1041 Evol of USAF: Aerospace Pwr II** Employment of U.S. air power in the Korean Conflict, relief missions and civic action programs in the later 1960s, and the war in Southeast Asia. The military theory of aerospace force employment. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**AER 2011 Air Force Leadership and MGT I** Managerial theory, concepts and techniques of decision-making, and the basic functions of management with particular emphasis on applications for Air Force officers. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**AER 2021 Air Force Leadership & Mgt II** An interdisciplinary approach to leadership which includes study of human behavior and relationships, and motivation. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**AER 2031 National Security Issues I** The Armed forces as an integral and inseparable element of society. Emphasis on the overall national security process and the factors which comprise it. The impact of a nation's military, economic psychological, and technical components on national security policy. Major geopolitical hotspots and the origin of arms races. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**AER 2041 National Security Issues II** Civilian control of the military, conflict control, military professionalism, and military justice. Emphasis on the reciprocal responsibilities of civilians and the military in a democratic society. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**AFR 5000 Ind. Study Africana Studies** Permission of Program Director. Individual students with specific interest work on a tutorial basis with an appropriate professor. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**AIS 1111 Basic Arabic** (3 cr)

**AIS 4100 Sem: Arab & Islamic st** (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 2000.

**ARB 1111 Basic Arabic I** Functional use of Modern Standard Arabic for students with no prior knowledge of Arabic. Recitations, readings and oral drills, supplementary language laboratory work. (6 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**ARB 1112 Basic Arabic II** Functional use of Modern Standard Arabic for students with no prior knowledge of Arabic. Recitations, readings and oral drills, supplementary

language laboratory work. (6 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**ARB 1121 Intermediate Arabic I** Review of grammar and vocabulary. Recitations, readings and oral drills. Supplementary language laboratory work. (5 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**ARB 1122 Intermediate Arabic II** Review of grammar and vocabulary. Recitations, readings and oral drills. Supplementary language laboratory work. (5 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Summer 2000.

**ARB 1123 Intermediate Arabic I** (3 cr)

**ARB 1124 Intermediate Arabic II** (3 cr)

**ARB 1125 Intermediate Arabic III** (3 cr)

**ARB 1131 Intensive Adv Arabic I** Advanced communication skills including reading and discussing topics on current events. Supplementary language laboratory work. (3 cr) Last Offered: Fall 2000, Fall 1999, Summer 1999, Fall 1998.

**ARB 1132 Intensive Adv Arabic II** Advanced communication skills including reading and discussing topics on current events. Supplementary language laboratory work. (3 cr) Last Offered: Summer 1999, Spring 1998, Spring 1997.

**ARB 1141 Intro to Coll Egypt Arabic** Training in the use of colloquial Egyptian Arabic, focusing on listening and speaking skills. Supplementary laboratory work and drills. (3 cr) Last Offered: Spring 2000, Fall 1999, Spring 1999, Fall 1998.

**ARB 2100 Arabic Lit in English Trans** The major works of Arabic literature in translation. Conducted in English. Satisfies Diversity Requirement. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 1998.

**ARB 2141 Arab-Andulasian Legacy** The impact of the Arab period on the Iberian Peninsula from the historical, cultural and literary viewpoints. Fulfills advanced literature requirements. (3 cr)

**ARB 2142 Arab Culture & Civilization** Arab culture and civilization with emphasis on the Arab people's contribution to the arts and sciences. Satisfies Diversity Requirement. (3 cr) Last Offered: Summer 2002, Summer 2001, Fall 2000, Summer 1999.

**ART 2110 Studio Art** (3 cr)

**AST 1050 Planet Earth I** Earth as a planetary member of the Solar System. Characteristics, history of formation, dynamics, and evolution of the solar system.

Emphasis on the fundamental scientific principles at work throughout the universe. (3 cr)  
Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: AST 1051.

**AST 1051 Planet Earth Lab I** Laboratory to accompany Planet Earth I. Astronomical observations and principles of experimentation both with real physical experiments and computer simulations. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: AST 1050.

**AST 1052 Planet Earth II** A continuation of AST 1050 (Planet Earth I). (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: AST 1050. Corequisites: AST 1053.

**AST 1053 Planet Earth Lab II** A continuation of AST 1051 (Planet Earth II). (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Corequisites: AST 1052.

**AST 1072 Birth & Death of Stars** A study of the life cycles of the stars from their birth in dark, dense interstellar dust clouds to their deaths in nature's most violent cataclysms with a focus on stars and humanity, the formation of the chemical elements, the effects of nearby supernovae, the future of the Sun and the ultimate fate of Earth, and the question of planetary systems around other stars. Co-requisite for Arts students: AST 1073 (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**AST 1073 Stellar Lab** Laboratory focuses on stellar and galactic problems. Co-requisite: AST 1073, 2122 or 2120. (1 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**AST 1074 Planets** The surfaces and atmospheres of other worlds and how they compare to Earth with a focus on the physical processes which mold their landscapes and both generate and modify their gaseous atmospheres. The geology and meteorology of planets and their moons; the role of destructive collisions versus accretion and re-compaction. The effects of collisions with asteroids and comets, their role in mass extinctions, and in the possible formation of atmospheres and oceans; the search for planets and life in our solar system and beyond. Co-requisite for Arts students: AST 1075. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**AST 1075 Planets Lab** A continuation of Astronomy Lab I that focuses on planetary and solar system problems. Co-requisite: AST 1075 or AST 2121. (1 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**AST 1101 The Solar System** (3 cr)

**AST 1102 Exploration of the Universe** (3 cr)

**AST 1131 Astronomy Laboratory I** (1 cr)

**AST 1151 Astronomical Ideas** The evolution (and revolution) of human views and understanding of the sky from pretechnology cultures (e.g., Stonehenge, the American Southwest), through the sophisticated cultures of the ancient Near East, the ancient Greeks, the Renaissance (Copernicus, Galileo, Newton) and into the Twentieth Century. (3 cr) Last Offered: Spring 1999, Fall 1997, Fall 1996, Fall 1995.

**AST 2120 Sun and Stars** A technical study of the Sun and other stars; their internal constitutions and atmospheres, life cycles and evolutionary processes, memberships in groups, the radiations they produce, and the manner in which astronomers quantify their characteristics. Prerequisite: MAT 1500 or above. Open to science, engineering and math majors. Non-Astronomy majors may elect AST 1073 as a lab. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: (AST 2121 or AST 2122).

**AST 2121 Solar System Astronomy** The science of the solar system: early ideas of the nature of the solar system; the dynamics and compositions of the planets; atmospheric evolution and maintenance. The manner with which comets and meteorites reveal the structures of the primitive solar system. Prerequisite: MAT 1500 or above. Open to science, engineering and math majors. Non-Astronomy majors may elect AST 1075 as a lab. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Fall 1998.

**AST 2122 Galaxies and Cosmology** The universe beyond the solar system: galactic structure, galactic evolution, and the current cosmological models of the large scale structure of the universe. Prerequisite or Corequisite: MAT 1500 or above. Open to science, engineering and math majors. Non Astronomy majors may elect AST 1073 as a lab. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**AST 2133 Observational Lab I** Astronomical instruments, methods of observing, reduction of observations, and discussion of astronomical data. Observations include CCD imaging, spectroscopy, and photoelectric photometry using the observatory reflector and Schmidt telescopes. Two hours per week in the laboratory in addition to the observing time necessary to complete the assigned projects. Corerequisite or prerequisite: AST 2120. (2 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**AST 2134 Observational Lab II** Continuation of AST 2122. (2 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: AST 2133.

**AST 3121 Directed Studies I** Studies in selected areas under the direction of a staff member. (2 cr)

**AST 3122 Directed studies II** Studies in selected areas under the direction of a staff member. (2 cr)

**AST 3131 Sem Astro & Astrophysics** Seminar on special topics in Astronomy and Astrophysics. (1 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**AST 3141 Galactic Astronomy** The nature, distribution, and motions of the constituents of the Galaxy; the major star system in which our Sun is located the stars, the gas and dust, star clusters, etc.; stellar distance determination, distribution of stars and gas, stellar kinematics, galactic dynamics, galactic radio emission, cosmic rays, and evolution of galaxies. Prerequisite: one year of mathematics or physics and either AST 2120 or AST 2122. (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1998, Fall 1996.

**AST 3142 Intro to Astrophysics** Theories of stellar atmospheres, line-broadening and formation, radiative transfer, theoretical spectra, and the theory of stellar interiors are covered. Fundamental stellar timescales, thermonuclear reactions, evolutionary models, stellar pulsations, novae and supernovae. (3 cr) Last Offered: Spring 2001, Spring 1999, Spring 1997, Spring 1995. Prerequisites: AST 2120 or AST 2122 and PHY 2410.

**AST 3152 Astrodynamics** Problems dealing with orbit determination, artificial satellites, space travel and related subjects. MAT 1505 or above. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1998. Prerequisites: AST 2121.

**AST 3162 HighEnergy Astrophysics Topics** Classes of astronomical sources detected at ultraviolet, X-ray, and gamma-ray wavelengths and the physical processes behind these emissions: stellar coronae and stellar flares, cataclysmic binaries, supernovae, accretion disks around neutron stars and black holes, X-ray bursters, active galactic nuclei, QSO's, BL Lac objects, and gamma-ray bursters. Prereq: One year of mathematics or university level physics, plus 2120. (3 cr) Last Offered: Spring 2002. Prerequisites: PHY 2410 and PHY 2412 and AST 2120.

**AST 4121 Undergrad Research I** Student participation in departmental or independent research under faculty supervision; frequent conferences on literature search, research techniques, experimental procedures and results. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Fall 1999.

**AST 4122 Undergrad Research II** Continuation of AST 4121. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Spring 2000.

**BIO 1101 Biology** General principles, cells and energy, hereditary mechanisms, survey of organisms, evolution and ecological principles. For non-biologists who do not plan a more extensive study of biology. Open to C & F majors. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**BIO 1181 Cell Biology and Genetics** The structure of prokaryotic and eukaryotic cells; microbial classification; control of microbial growth, principles of disease; pathogenic mechanisms; host defenses. Eukaryotic and prokaryotic gene organization and function; analysis of patterns of inheritance; recombinant DNA technology; linkage and genetic maps, genetic variation in human populations; inheritance, diagnosis and treatment of metabolic disease; cytogenetics; immunogenetics; cancer; developmental genetics. Open to Nursing majors. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Fall 2000.



**BIO 1205 Human Anat & Physiology I** Basic concepts and laboratory studies of anatomy and physiology with presentation of overall morphology and function of the integumentary, skeletal, muscular, nervous, and endocrine systems. Open to Nursing majors. (4 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**BIO 1206 Human Anat & Physiol II** Continuation of Biology 1205. The structure and function of the blood, vascular, lymphatic, respiratory, digestive, urinary, and reproductive systems. Open to Nursing majors. (4 cr) Last Offered: Summer 2002, Spring 2002, Fall 2001, Summer 2001.

**BIO 1303 General Biology II** (3 cr)

**BIO 1401 Microbiology** Fundamentals of structure, function, and characteristics of microorganisms and their interaction with host organisms; basic microbiological techniques carried out or demonstrated in laboratory. Open to Arts sophomores. (3 cr) Last Offered: Spring 2000, Spring 1998, Spring 1997, Fall 1996. Corequisites: BIO 1402.

**BIO 1402 Microbiology Lab** Basic microbiological techniques carried out or demonstrated in laboratory. Open to Arts sophomores. (1 cr) Last Offered: Spring 2000, Spring 1998, Spring 1997, Spring 1996. Corequisites: BIO 1401.

**BIO 1505 Biology for Today** Biology of cells, comparative animal physiology, genetics, reproduction and development, evolutionary biology and ecology. Experimental approaches used by biologists in problem solving. Writing assignments on the interpretation of science presented in the news media. Open to Arts sophomores. (4 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**BIO 1555 Environmental Science** Fundamentals of ecology; energy use and alternatives for the future; mineral resources; population, food nutrition, hunger; air and water pollution; pesticides; waste disposal; global warming; oil spills. Open to Arts sophomores. (4 cr) Last Offered: Spring 2002, Spring 2001, Summer 1998, Spring 1998.

**BIO 1605 Heredity & Human Affairs** Genetic variation in humans and human populations including metabolic diseases, chromosomal aberrations and cancer. Genetic aspects of biotechnology, biodiversity and environmental hazards. Open to Arts sophomores. (4 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**BIO 1625 How Microbes Rule the World** How microbes benefit humans through the recycling of elements and their uses in food and fuel production, water purification and detoxification of wastes. Microbes as the causative agents of disease and as agents to produce lifesaving cures through biotechnology. Open to Arts sophomores. (4 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**BIO 1655 Human Physiology - Body Works** The principles and mechanisms underlying how the human body functions, with emphasis on physical fitness. Open to

Arts sophomores. (4 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**BIO 1705 Life in the Sea** Fundamentals of chemical, physical, and geological oceanography and their relationship to the evolution of marine organisms. The biology and ecology of marine algae, invertebrates, fishes and marine mammals. The ecological dynamics of marine habitats including saltmarshes, coral reefs and the deep sea. Open to Arts sophomores. (4 cr) Last Offered: Spring 2001, Spring 1999, Spring 1997, Spring 1995.

**BIO 1785 Special Themes in Biology** A selected theme on some aspect of biology. Topics will be announced. Specific information will be available in the department office. Open to Arts sophomores. (4 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000. Prerequisites: BIO 1505 (may be taken concurrently) or HON 1070.

**BIO 1903 Internship Elective** Open to BIO and BSC majors. (3 cr) Restrictions: Restricted to BSC Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**BIO 1906 Internship Elective** Open to BIO and BSC majors. (6 cr) Restrictions: Restricted to BSC Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**BIO 1909 Internship Elective** Open to BIO and BSC majors. (9 cr) Restrictions: Restricted to BSC Majors. Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**BIO 2105 General Biology 1** An introduction to biological organization stressing the molecular and cellular aspects of living organisms. The chemistry of life, the cell, the gene, and mechanisms of evolution. (4 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**BIO 2106 General Biology II** The origin of life and diversity of organisms seen in five biological kingdoms. Topics include nutrient acquisition, digestion, circulation, response to stimuli, movement, reproduction, behavior, and ecology. (4 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**BIO 2993 Internship** Open to BIO and BSC majors. (3 cr) Restrictions: Restricted to BSC Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**BIO 2996 Internship** Open to BIO and BSC majors. (6 cr) Restrictions: Restricted to BSC Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**BIO 3011 Animal Behavior** Causation, development, ecology, evolution of behavioral patterns, behavioral genetics, neuroethology, communication, foraging territoriality, mating systems, parental behavior, social organization. Emphasis on ultimate explanations. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999, Summer 1998. Prerequisites: (BIO 2105 and BIO 2106) or (HON 1075 and HON 1076).

**BIO 3012 Animal Behavior Lab** Methods for observing behavior and for collection, statistical analysis, and interpretation of behavioral data. Exercises in lab and field, discussion, and small- group independent research projects. (1 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999, Summer 1998. Prerequisites: (BIO 2105 and BIO 2106) or (HON 1075 and HON 1076). Corequisites: BIO 3011.

**BIO 3055 Animal Physiology** The basic principles underlying how animals function and the mechanisms used to solve physiological problems. (4 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (BIO 2105 or HON 1075) and (BIO 2106 or HON 1076).

**BIO 3105 Biometry** Statistical treatment and interpretation of data obtained from biological experiments, emphasizing analytical procedures in relation to growth and development. (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 1996, Fall 1995. Prerequisites: BIO 2105 and BIO 2106.

**BIO 3155 Comparative Anatomy** Evolution of homologous structures of vertebrates including functional considerations. Laboratory includes systematic and topical dissection of representative chordates and demonstrations of living organisms' functions. (4 cr) Last Offered: Spring 2002, Spring 2001, Fall 1999, Fall 1998. Prerequisites: (BIO 2105 or HON 1075) and (BIO 2106 or HON 1076).

**BIO 3225 Intro to Electron Microscopy** Introduction to specimen production for and use of scanning and transmission electron microscopes. (4 cr) Last Offered: Fall 2002, Fall 2000, Spring 1999, Fall 1996. Prerequisites: (BIO 2105 or HON 1075) and (BIO 2106 or HON 1076).

**BIO 3255 Introductory Ecology** Factors affecting the distribution, abundance, and interactions of organisms. Climate patterns, biomes, physiological adaptation, population dynamics, behavioral ecology, species interactions, community structure, ecosystem function, and environmental problems. Hypothesis testing using statistical analysis of data. (4 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Fall 2000. Prerequisites: (BIO 2105 or HON 1075) and (BIO 2106 or HON 1075).

**BIO 3351 Genetics** Transmission genetics, cytogenetics, gene expression and regulation and population genetics. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (BIO 2105 or HON 1075) and (BIO 2106 or HON 1076).

**BIO 3405 Higher Vertebrates** Evolutionary history, diversification and basic biology of birds and mammals: ecological and physiological adaptations, reproductive biology, social behavior, population ecology, life history strategies, taxonomy and identification. Field trips. (4 cr) Last Offered: Fall 2001, Spring 1998, Fall 1997, Fall 1995. Prerequisites: BIO 2105 and BIO 2106.

**BIO 3455 Histology** The microscopic study and demonstration of cells, tissues and organ systems of the mammalian body. (4 cr) Last Offered: Spring 2002, Spring 2001,

Spring 2000, Summer 1999. Prerequisites: (BIO 2105 or HON 1075) and (BIO 1206 or HON 1076).

**BIO 3505 Invertebrate Zoology** The anatomy, taxonomy, evolution, physiology, development, ecology and behavior of invertebrates. The comparative approach in both field and laboratory. (4 cr) Last Offered: Fall 2000, Fall 1998, Fall 1996. Prerequisites: BIO 2105 and BIO 2106.

**BIO 3555 Lower Vertebrates** The biology of fishes, amphibians and reptiles: systematic and morphological diversity, physiological, reproductive and behavioral adaptations, ecology, and evolution. Required field trips to representative local habitats. (4 cr) Last Offered: Spring 2001, Spring 1999, Spring 1997, Spring 1995. Prerequisites: (BIO 2105 or HON 1075) and (BIO 2106 or HON 1076).

**BIO 3595 General Microbiology** Bacteria, viruses, eukaryotic microbes, immune function. Microbes in air, water, soil: interactions with plants and animals. Agricultural, commercial, industrial, and medical applications. Laboratory studies in growth and analysis of selected organisms/viruses. (4 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (BIO 2105 or HON 1075) and (BIO 2106 or HON 1076).

**BIO 3605 Microtechnique** The principles and basic methods of preparing specimens for microscopic study; major techniques and recent developments. (4 cr) Prerequisites: BIO 2105 and BIO 2106.

**BIO 3651 Non-vascular Plants** Physiology, comparative evolutionary trends, ecology, and morphology of Monera, photosynthetic Protists, Bryophytes, Fungi, and Lichens. (2 cr) Last Offered: Spring 1997, Spring 1996, Spring 1995. Prerequisites: BIO 2105 and BIO 2106.

**BIO 3652 Non-vascular Plants Lab** Physiological experimentation and microscopic study of Monera, photosynthetic Protists, Bryophytes, Fungi, and Lichens. (2 cr) Last Offered: Spring 1997, Spring 1996, Spring 1995. Prerequisites: BIO 2105 and BIO 2106.

**BIO 3755 Parasitology** Biology of host-parasite relationships with emphasis on parasites of man and domestic animals. Methods of transmission, host response to parasites, prevention and treatment. (4 cr) Last Offered: Spring 2002, Fall 1998, Spring 1997, Spring 1995. Prerequisites: BIO 2105 and BIO 2106.

**BIO 3801 Plant Physiology** Physiology and metabolism of plants: photosynthesis, respiration, hormones, photoperiodism, radioisotopes in biological research, DNA biosynthesis and metabolism during plant development. (2 cr) Last Offered: Spring 1997, Spring 1996, Spring 1995. Prerequisites: BIO 2105 and BIO 2106.

**BIO 3802 Plant Physiology Lab** Photosynthesis, respiration, hormones, extraction and characterization of DNA, DNA biosynthesis, autoradiographic techniques and liquid

scintillation spectrometry. (2 cr) Last Offered: Spring 1997, Spring 1996, Spring 1995. Prerequisites: BIO 2105 and BIO 2106. Corequisites: BIO 3801.

**BIO 3905 Vascular Plants** Organization of the vascular plant body, plant reproduction and development, systematic and environmental considerations, tissue culture and hormonal regulation. (4 cr) Last Offered: Fall 2002, Fall 2000, Fall 1998, Fall 1997. Prerequisites: BIO 2105 and BIO 2106.

**BIO 4105 Bacterial Pathogens** The nature and activities of bacterial pathogens. Mechanisms of pathogenesis and invasiveness, and the physical evidence of infection and defense mechanisms of the host. Laboratory focus on isolation and identification methods and cultivation techniques. (4 cr) Last Offered: Spring 2001, Spring 2000. Prerequisites: BIO 3595.

**BIO 4205 Cell Biology** The mechanisms of cell signaling, regulation of growth and division, adhesion, movement, macromolecular biosynthesis, processing and trafficking. Important experimental techniques and strategies for study of the eukaryotic cell. (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: BIO 3351 and CHM 2211 and CHM 2212.

**BIO 4251 Comp Endocrinology** Mechanisms of endocrine control of growth, metabolism, reproduction, adaptation, and behavior. The endocrine glands. (3 cr) Last Offered: Spring 2002, Spring 2001, Summer 2000, Spring 2000. Prerequisites: BIO 3055.

**BIO 4252 Comp Endocrinology Lab** Laboratory experience in endocrinology, demonstrative and analytical. (1 cr) Last Offered: Spring 2002, Spring 2001, Summer 2000, Spring 2000. Prerequisites: BIO 3055. Corequisites: BIO 4251.

**BIO 4285 Developmental Biology** Mechanisms and patterns of vertebrate embryo development from primordial germ cells to formation of organ systems. Lectures on, and laboratory work with living embryos; microscopic study of prepared embryos; and individual research projects. Prerequisite: BIO 3351 (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: BIO 3351.

**BIO 4305 Evolution** Process and pattern from micro- and macro-evolutionary perspectives. Evolutionary genetics, natural selection, speciation, macroevolutionary trends, and extinctions. Field, laboratory, and computer approaches. (4 cr) Last Offered: Spring 2001, Spring 1999, Spring 1998, Spring 1997. Prerequisites: BIO 3351.

**BIO 4355 Experimental Genetics** Laboratory exploration and discussion of topics in bacterial, developmental, molecular, population and transmission genetics. Readings in the primary literature are stressed. (4 cr) Prereq: BIO 3351; MAT 1310-1315. (4 cr) Last Offered: Spring 2001, Spring 1999, Spring 1997. Prerequisites: BIO 3351.

**BIO 4451 Field Ecol and Evol** Advanced study of organisms and ecosystems of a particular region (location varies; has included Florida, Puerto Rico, Nova Scotia).

General principles explored using examples from focal area: historical and ecological biogeography, habitat patterns, biotic and abiotic interaction, evolutionary processes, and conservation problems. (2 cr) Last Offered: Spring 2002, Summer 2001, Spring 2000, Spring 1998. Prerequisites: BIO 3012 or BIO 3255 or BIO 4305.

**BIO 4452 Field Ecol and Evol Lab** Field study of organisms and ecosystems of a focal region. Trip lasting 15-20 days usually in late May to geographical area covered in BIO 4451, with focus on local habitats and conservations projects, field identification, group exercises, and independent research projects. Costs to students and timing vary with site chosen. (2 cr) Sem 2, even year. Prereq: BIO 2105, 2106. Coreq: Bio 4451. (2 cr) Last Offered: Spring 2002, Summer 2001, Spring 2000, Spring 1998. Prerequisites: BIO 3012 or BIO 3255 or BIO 4305. Corequisites: BIO 4451.

**BIO 4485 Marine Biology** An introduction to chemical, physical and geological oceanography; the biology and ecology of marine organisms (plankton, seaweeds, invertebrates, fishes, sea birds, marine mammals); and the comparative ecology of marine communities and ecosystems (estuaries, rocky intertidal, kelp forests, coral reefs, the deep sea and hydrothermal vents). Open to all majors. (4 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999, Spring 1998.

**BIO 4505 Molecular Biology** DNA structure, replication, recombination, mutagenesis and repair, transcription, RNA processing, translation and the genetic code, control of gene expression, eukaryotic genome structure. Molecular aspects of immunity, cancer, and AIDS. Laboratory exercises in gene cloning and analysis. (4 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Fall 1998. Prerequisites: BIO 3351 and CHM 2211 and CHM 2212.

**BIO 4605 Neurobiology** The physiology of the nervous system using vertebrates and invertebrates. The function of nerve cells, synapses, sensory, motor, behavior and learning. (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: BIO 3055.

**BIO 5100 Senior Seminar** Special topics in modern biology, presented by student lectures and informal discussions. Topics to be announced each semester. (1 cr) Restrictions: Restricted to BIO Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**BIO 6100 Affiliation Study** (0 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**BIO 6401 Independent Study** Supervised laboratory/field research (1 cr) Last Offered: Fall 2002.

**BIO 6402 Independent Study** Supervised laboratory/field research. (1 cr) Last Offered: Fall 2002.

**BIO 6403 Independent Study** Supervised laboratory/field research. (1 cr) Last Offered: Fall 2002.

**BIO 6404 Independent Study** Supervised laboratory/field research. (1 cr) Last Offered: Fall 2002.

**BIO 6409 Senior Thesis** Directed laboratory research. Students will conduct original research and submit a written thesis. (2 cr) Restrictions: Restricted to BIO Majors. Last Offered: Spring 2002, Spring 2001, Spring 2000, Fall 1999. Prerequisites: or HON 1075) and (BIO 2106 or HON 1076)(BIO 2105. Corequisites: BIO 5100.

**BIO 6509 Directed Research** Library and/or laboratory research under thesis. (2 cr) Sem 1&2. Prereq: Bio the direction of a student-selected Biology faculty member. Prerequisite for senior. 2105, 2106; consent of mentor; 3.0 QPA. Restricted to junior or senior biology majors. (No substitution for required biology laboratory courses.) (2 cr) Restrictions: Restricted to BIO Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (BIO 2105 or HON 1075) and (BIO 2106 or HON 1076).

**BIO 6940 Special topics** Current topics in biology. Topics will be announced on a semester by semester basis. Specific information will be available in the department office. (2 cr) Last Offered: Spring 1999, Spring 1996.

**BL 1090 Legal Environ Bus & Soc** The sources, nature and substantive principles of American Law; its moral and ethical dimensions; the judicial process; comparison with other legal systems; impact of government regulations. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**BL 2100 Labor Legislation** Modern legislation governing activities of employers and unions in labor disputes and relations between unions and their members; comparison with labor legislation internationally. (3 cr)

**BL 2135 Bus Assoc & Commerc Tran** The law of agency, partnerships and corporations; personal property; the Uniform Commercial Code sections dealing with secured transactions and negotiable instruments; moral and ethical dimensions; comparison with other legal systems. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**BL 2150 Real Estate Princs Pract** Ownership, possession and management of land and buildings; landlord and tenant, transfer of rights; title insurance; moral and ethical dimensions; comparison with other legal systems. (3 cr) Last Offered: Spring 2002, Fall 1995, Spring 1995.

**BL 2160 International Business Law** The nature, sources, functions and practical applications of International Law, approached from a perspective of the individual, governments, and business entities. Emphasis on the "rules" that govern doing business

globally and resolving disputes. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1997.

**BL 2185 Law of Contracts & Sales** Elements for legal agreements; Uniform Commercial Code Article 2; moral and ethical dimensions; comparison with other legal systems. (3 cr) Last Offered: Fall 2002, Fall 2001, Summer 2001, Fall 2000.

**BL 3160 Estate Planning** Emphasis is placed on the use of estate planning principles in establishing estate objectives and plans, and the development of a faculty for using the tools of estate planning; moral and ethical dimensions. (3 cr)

**BL 3190 Indep Study & Research** Study with faculty member's guidance in an area of special interest to students. (3 cr) Last Offered: Fall 2000, Fall 1999.

**BL 5701 Alternate Dispute Resolution** The nature of conflict and the means of effectively resolving disputes: litigation, negotiation, mediation, and arbitration. (3 cr) Last Offered: Spring 2001.

**BUS 1102 Integrated Prin Fin & Fin Acct** The theory and techniques of financial management integrated with the fundamentals of financial accounting. Exposure to appropriate legal topics is included. (4 cr) Last Offered: Summer 2001, Summer 2000, Summer 1999, Summer 1998. Corequisites: BUS 1103, BUS 1104, BUS 1105, VBIL 1001.

**BUS 1103 Integrated Prin Mkt & Mgmt** Description and evaluation of the ways in which goods and services are developed to meet consumer needs and distributed for domestic and international consumption, integrated with the introduction to organizational structures, functions and management processes. Exposure to appropriate legal topics is included. (4 cr) Last Offered: Summer 2001, Summer 2000, Summer 1999, Summer 1998. Corequisites: BUS 1102, BUS 1104, BUS 1105, VBIL 1001.

**BUS 1104 Integrated Prin Acctg & Op Mgt** Introduction to issues related to the design of effective managerial accounting systems, integrated with the concepts and techniques for solving problems in manufacturing and service organizations. Exposure to appropriate legal topics is included. (4 cr) Last Offered: Summer 2001, Summer 2000, Summer 1999, Summer 1998. Corequisites: BUS 1102, BUS 1103, BUS 1105, VBIL 1001.

**BUS 1105 Integrated Prin Mic & Mac Econ** The economic system and its fundamental principles, integrated with discussion of the price system, demand & supply analysis, the production process and the analysis of market structures. Exposure to appropriate legal topics is included. (4 cr) Last Offered: Summer 2001, Summer 2000, Summer 1999, Summer 1998. Corequisites: BUS 1102, BUS 1103, BUS 1104, VBIL 1001.

**BUS 1106 Integrated Bus Simulation** Internet based computer simulation that seeks to provide students with hands-on experience in managing a company. (1 cr) Last Offered: Summer 2001, Summer 2000.



**CEE 2101 Egr Mechanics I- Statics** Vector analysis of force systems on particles and rigid bodies with particular emphasis on mathematical and physical formulation of principles underlying the solution of engineering problems; vector algebra; friction; centroids and moments of inertia. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: MAT 1505 and PHY 2400.

**CEE 2102 Egr Mechanic II-Dynamics** Kinematic and kinetic analysis of particles and rigid bodies using vector calculus; work and energy; impulse and momentum. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: CEE 2101.

**CEE 2103 Mechanics of Solids** Stress resultants in bodies from tension, compression, shear, flexure, torsion and temperature; stress and strain transformations; combined stresses; load deformation relationships; Euler buckling. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: CEE 2101 or CEE 2104.

**CEE 2104 Mechanics: Statics & Dynamics** (4 cr) Last Offered: Fall 2002.

**CEE 2602 Civil Egr Measurements** Two major group projects: environmental study of local stream and test model of bridge truss; "as needed" topics include map skills, photo interpretation, plane surveying, water quality, stream hydraulics, material properties and testing, beam flexure; field trips. Two lecture periods and one laboratory period a week. Prerequisite or corequisite: PHY 2400. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**CEE 3101 Soil Mechanics** Properties of soil as an engineering material, stresses in soil masses, consolidation and settlement, bearing capacity, seepage and soil stabilization. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CEE 2103 and GLY 2805. Corequisites: CEE 3901.

**CEE 3111 Fluid Mechanics** Fluid properties; fluid statics; kinematics of flow; conservation of mass, energy, momentum; dynamic similarity; fluid resistance, boundary layer theory; flow in conduits; lift and drag; potential flow; compressible flow. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: CEE 2102 or CEE 2104 and MAT 2500.

**CEE 3211 Transportation Egr** Transportation planning; system modes and roles of government agencies. Facility design: alignment, geometrics, pavement, economic evaluation of alternatives. Operations: capacity, level of service, traffic control, queuing, safety. Rail, air, public and future modes of transportation. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: CEE 2102 or CEE 2104 and CEE 2602.

**CEE 3224 Trans Facilities Design** Systems engineering application of the planning/design process including conceptual design philosophies, environmental impact

evaluations, design of highway and transit facilities. Communication processes and software applications stressed. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CEE 3211. Corequisites: CEE 3924.

**CEE 3401 Structural Mechanics** Concepts of stability and determinacy; moment area, conjugate beam and energy principles; indeterminate analysis by method of consistent deformation, slope deflection, moment distribution. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: CEE 2103.

**CEE 3422 Structural Design** Principles of design; limit state design logic and procedures; behavior and design of reinforced concrete and structural steel members; design for tension, compression, shear, and moment; serviceability. Three lecture periods and one laboratory period a week. (4 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CEE 3401.

**CEE 3501 Environmental Egr I** Fundamental physical/chemical principles for environmental remediation; environmental regulations; water pollution, dissolved oxygen modeling, computer applications; solid and hazardous waste generation and management; toxicology and risk assessment. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CHM 1152 and MAT 2500.

**CEE 3511 Hydraulic Egr & Hydrology** Pressure conduits, water and wastewater transport, pumping; open channel flow, hydraulic structures; principles of hydrology. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CEE 3111 and CEE 3704.

**CEE 3704 CE Numerical & Stat Analysis** Development and application of algorithms for civil engineering problems. Numerical methods for root finding, simultaneous equations, curve fitting, interpolation, integration, and differentiation are covered. Students are introduced to fundamental probability theory and statistics. (3 cr) Last Offered: Fall 2002. Prerequisites: EGR 1611.

**CEE 3901 Soil Mechanics Lab** Soil classification; techniques for determining properties of soil and soil aggregate; case histories in geotechnical engineering. One period a week. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Corequisites: CEE 3101.

**CEE 3911 Fluid Mechanics Laboratory** Experiments and demonstrations illustrating principles of flow behavior including computer-aided analysis and interpretation. One period a week. Prerequisite or corequisite CEE 3111. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: .

**CEE 3924 Trans Facilities Dsg Lab** Design making under uncertainty; problems related to geometric design, highway and intersection capacity and site planning; route location and feasibility study. Software applications. One period a week. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Corequisites: CEE 3224.

**CEE 4225 Advanced Trans Egr** Applications of statistics and probability theory to solution of urban and rural transportation problems and the design of systems with software applications and model development. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999, Spring 1998. Prerequisites: CEE 3211.

**CEE 4423 Computer-aided Struct Egr** Advanced structural analysis techniques; advanced topics in structural design; matrix formulations, structural modeling and design using commercial software packages. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CEE 3422.

**CEE 4522 Environmental Egr II** Water quality problems and eutrophication; Clean Water and Safe Drinking Water Acts; analysis and design of unit processes in water and wastewater treatment plants including sedimentation, coagulation and flocculation, adsorption, filtration, disinfection, activated sludge and trickling filters. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: CEE 3111 and CEE 3501. Corequisites: CEE 4922.

**CEE 4523 Water Resources Engr Design** Design fundamentals of hydrology and open channel hydraulics using production-level programs. Topics include design storms, storm water design and open-channel river modeling. Three lecture periods and one analysis-design period a week. (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: CEE 3511.

**CEE 4605 Civil Egr Design Project I** Multidisciplinary preliminary design project; project planning; evaluation of alternatives; scheduling; technical writing; oral presentations; seminars on professional practice issues. Prerequisite: One CEE design elective. Corequisite: Another CEE design elective. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**CEE 4606 Civil Egr Design Project II** Written and oral reports on a design project. Prerequisites: CEE 4605 and two CEE design electives. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**CEE 4607 Selected Topics in CEE** Independent study or research on a current engineering topic. Prerequisites: Senior standing and permission of the chairperson. (3 cr) Last Offered: Summer 2002, Spring 2002, Spring 2001, Spring 2000.

**CEE 4701 Economy and Risk** Value theory, interest formulas, equivalence calculations, inflation and taxes, comparison among alternatives; decision criteria, risk and uncertainty. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: CEE 3704.

**CEE 4821 Geological Engineering** Soil testing, site investigation, design of both shallow and deep foundations. Three lecture periods and one analysis-design period a

week. (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: CEE 3101 and CEE 3901.

**CEE 4922 Environmental Egr Lab** (CEE Design Elective) Physical, chemical, and microbiological analyses of water and wastewater; quantitative analysis of several unit operations and processes for water and wastewater treatment plants design and control; field trips to water and wastewater processing facilities. One period a week. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: CEE 4522.

**CEE 5602 Architec & Egr Bldg Dsgn** (Free CEE Elective) Role and relation between the architect and engineer in the design of buildings using real world building design applications; architectural design requirements; relation of engineering systems to building design. Prerequisite: Senior standing. (3 cr) Last Offered: Spring 2000, Spring 1999, Spring 1998, Spring 1997.

**CGS 5900 Cognitive Science Seminar** Interdisciplinary seminar focusing on theories, methods, and applications related to the study of intelligent systems. (3 cr) Last Offered: Spring 2002, Spring 2001.

**CHE 2032 Chem Engr Thermo I** Thermodynamics of single component systems: applications of first and second laws, steady-state energy balances, equations of state, thermodynamic properties of fluids, thermochemistry. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CHE 2041.

**CHE 2041 Chem Process Calculat** Application of physical and chemical principles to the solution of steady-state material balances. (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: (CHM 1152 and EGR 1611 and MAT 1505 and CHM 3411 (may be taken concurrently)).

**CHE 2232 Fluid Flow Operations** Fluid statics, fluid properties, flow of incompressible fluids in conduits, friction factors, meters, pumps, external flow, drag, flow in packed and fluidized beds. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CHE 2041.

**CHE 2432 Modeling & Numerical Methods I** Application of rate laws and conservation equations to modeling by differential equations of physical systems. numerical methods related to solution of system models involving algebraic equations and ordinary differential equations. Errors, stability and convergence. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**CHE 2811 Professional Development I** Introduction to professionalism: Engineering ethics; safety; professional responsibility; environmental responsibility. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**CHE 3031 Heat Transfer Operations** Principles of heat flow, mechanisms of conduction, convection and radiation, correlations for heat transfer coefficients, heat

transfer equipment and process applications. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: (CHE 2032 and CHE 2232).

**CHE 3032 Principles of Mass Transfer** Fundamentals of interphase mass transfer: mechanisms, driving force and resistance to transfer, design and analysis of continuous and staged contacting processes, gas absorption and stripping, binary distillation, liquid extraction. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (CHE 3031 and CHE 3131).

**CHE 3131 CHE Thermodynamics II** The fundamental property relation, thermodynamic properties of single and multiple pure phases, homogeneous multicomponent phases, ideal and non-ideal liquid solutions, phase equilibria, chemical reaction equilibria, problem solving techniques, applications. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: CHE 2032.

**CHE 3132 Chemical Engineering Economics** Methods of economic evaluation and decision making, applied to engineering problems. Cost estimation and indexing, time value of money, depreciation, comparison of alternatives. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**CHE 3231 Modeling, Numerical Methods II** Application of conservation equations to the development of dynamic models of chemical engineering processes, analysis of system models using analytical and numerical methods. Introduction to systems described by partial differential equations and their solution by numerical methods. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000. Prerequisites: CHE 2432.

**CHE 3232 Simulation and Control** Introduction to process control concepts and applications, computer simulation of processes during transient change, real-time and LaPlace domain analysis of controlled systems. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CHE 3131 and CHE 2432.

**CHE 3821 Professional Development II** Professionalism: Oral and written communication; experimentation, data handling, elementary statistical analysis; lab safety; professional portfolio. (2 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: (CHE 2811 and CHE 3911 (may be taken concurrently)).

**CHE 3822 Professional Development III** Professionalism: Systematic safety analyses, hazard identification, fault-free analysis, redundant control; data handling; design of experiments; career issues; professional portfolio. (2 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000. Prerequisites: (CHE 3821 and CHE 3922 (may be taken concurrently)).

**CHE 3911 Chem Eng Laboratory I** Illustration of chemical engineering principles using laboratory and pilot scale equipment. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**CHE 3922 Chem Eng Labaoratory II** Continuation of CHE 3921. (2 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (CHE 3921 and CHE 3032 (may be taken concurrently) and CHE 3232 (may be taken concurrently) and CHE 3822 (may be taken concurrently)).

**CHE 4031 Chem Reaction Engineering I** Principles and methods of chemical kinetics and reactor design, applied to homogeneous reactive systems of industrial importance. Stoichiometry and rate laws for simple and complex reactions, analysis of reaction rates, isothermal reactors, introduction to temperature effects. Team design of integrated reactor system. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000. Prerequisites: CHE 3131 and CHE 3031. Corequisites: CHE 4131.

**CHE 4131 Process Design I** Application of fundamental principles of chemical engineering to design of industrial chemical processes; use of process simulators (such as Aspentech ASPEN PLUS) for process design. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: (CHE 3032 and CHE 3232 and CHE 4031 (may be taken concurrently)).

**CHE 4821 Professional Development IV** Professionalism: Lifelong professional development; independently researched seminar; inherently safe design practices; professional portfolio. (2 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000. Prerequisites: CHE 3822.

**CHE 4831 Chem Engr Projects I** Independent investigation of a chemical engineering problem, under supervision of a faculty adviser, including a written comprehensive report. (Nine hours per week of independent study). (3 cr) Restrictions: Restricted to CHE Majors. Last Offered: Fall 2002, Fall 2001, Summer 2001, Fall 2000.

**CHE 4832 Chem Engr Projects II** Continuation of CHE 4831. May include further investigation of same problem or a different topic. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000. Prerequisites: CHE 4831.

**CHE 4921 Chem Eng Laboratory III** Continuation of CHE 3922, extended experimental investigations. (2 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000. Prerequisites: CHE 3922.

**CHE 5001 Industrial Liq & Sld Waste** Industrial waste management: nature and sources of waste streams, principles underlying chemical and physical treatment methods, case studies of treatment technology. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Spring 2000.

**CHE 5002 Prin of Air Pol Control** Causes, effects and control of air pollution, emphasizing fundamental mechanisms: pollutant generation, atmospheric dispersion, sampling/analysis and data interpretation, air pollution control technology. (3 cr) Last Offered: Spring 2002, Fall 2000, Spring 2000, Spring 1999.

**CHE 5032 Process Equip Design II** Continuation of CHE 4131, with emphasis on equipment design; use of process simulators (such as Aspentech ASPEN PLUS) for process equipment design. (3 cr)

**Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1998. Prerequisites: CHE 4131.**

**CHE 5132 Transport Phenomena** Unified study of heat, mass and momentum transport: underlying physical laws, mathematical representation of transport laws, analogies between different transport modes, estimation of transport properties, applications. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 1999. Prerequisites: CHE 3032.

**CHE 5232 Chem Reaction Eng II** Principles and methods of chemical kinetics and reactor design applied to heterogeneous reactive systems of industrial importance: catalysis and catalytic reactors, catalyst deactivation, diffusion effects, design of heterogeneous catalytic and non-catalytic chemical reactors. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CHE 4131.

**CHE 5331 Process Control Theory** Mathematical tools for control systems analysis: linear open- and closed-loop systems, frequency response techniques, multi-variable process control, sampled-data control techniques, other advanced topics. (3 cr) Last Offered: Fall 1998, Fall 1997, Fall 1996, Fall 1995. Prerequisites: CHE 3232.

**CHE 5332 Special Topics in CHE** Selected topics in chemical engineering: recent developments, new technology, applications of other disciplines to chemical engineering problems. (3 cr) Restrictions: Restricted to CHE Majors. Last Offered: Fall 2000, Spring 1997.

**CHE 5532 Intro to Biotechnology** Production of commercially useful materials by living organisms, emphasizing emerging technology: biologically important compounds, their relationships to genetics and metabolic pathways, controlled growth of microbes, separation and purification of products. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 1999.

**CHE 5632 Polymer Sci and Engr** Basic principles of polymer science: nature and structure of organic high-polymers, polymerization reactions, physical and chemical properties, mechanical testing, viscoelasticity, flow and processing applications. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Fall 1999. Prerequisites: (CHE 2212 or CHM 3212).

**CHI 1111 Basic Chinese I** Functional use of Chinese for students with no prior knowledge of Chinese. New pronunciation system, PINYIN, readings and oral drills. Supplementary language laboratory work. (6 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**CHI 1112 Basic Chinese II** Continuation of CHI 1111-Basic Chinese I New pronunciation system, PINYIN, readings and oral drills. Supplementary language laboratory work. (6 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**CHI 1121 Intermediate Chinese I** Review of Grammar and vocabulary. New pronunciation system, PINYIN, reading and oral drills. Supplementary language laboratory work. (5 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**CHI 1122 Intermediate Chinese II** Review of grammar and vocabulary. New pronunciation system, PINYIN, readings and oral drills. Supplementary language laboratory work. (5 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**CHI 1131 Advanced Chinese I** Advanced communication skills including reading and discussing topics on current events. Supplementary language laboratory work. (3 cr)

**CHI 1132 Advanced Chinese II** Advanced communication skills including reading and discussing topics on current events. Supplementary language laboratory work. (3 cr)

**CHI 2143 Chinese Culture** Chinese culture and civilization from the beginning to the present. Conducted in English. Satisfies Diversity Requirement. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**CHI 2144 Chi Lit in Translation** The history and development of Chinese fiction from its beginning to the present. Conducted in English. Satisfies Diversity Requirement and advanced English literature elective course. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**CHM 1000 Profesi Development Sem** These courses taken by all chemistry majors each semester with presentations on the chemical profession by students, faculty and visiting chemical professionals. A broad range of activities will include presentations on undergraduate research, career planning, the chemical industry, chemical safety and such topics as medicinal chemistry, polymer chemistry, pharmacology, etc. (1 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**CHM 1001 Experimental Chem I** Simple syntheses and quantitative measurements; analysis of materials and separations. Some experience with modern instrumentation will be provided to demonstrate the limitations accompanying the experimental method. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: CHM 1050.

**CHM 1002 Experimental Chem II** This laboratory experience will continue to extend the student's knowledge of chemistry as an experimental science. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CHM 1001.



**CHM 1050 Chem Themes Foundation** For non-science majors. Basic concepts of measurement, the S. I. system of units, structure of atoms and molecules, inorganic nomenclature, qualitative and quantitative aspects of chemical reaction, properties of gases, properties of solutions, principles of chemical equilibrium, acids and bases. The first semester in a two-semester sequence. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001.

**CHM 1051 Chemistry & Energy** For non-science majors. The role of chemistry in the production, storage and utilization of energy. Topics covered include basic thermochemistry, thermodynamics, organic chemistry, energy from combustion, electrochemistry, electrochemical energy production, nuclear chemistry, and other sources of energy (phase changes, wind and water power, solar energy, tidal power). (3 cr) Last Offered: Spring 1999. Corequisites: CHM 1002.

**CHM 1052 Organic and Biochemistry** For non-science majors. Introduction to alkanes, alkenes, arenes, amines, carboxylic acids, amino acids, carbohydrates, proteins and major metabolic pathways. Also includes topics in nutrition and exercise. Prereq: CHM 1050, 1000; Coreq: CHM 1002. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 1999.

**CHM 1053 Atoms Elements Molecules** For non-science majors. The experiments which led to the inception and evolution of the concepts of atoms, elements, and molecules will be examined. These samples give a grounding in the fundamentals of chemistry and an understanding of the logic which underlies the "scientific method". Coreq: CHM 1002. (3 cr) Last Offered: Spring 1997. Corequisites: CHM 1002.

**CHM 1054 Environmental Chemistry** For non-science majors. Application of scientific laws, principles, and concepts to a basic understanding of the chemistry of the environment its use and abuse, as it is affected by the quality of the air, water and soil; and the impact of the increasing demands for the earth's limited fossil, biological and mineral resources by an exponentially growing global population. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1997. Corequisites: CHM 1002.

**CHM 1055 Molecular Architecture** For non-science majors. An historical development of the idea of three dimensional species at the molecular level; experimental verification, chiral species, electronically delocalized species, aromatic and anti-aromatic species, fluxional species, rigid, highly strained, unstable and metastable species. Current and future directions (e.g. "Buckyballs") as time allows. (3 cr) Last Offered: Spring 2000, Spring 1998. Corequisites: CHM 1002.

**CHM 1056 Supermarket Chemistry** For non-science majors. The chemistry of products found in the supermarket: food processing, food additives, soaps and detergents, cosmetics, and over-the-counter pharmaceuticals. (3 cr) Last Offered: Spring 1998. Corequisites: CHM 1002.

**CHM 1057 Chem Theme: Criminalistics** For nonscience students. Introduction to the chemical aspects of forensic chemistry examining physical evidence found at a crime scene (hair, fibers, chemical residues, DNA, etc.), proper collection, preservation of evidence, and chemical principles involved in the analyses. (3 cr) Last Offered: Spring 2002. Prerequisites: CHM 1050. Corequisites: CHM 1002.

**CHM 1103 General Chemistry Lab I** Qualitative and quantitative laboratory experiments which include: the reactions of metals with water; the collection and plotting of data; acid-base titrations; oxidation-reduction titrations; the use of the pH meter and the determination of acid-base titration curves; the use of the spectrophotometer. (1 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**CHM 1104 General Chemistry Lab II** Students will be required to identify all metal ions present in an unknown solution. Quantitative titrations of sodium carbonate and the total hardness of water. Synthesis of inorganic compounds and determination of the formula of a transition metal complex ion using spectroscopic methods. (1 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Corequisites: CHM 1152.

**CHM 1108 General Chemistry Lab II** Chemistry of organic and biochemical compounds with an emphasis on the identification and chemical reactivities of functional groups. Students will be required to separate and identify various organic and biochemical compounds. Open to health affiliation students. (1 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Corequisites: CHM 1134.

**CHM 1131 General Chemistry I** Fundamental laws and theories of chemistry: atomic theory, chemical bonding, chemical kinetics and chemical equilibrium, gases, liquids, solids, solutions, stoichiometry, acid-base theories, electrochemical concepts, and an introduction to nuclear chemistry will be included. Open to health affiliation students. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Corequisites: CHM 1103.

**CHM 1134 General Chemistry II** Introduction to organic and biochemistry stressing the application of principles developed in CHM 1131. Open to health affiliation students. (3 cr) Last Offered: Summer 2002, Spring 2002, Fall 2001, Summer 2001. Corequisites: CHM 1108.

**CHM 1151 General Chemistry I** Basic concepts of chemistry covering the following topics: properties of bulk matter; stoichiometry; colligative properties of solutions; thermochemistry; redox reactions; equilibrium and kinetics. For science and engineering students. (4 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Corequisites: CHM 1103.

**CHM 1152 General Chemistry II** Descriptive presentation of atomic orbitals; molecular structure; chemical and physical trends in the periodic table; general descriptive chemistry of the elements; complex ions and factors that drive chemical

reactions. For science and engineering students. (4 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: CHM 1151.

**CHM 1301 Inorganic Chemistry Lab I** Selected experiments to illustrate fundamental laboratory techniques and skills. Qualitative and quantitative measurements, synthesis and characterization of inorganic complexes, literature searching and computer usage. Emphasis on modern research applications of metals and main group elements. For chemistry majors only. (2 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000. Corequisites: CHM 1311.

**CHM 1311 Inorganic Chemistry I** Fundamental principles in inorganic chemistry stressing relationships among structure, bonding, and reactivity. Properties of matter, periodic trends, acid/base reactions, redox reactions, and bonding in transition metal complexes. For chemistry majors only. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000. Corequisites: CHM 1301.

**CHM 1502 Quant Anal Lab** Laboratory experiments to complement CHM 1512 covering the following: gravimetric analysis, acid-base titrations (weak acid; mixed acid), compleximetric titration and redox reactions. (2 cr) Last Offered: Spring 2002, Spring 2001. Prerequisites: CHM 1301. Corequisites: CHM 1512.

**CHM 1512 Quantitative Analysis** Chemical analysis, with emphasis upon statistical methods, acid-base properties, pH, equilibrium expressions, complexation equilibria, solubility properties, redox potentials, electrolysis, and electrochemical cells. (3 cr) Last Offered: Spring 2002, Spring 2001. Prerequisites: CHM 1311. Corequisites: CHM 1502.

**CHM 1903 Internship Elective** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Fall 1999.

**CHM 1906 Internship Elective** (6 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Fall 1999.

**CHM 1909 Internship Elective** (9 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Fall 1999.

**CHM 2201 Organic Chemistry Lab I** Practical experience in techniques used for separation, purification, and isolation of synthetic as well as naturally occurring organic compounds. Semi-micro and micro scale experiments. Crystallization, distillation, extraction, and chromatography are introduced. (1 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**CHM 2202 Organic Chemistry Lab II** Further training in laboratory techniques used in organic chemistry, including those introduced in CHM 2201, and utilization of such techniques in representative types of organic reactions. Semi-micro and micro scale experiments. (1 cr) Last Offered: Summer 2002, Spring 2002, Fall 2001, Summer 2001. Corequisites: CHM 2212.

**CHM 2211 Organic Chemistry I** Fundamental principles of organic chemistry stressing the relation of structure and reactivity. Structure and bonding; stereochemistry; acids, and bases; electrophilic addition, elimination and nucleophilic substitution. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Corequisites: CHM 2201.

**CHM 2212 Organic Chemistry II** Continuation of CHM 2211. Carbonyl group reactions, aromatic chemistry, spectroscopy and special topics such as heterocycles, carbohydrates and nucleosides, amino acids and proteins, lipids, radicals, rearrangements, polymers and photochemistry. (3 cr) Last Offered: Summer 2002, Spring 2002, Fall 2001, Summer 2001. Prerequisites: CHM 2211 and CHM 2201. Corequisites: CHM 2202.

**CHM 2993 Internship** (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000.

**CHM 2996 Internship** (6 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000.

**CHM 3002 Chemical Lit and Res** A writing intensive course with training in the use of the chemical literature, in performing searches in Chemical Abstracts, in computer searches, in writing reports, research papers, grant proposals, and abstracts. One written report will also serve as the basis for an oral presentation. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000.

**CHM 3201 Organic Chemistry Lab I** Provides practical experience in the principal techniques utilized for the purification, separation, identification, and synthesis of organic compounds on the micro scale. Open to Chemistry majors. (2 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: CHM 1502. Corequisites: CHM 3211.

**CHM 3202 Organic Chemistry Lab II** The semi-micro techniques include distillation, recrystallization, extraction, sublimation, and chromatography. Synthesis of representative organic compounds. An introduction to research in organic chemistry, introduction to qualitative organic analysis and practical use of infrared and nuclear magnetic resonance spectroscopies. (2 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Corequisites: CHM 3212.

**CHM 3211 Organic Chemistry I** Fundamental principles of organic chemistry stressing the relation of structure and reactivity from a physical-chemical viewpoint. Structure and bonding; stereochemistry; acids and bases; electrophilic addition reactions of alkenes, alkynes, and dienes; nucleophilic substitution reactions at saturated carbon atoms and elimination reactions leading to alkenes or alkynes. Open to chemistry majors. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: CHM 1512 and CHM 1502. Corequisites: CHM 3201.

**CHM 3212 Organic Chemistry II** Addition and substitution reactions of carbonyl compounds, electrophilic and nucleophilic aromatic substitutions, radical and concerted reactions, heterocyclic compounds and polymer chemistry. Spectroscopic methods of analysis including nuclear magnetic resonance, infrared spectroscopies and mass spectrometry. Introduction to multi-step organic synthesis. Open to chemistry majors. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CHM 3211 and CHM 3201. Corequisites: CHM 3202.

**CHM 3301 Inorganic Chem Lab II** This laboratory course emphasizes preparative techniques of inorganic compounds. Instrumental methods of structure elucidation are included. (2 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000. Prerequisites: (CHM 2212 and CHM 2202) or (CHM 3212 and CHM 3202). Corequisites: CHM 3312.

**CHM 3311 Inorganic Chem II** (3 cr) Last Offered: Fall 2002.

**CHM 3312 Descript Inorganic Chem** Emphasis on practical aspects of chemical and industrial processes including recovery and refining of elements and their compounds. The periodic relationship of elements will be studied along with structure, bonding and stereochemistry of inorganic chemicals. Acid-base theory and coordination chemistry will also be covered. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (CHM 2212 and CHM 2202) or (CHM 3212 and CHM 3202). Corequisites: CHM 3301.

**CHM 3401 Physical Chem Lab I** Use of the computer to design statistical package software for treatment of experimental data will be stressed in the two semester laboratory course. Phase and chemical equilibrium to supplement CHM. 3411 will be included. Gas chromatographic techniques will be used. (1 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001. Corequisites: CHM 3411.

**CHM 3402 Physical Chem Lab II** Experimental methods of chemical kinetics will be covered. Spectroscopic, polarimetric, and conductimetric methods will be used. (1 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: CHM 3401 and CHM 3411. Corequisites: .

**CHM 3403 Physical Chem Lab for Majors** (2 cr) Last Offered: Fall 2002.

**CHM 3411 Physical Chemistry I** First, second, and third laws of thermodynamics; phase equilibria and chemical equilibria; gases; and electrochemistry will be covered in this course. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001. Prerequisites: CHM 1152 and MAT 1505 and (CHM 3401 (may be taken concurrently) or CHM 3403 (may be taken concurrently)).

**CHM 3412 Physical Chemistry II** The course will present an introduction to atomic and molecular structure and spectroscopy. The knowledge attained in these topics will be

used to present the topics of chemical kinetics and chemical dynamics from the molecular point of view. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: CHM 3411 and CHM 3401. Corequisites: CHM 3402.

**CHM 3415 Physical Chem for Engineers** (3 cr) Last Offered: Fall 2002.

**CHM 3416 Physical Chem for Engineers** Chemical kinetics, electrochemistry, and the structure and properties of materials, including atomic structure, solid and liquid state chemistry, surface and colloid chemistry, and transport properties. (3 cr) Last Offered: Spring 2002. Prerequisites: CHM 3411. Corequisites: .

**CHM 3501 Instrumental Analysis Lab** Laboratory techniques to obtain quantitative information about the composition of unknown samples, including potentiometric titration, spectrophotometry, chromatography, kinetic analysis, anodic stripping voltammetry, spectrofluorometry and atomic absorption spectrometry. Designed to complement CHM 3511 lecture. (2 cr) Last Offered: Fall 2002, Fall 2001. Prerequisites: CHM 1311. Corequisites: CHM 3511.

**CHM 3503 Analytical Chem Lab** Laboratory course to complement CHM. 3514; emphasis on the analysis of biological systems utilizing modern analytical techniques. Designed for the biochemistry concentration. (1 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998. Corequisites: CHM 3514.

**CHM 3505 Analytical Chem Lab I** Designed to complement CHM. 3515. Laboratory experiments involving gravimetric, titrimetric and spectrophotometric methods are used to obtain quantitative data about the composition of various samples. (2 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998. Corequisites: CHM 3401, CHM 3411, CHM 3515.

**CHM 3506 Analytical Chem Lab II** A complementary course for CHM. 3516. Emphasis on instrumental techniques to obtain quantitative data. Techniques such as spectroscopy, spectrochemical titrations, electroanalytical techniques (electrode position, polarography, coulometry, etc.) and separation techniques (gas chromatography and liquid chromatography). (2 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Spring 1998. Prerequisites: CHM 3505 and CHM 3515. Corequisites: CHM 3402, CHM 3412, CHM 3516.

**CHM 3511 Instrumental Analysis** The utilization of instruments covering the following topics: analog and digital signals, absorption and emission of light by molecules and atoms, chromatography (HPLC, GC) and detection, use of enzymes and antibodies, radioactivity, and chemometrics. (3 cr) Last Offered: Fall 2002, Fall 2001. Prerequisites: CHM 1311. Corequisites: CHM 3501.

**CHM 3514 Analytical Chemistry** Designed for the biochemistry concentration with emphasis on theory, instrumentation and practical applications of analytical chemistry to

biological materials. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998. Prerequisites: CHM 2212 or CHM 3212. Corequisites: CHM 3503.

**CHM 3515 Analytical Chemistry I** Fundamentals of modern analytical chemistry with emphasis on data collection and analysis, evaluation of error, extensive treatment of equilibria in simple and complex systems. Examination of gravimetric and titrimetric methods. Introduction to spectroscopy. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998. Corequisites: CHM 3401, CHM 3411, CHM 3505.

**CHM 3516 Analytical Chemistry II** Quantitative instrumental analysis theory and its application to the analysis of common laboratory samples, environmental samples, and forensic samples. The application of reaction rates to analytical chemistry. Topics such as optical methods, electroanalytical techniques, and chromatographic techniques are stressed. (3 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Spring 1998. Prerequisites: CHM 3515 and CHM 3505. Corequisites: CHM 3506.

**CHM 4202 Org Struct Analysis Lab** Laboratory experiments involving separations by modern chromatographic techniques including thin layer, radial, flash, and high performance liquid chromatography. Multistep syntheses of organic compounds with experiments chosen from the chemical literature. Characterization of organic compounds by advanced spectroscopic methods. (2 cr) Corequisites: CHM 4222.

**CHM 4222 Organic Struct Analysis** Spectroscopic methodology for the determination of structure of static, as well as dynamic molecular systems. Proton and carbon-13 nuclear magnetic resonance spectroscopy, mass spectrometry, infrared, ultraviolet-visible, and optical rotatory dispersion-circular dichroism will also be presented. (3 cr) Last Offered: Spring 1999, Spring 1998, Spring 1997, Spring 1996.

**CHM 4413 Spectroscopy & Structure** Use of the fundamental principles of atomic and molecular structure to study ultraviolet, infrared, microwave and magnetic resonance spectroscopies. Continuous-wave and Fourier transform methods will be included along with fluorescence, phosphorescence and laser spectroscopic techniques. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: CHM 3412 and (CHM 2212 or CHM 3212).

**CHM 4601 Biochemistry Laboratory** An introduction to laboratory techniques in biochemistry; enzyme kinetics, column chromatography, electrophoresis, standard biochemical assays and interpretation of data. (1 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: CHM 2212.

**CHM 4603 Biochem Tech. and Pract.** A laboratory course to complement CHM 4621 and 4622. Emphasis on enzyme purification, enzyme characterization, nucleic acid analysis, polysaccharide analysis and coupled enzyme systems. (2 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: (CHM 2212 or CHM 3212) and CHM 4621. Corequisites: CHM 4622.

**CHM 4611 Intro Biochemistry** Basic areas of biochemistry; carbohydrates, lipids, proteins, nucleic acids, enzymes, vitamins and hormones; consideration of their utilization and metabolism in living systems. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: CHM 2212.

**CHM 4621 Biochemistry I** An in depth study of the structure and function of the structure and function of proteins, enzymes, carbohydrates, nucleic acids and lipids. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000.

**CHM 4622 Biochemistry II** Continuation of CHM 4621 with emphasis on the metabolic pathways of carbohydrates, fats, steroids, amino acids and nucleotides. Metabolic controls of the pathways is stressed. /tgree hours (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: CHM 4603.

**CHM 4623 Biochemistry III** Integration of metabolism in organisms, membrane receptors expression of genes, gene manipulation, translation, transcription. Prereq: CHM 4622 (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CHM 4622.

**CHM 4801 Research I** Student participation in independent research under faculty supervision, frequent conferences with advisor on literature search, theoretical and experimental research (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**CHM 4802 Research II** Continuation of CHM 4801. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**CHM 4803 Research III** Continuation of CHM 4802. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**CHS 1000 Anc Med Renaiss Thought** A Humanities seminar based principally on texts and readings drawn from primary sources up to 1650. Extensive written work and seminar discussions. Required readings: Hebrew and Christian scriptures, selections from the works of Augustine, Greek and Renaissance works. Readings from different genres and disciplines. Themes developed by the instructor in accordance with the selected readings. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**CHS 1001 Mod Thgt:Enlight to Pres** A Humanities seminar based principally on texts and readings drawn from primary sources 1650 to the present. Extensive written work and seminar discussions. Readings from each of the following five historical eras: Early Modern, Enlightenment, Romantic, Modernist, Contemporary. Readings will also reflect different genres and disciplines. Themes developed by the instructor in accordance with the selected readings, including a specific Augustinian theme. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.



**CJ 1000 Intr to Private Security** Policies and procedures for special threats, institutional security systems, security issues, security challenges and the professionalization of private security. (3 cr) Last Offered: Fall 1998, Fall 1996, Fall 1995.

**CJ 2000 Institutional Security** Policies, procedures and practices for the security of health, hotel, campus, museum, library and archival, cargo, bank, commercial, corporate, and retail operations. (3 cr) Last Offered: Spring 1996, Spring 1995.

**CJ 2300 Civil Liability** (3 cr) Last Offered: Spring 1999, Fall 1995.

**CJ 2500 Private Security Invest** (3 cr) Last Offered: Fall 1999, Spring 1997.

**CJ 3000 Intro to Victimology** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Fall 2000.

**CJ 3500 Loss Prevention Priv Sec** (3 cr) Last Offered: Spring 2000, Fall 1997.

**CJ 3700 Private Security & Terrorism** The ramifications of terrorism, terrorist typologies and terrorist objectives, and the evaluative and protective strategies for individuals, property and environments requiring protection from terroristic activities are discussed. (3 cr) Last Offered: Spring 1998.

**CJ 3800 Priv Sec & Collect Behav** (3 cr)

**CJ 4000 Practicum Priv Securiy** (3 cr)

**CJ 4500 Priv Security Super Mgt** (3 cr) Prerequisites: CJ 1000 and CJ 2300.

**CLA 1005 Literacy and Latin** (3 cr)

**CLA 2021 Language of Science & Medicine** Language of Science and Medicine Greek and Latin prefixes, roots, and suffixes in modern vocabulary; vocabulary building, with emphasis on technical terminology in scientific and medical usage. Knowledge of the languages is not required. (3 cr)

**CLA 2032 Classical Mythology** The myths, legends and folklore of the Greeks and Romans as they developed in their life, thought and literature; their influence on the Renaissance and modern times. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**CLA 2051 Cities of Ancient Greece** Classical archaeology and architecture of Greece. Selected sites in the Greek world with emphasis on their architectural, artistic and history significance. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 2002, Spring 1996.

**CLA 2052 Rome: The Ancient City** Classical archaeology and architecture of Italy. Selected sites in the Roman world with emphasis on their architectural, artistic and historical significance. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 1997.

**CLA 3001 Independent Study** Reading of selected material in Latin or Greek or in classical literature in translation under the direction of a member of the staff. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001.

**CLA 3040 Studies in the Classics** Selected themes of special interest. Topics vary according to interests of students and instructor: e.g. Women in the Classical World, Slavery in the Ancient World, Classical Rhetoric, etc. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000.

**CLA 3052 Roman Law** The origins, nature, and history of Roman Law during the Republic and Empire; evolution of the court system; civil and criminal codes; judicial procedure; social, business and economic institutions and the law; government and administration of the empire. Fulfills advanced literature requirements. (3 cr)

**COM 1000 Surv of Communication Studies** Process of communication; range of perspectives from which communication can be studied (from classical rhetoric to contemporary theory); the functions communication serves; and the forms of communication such as interpersonal, small group, organizational, public address, and mass media. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 1100 Public Speaking** Principles of communication related to speech composition and delivery; finding, analyzing, organizing and presenting material in ways appropriate to and effective with diverse audiences. Does not fulfill C&F requirement. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 1101 Business & Prof Communication** Communication strategies and skills for a variety of business professional settings. Combines public speaking and small group organizational communication, featuring individual and group presentations. Fulfills the Commerce and Finance requirement; not intended for Communication Department majors. (3 cr) Restrictions: Not Open to COM Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 1903 Communication Internship** Supervised work/study program in radio, television, advertising, publicity or public relations. (3 cr) Restrictions: Restricted to COM Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**COM 1906 Communication Internship** Supervised work/study program in radio, television, advertising, publicity or public relations. (6 cr) Restrictions: Restricted to COM Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**COM 1909 Communication Internship** Supervised work/study program in radio, television, advertising, publicity or public relations. (9 cr) Restrictions: Restricted to COM Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**COM 2000 Voice and Diction** Improvement of vocal quality and articulation through study of vocal anatomy, phonetics, projection, and expressiveness. Emphasis on live and taped performances of readings. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 2050 Performance of Literature** Solo and group performance of poetry, prose, and drama. Focus on rhetorical power of performed literature. Combines elements of theatre, literature and communication. (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1999.

**COM 2100 Adv Speaking & Speechwriting** Intensive study of oral style and content; introduction to rhetorical theory and criticism; utilizing these concepts to prepare and deliver speeches. (3 cr) Last Offered: Spring 2002, Spring 2001. Prerequisites: COM 1100 or COM 1101.

**COM 2150 Screenwriting** Development of narrative strategies through improvisation and techniques of mediated visualization using video. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000.

**COM 2210 Rhetoric and Public Discourse** Rhetoric as the process of symbolic creation and recreation of community identity. Theory and history of rhetoric; applications to the study of politics, popular culture, speeches, media images, artistic works, advertising, and legal issues. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 2000.

**COM 2250 Argumentation and Debate** Argumentation theory and practice, emphasizing the construction of well-reasoned arguments and attacks on and defense of arguments. Participation in a number of in-class debates. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000.

**COM 2310 African American Rhetoric** The symbolic construction of African American identity in the United States through an analysis of speeches, films, television and other media. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000.

**COM 2450 Media and Politics** Examination of political communication research, theory and history. A particular focus on the role of media, such as advertising and news reporting, on political campaigns and policymaking. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**COM 2510 Broadcast Performance** Styles and techniques of broadcast journalism performance, including studio and location reporting and interviewing. Historical and

contemporary trends in broadcast journalism explored. (3 cr) Restrictions: Restricted to COM Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001.

**COM 2540 Rhet & Demo in Ancient Greece** An upper-level course in which students study important ancient Greek rhetorical and philosophical texts and their influence on significant archaeological sites. THIS COURSE IS ONLY OFFERED IN THE SUMMER STUDY ABROAD IN GREECE PROGRAM. (3 cr) Last Offered: Summer 2002, Summer 2001.

**COM 2550 Performance of Greek Lit** Students analyze and perform both ancient and contemporary Greek literary texts; the performances, both solo and group are at Greek archaeological sites based on Greek oral traditions, poetry and drama, such as from Homer, Sappho, Antigone and Medea. THIS COURSE IS ONLY OFFERED IN THE SUMMER STUDY ABROAD IN GREECE PROGRAM. (3 cr) Last Offered: Summer 2002, Summer 2001.

**COM 2950 Spec Top in Rhetoric & Perf** Topic or problem in the Rhetoric & Performance area of communication selected by the instructor. (3 cr) Last Offered: Spring 2002, Spring 2001.

**COM 2993 Communication Internship** Supervised work/study program in radio, television, advertising, publicity or public relations. (3 cr) Restrictions: Restricted to COM Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 2996 Communication Internship** More intensive, in depth work/study/program in radio, television, advertising, publicity or public relations. (6 cr) Restrictions: Restricted to COM Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 3000 Mass Communication Studies** Structure and content of the major media industries in America (radio, television, film, newspapers, magazines, recordings, and books), and how each interacts with individuals, groups, and institutions. Students analyze and critique media systems and content in terms of social, legal, political, and economics forces that influence them. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 3050 Public Relations** Theories behind the practice of public relations as well as a working knowledge of public relations strategy planning. (3 cr) Restrictions: Restricted to COM Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 3100 Advertising** Strategies and techniques used in contemporary American advertising: consumer behavior, market research and analysis, message development for print and broadcast, and media selection. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 3150 Media Writing** Develop professional writing skills through a series of assignments including public communication campaigns, commercials, and analysis of short dramatic pieces. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**COM 3210 Television Production** In-studio workshop that deals with basic television production techniques, including producing and directing short interview programs, news, demonstrations and short dramatic pieces. Discussion of current problems in the management and operation of a television broadcasting station. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 3250 Advanced Television Production** Extends students' knowledge of basic television production; involves the writing, planning, and creation of varied formats of television programming, culminating in a semester project intended for broadcast or other media outlet. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: COM 3210.

**COM 3300 Programming for Radio & Telev** Process of evaluation, selection and scheduling of programming for television, radio and cable. (3 cr)

**COM 3310 Radio Broadcasting** The history and principles of commercial radio broadcasting: programming, research, sales, promotions, broadcast engineering and federal regulations. Hands-on-audio production experience with broadcast equipment focusing on the art of audio production and development of public affairs radio program to air on WXVU. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**COM 3350 Film Analysis** Methods and perspectives used to analyze visual media drawing on contemporary and historically important films. Historical, theoretical, and aesthetic approaches to film analysis, as well as the social, political and economic forces that influence film content. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 3400 Film History** Evolution of film as an art form; includes the impact of technology. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**COM 3450 International Cinema** Study of the film of or about a particular country with emphasis on political, social, cultural and artistic issues. (3 cr) Last Offered: Spring 2002.

**COM 3510 Contemporary Cinema** Seminar course in which various strategies are applied to the analysis of contemporary films. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**COM 3550 Film Genre Study** Exploration of a particular genre's significance within film history and its reflection of contemporary political, social, and cultural issues. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**COM 3650 The Film Auteur** Intensive chronological study of the work of one European or American film director. (3 cr) Last Offered: Fall 2002, Fall 2000, Spring 2000.

**COM 3700 Women and Film** Historical survey of American film from a feminist perspective. Study of American and foreign women directors. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**COM 3750 Families on Film** Study of films which focus on the dynamics of family communication using the semiological, psychoanalytic, phenomenological and family communication theory approaches. (3 cr) Last Offered: Fall 2000, Fall 1999.

**COM 3800 Media Criticism** Analysis of contemporary film, television, music, print media and electronic media from a cultural studies perspective. (3 cr) Last Offered: Spring 2002.

**COM 3950 Spec Top in Media & Film** Topic or problem in the Media & Film area of Communication selected by the instructor. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 4000 Interpersonal Comm Studies** Explores everyday communication between people across many contexts. Critical examination of the personal, social, and cultural dimensions of human relationships. Experiential activities augment lectures/discussions. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**COM 4050 Teambuilding & Small Group Com** Theory and practice of communication for idea generation and problem-solving in groups, teams, and in other multiple contexts. (3 cr) Last Offered: Fall 2001, Fall 1999.

**COM 4100 Speech Comm in the Classroom** Role of communication in the contemporary classroom; classroom skills of lecturing, discussing, demonstrating and oral reading; communication strategies to achieve classroom discipline. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**COM 4150 Gender and Communication** Communication of women and men against the backdrop of society and feminism in such communicative contexts as families, schools, friendships and relationships, organizations, media, and technology. (3 cr) Last Offered: Summer 2002, Summer 2001, Spring 2001, Summer 2000.

**COM 4200 Intercultural Communication** The impact on culture of communication styles, and practices. The role of communication in personal and professional intercultural relationships. (3 cr) Last Offered: Spring 2001, Spring 2000.

**COM 4250 Organizational Communication** Role of communication in organizing; supervisory- subordinate relationships, group relationships, organizational culture and

communication networks, communication technologies, communication based training and development, and human resource applications. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000.

**COM 4300 Communication and Conflict** Communicative elements of conflict that arise out of personal and cultural differences in a variety of interpersonal interactions and relationships. Intergroup conflicts between dominant and minority groups also examined. (3 cr) Last Offered: Fall 2002.

**COM 4950 Spec Top in Interpersonal Org** Topic or problem in the Interpersonal/Organizational area of communication selected by the instructor. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**COM 5000 Communication Research** Reading and designing research in communication through gathering and critically analyzing literature in the field and introduction of the chief methods used in communication studies. (3 cr) Restrictions: Restricted to COM Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 5050 Senior Project** Design, implementation, and presentation of a group research project in which students apply the knowledge and skills learned through the Communication program of study to the investigation of rhetorical or communication phenomena. (3 cr) Restrictions: Restricted to COM Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: COM 5000 or CA 5000.

**COM 5100 Directed Study** Supervised project culminating in term paper. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**COM 5150 Spec Top in Communication** A topic or problem in Communication selected by the instructor. (3 cr) Last Offered: Spring 2002, Fall 2000, Summer 2000, Spring 2000.

**CSC 1010 Tools for Text** A unified view of the powerful tools for manipulating text and the algorithms they implement; complexity and security of operations on text; locating and searching online text databases and bibliographies via the Internet; alternative text structures: hypertext, multimedia; alternative input techniques: scanning, voice. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**CSC 1020 Fund Computing Systems** Information representation and manipulation; file systems and directories; compatibility and data exchange; security and privacy; elements of computer architectures and operating systems; computer networks, the Internet, and the World Wide Web; PC based examples and illustrations. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**CSC 1024 Computing for Scientists** Active learning of computing skills necessary for science students: data graphing, regression analysis, animation, symbolic computing,

information search techniques, scientific report writing, Web page construction, fundamentals of programming. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**CSC 1030 Prob Solv with Computers** Using the microcomputer as a problem solving tool; system use; general purpose language programming; spreadsheet analysis and modeling; retrieving information from the Internet; strengths and weaknesses of computer based problem solutions. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000.

**CSC 1040 Computing with Images** Computing systems as tools for design and publishing of graphically-rich material in many forms: Image processing techniques and systems; image style and related tools; digital image processing theory; computational complexity; multimedia. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**CSC 1051 Algorithms & Data Struct I** Object-oriented design: objects, classes, methods, encapsulation; Programming fundamentals: data, variables, selection, loops, arrays, input/output; basic graphics; extensive programming required. (4 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**CSC 1052 Algorithms & Data Struct II** Object-oriented design: inheritance, interfaces, polymorphism, problem analysis; recursion; abstract data types; dynamically linked structures; Linear data structures: stacks, queues, lists, vectors; sorting and searching; event-driven programming; graphical user interfaces; extensive programming required. (4 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: (CSC 1051 or CSC 2070).

**CSC 1200 Computer Organization** Computer structure; central processing unit; binary number representation and arithmetic; digital logic design; storage units; machine language; introduction to assembly language. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: (CSC 1052 or CSC 2070) and (CSC 1300 or MAT 2600).

**CSC 1300 Discrete Structures** Mathematical structures that support computer science: sets, logic and proof, mathematical induction, relations, functions, counting techniques, probability, boolean algebra, matrices, graphs and trees. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (CSC 1051 and CSC 1052 (may be taken concurrently)) or CSC 2070.

**CSC 1600 Operating Systems** System software design and implementation; process and resource management; concurrency, scheduling, and deadlock; memory management; file systems and security. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: CSC 1200 or ECE 2490 or ECE 2040.



**CSC 1700 Analysis of Algorithms** Efficiency classifications and mathematical analysis of recursive and nonrecursive algorithms: sorting, searching, string processing, graphs, arithmetic. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (CSC 1052 or CSC 2070) and (CSC 1300 or MAT 2600).

**CSC 1800 Organ of Prog Languages** High level language features: data types, control structures; formal lexical and syntactical analysis; operational semantics; language translation. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 2000. Prerequisites: (CSC 1052 or CSC 2070) and (CSC 1300 or MAT 2600).

**CSC 2053 Alg & Data Structures III** Object-oriented design: UML notation; Non-linear data structures; trees, graphs; advanced problem analysis; advanced sorting and searching; advanced graphical user interfaces; advanced input/output; database fundamentals; tables, relations, queries; extensive programming required. (3 cr) Last Offered: Fall 2002. Prerequisites: CSC 1052 and CSC 1300.

**CSC 2070 Alg & Data Struct: Accel** Introduction to object-oriented software development and data structures for students with some programming experience; objects, classes, inheritance, polymorphism; linked data structures; stacks, queues, lists, trees; recursion; basic sorting and search; requires extensive programming. (4 cr) Last Offered: Fall 2001, Spring 2001, Fall 2000, Spring 2000.

**CSC 2500 Survey of Information Science** Brief introductions to several areas in which problems in information use are important. Examples are business, law, biology, medicine, electronic commerce, and libraries. (3 cr) Last Offered: Spring 2002.

**CSC 2993 Internship in Computing** Internship in computer science open to second semester sophomores and above. Most likely, intern will participate in computer system development, maintenance, or evaluation in an environment which supports sound software engineering techniques. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**CSC 2996 Internship in Computing** Internship in computer science open to second semester sophomores and above. Most likely, intern will participate in computer system development, maintenance, or evaluation in an environment which supports sound software engineering techniques. (6 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**CSC 3400 Information Retrieval** Theory and practice of location, organization, and rendering of meaningful content from largely unorganized sources. (3 cr) Prerequisites: CSC 2500.

**CSC 4140 Theory of Information** Information and coding theory, data compression, cryptology. (3 cr) Prerequisites: CSC 1300 and CSC 2500.

**CSC 4170 Theory of Computation** Finite automata and regular expressions; push down automata and context-free grammars; Turing machines; Church's thesis; computability; NP-completeness. (3 cr)

**Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 2000. Prerequisites: CSC 1700.**  
CSC 4181 Compiler Construction Lexical and syntactical analysis; code generation; error recovery; recursive descent compilation; handling of run-time environment. (3 cr)  
Last Offered: Fall 2002, Spring 2002. Prerequisites: CSC 1200 and CSC 1800.

**CSC 4200 Adv Algs and Complexity** Greedy algorithms, divide-and-conquer; dynamic programming; backtracking; branch-and-bound; linear and integer linear programming; Fast Fourier transform, probabilistic algorithms; NP-complete problems and approximation methods. (3 cr) Last Offered: Fall 1996, Spring 1995. Prerequisites: CSC 1700.

**CSC 4280 Parallel Algs & Architecture** Design and analysis of parallel algorithms for arithmetic, matrix operations, sorting, simulation, combinatorial and graph problems, and Fast Fourier Transform. Taxonomies of parallel architectures; interconnection networks, meshes, trees, and hypercubes; scalability and speed-up. (3 cr) Last Offered: Fall 2000, Spring 1999, Spring 1998, Spring 1997. Prerequisites: (CSC 1600 and CSC 1700).

**CSC 4300 Computer Graphics** Hardware and software in computer graphics; graphics programming language; input/output device handling; modeling in 3D space; development of interactive software. (3 cr) Last Offered: Fall 2002, Fall 1999, Fall 1997, Fall 1995. Prerequisites: (CSC 1052 or CSC 2070) and (CSC 1300 or MAT 2600).

**CSC 4380 Info Visualization** The presentation of information; project based course - possible topics: visual cognition, scientific visualization, illustration presentation, color theory, motion dynamics, image processing. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1998. Prerequisites: (CSC 1052 or CSC 2070) and (CSC 1300 or MAT 2600).

**CSC 4400 Microprocessors** Introduction to 8-, 16-, and 32-bit microprocessors; programming model; system architecture and software; instruction sets; addressing modes; input-output protocols; interrupt handling; RISC architecture. (3 cr) Prerequisites: CSC 1200 or ECE 2490 or ECE 2040.

**CSC 4480 Principles of Database Systems** Concepts and technology of database management systems; data modeling with an emphasis on the relational model; database querying and normalization; physical data organization. (3 cr) Last Offered: Fall 2002. Corequisites: CSC 2053.

**CSC 4490 Data Warehousing & Mining** Tools and techniques, theory and practice for storage and effective use of massive data sets. (3 cr) Prerequisites: CSC 4480.

**CSC 4500 Artificial Intelligence** The nature of intelligence and the question of its computer implementation; search algorithms; knowledge representation; automated deduction; natural language understanding; planning; problem solving. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 1999. Prerequisites: CSC 1700.

**CSC 4550 Expert & Knowledge Systems** Knowledge representation, uncertainty, automated knowledge acquisition, practical aspects of implementing expert systems. Prerequisite: Junior standing. (3 cr)

**CSC 4600 Distributed Processing** Data concurrency; distributed file systems and database; distributed operating systems; security; interprocess communication; directory services; process migration; process vulnerability to partial failure. (3 cr) Last Offered: Fall 2000, Fall 1999, Spring 1997, Spring 1995. Prerequisites: CSC 1600.

**CSC 4630 Software Dev. and Systems** Operating system structures; system calls; system libraries; interprocess communication; user-interface programming environments; software utilities; software portability. (3 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Spring 1998. Prerequisites: CSC 1600.

**CSC 4700 Software Engineering** Management and production of software systems; the software life cycle; software design techniques and methodologies; participation in a team software development project. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Spring 2000. Prerequisites: (CSC 1052 or CSC 2070) and CSC 1300.

**CSC 4730 Human Computer Interaction** Design of the user/system interface; measurement of human-computer interaction; models of the user and user communities; design criteria for the interface; user interface management systems (UIMS); test and evaluation strategies and tools. (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1998, Fall 1996. Prerequisites: (CSC 1052 or CSC 2070) and (CSC 1300 or MAT 2600).

**CSC 4790 Senior Projects** Capstone course centered around a semester long software development or research project; project planning; requirements elicitation and specification; teamwork; oral presentations required of all students. (3 cr) Last Offered: Fall 2002, Fall 2001. Prerequisites: CSC 4700.

**CSC 4800 Web Application Development** Theory and design of web-based applications: stylesheets, applets, HTML, CGI programming, web server design, website design, security, multimedia representations, encryption, compression. (3 cr) Last Offered: Spring 2002. Prerequisites: CSC 1600.

**CSC 4900 Computer Networks** Application development over the TCP/IP and OSI network environments; client server computing; use of the WWW as a distributed platform; hypermedia; directories; network protocols; authentication and authorization. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: CSC 1600.

**CSC 5900 Seminar in Computing** Study and discussion of selected topics in computer science with presentations by individual students. May be repeated for credit if topics are different. Prerequisites may be imposed depending on the topics. (3 cr) Last Offered: Spring 1996, Fall 1995.

**CSC 5930 Topics Computer Science** Lecture presentation of selected topics in computer science. May be repeated for credit if topics are different. Prerequisites may be imposed depending on the topics. (3 cr) Last Offered: Fall 2001, Spring 2001, Fall 2000, Spring 2000.

**CSC 5940 Topics in Information Science** Lecture presentation of selected topics in information science. May be repeated for credit if topics are different. Junior standing. (3 cr)

**CSC 5993 Independent Study** Reading, research and/or projects in a selected area of computer science under the direction of a member of the staff. May be repeated for credit. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**CSC 7000 Algorithms & Programming** Algorithm design and refinement; extensive programming; loop and selection control; recursion; arrays, pointers, records and strings; abstract data types: linked lists, stacks, queues, binary trees; elementary search and sorting. (3 cr) Restrictions: Graduate students and qualified undergraduates. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**CSPA 2501 Payroll Administration** Payroll Administration An 11-week professional development program for payroll administration professionals using PayTrain, an innovative training program involving computer-based learning, as well as an instructor with practical experience in the field. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**DIT 1006 Intro to MIS** (3 cr) Last Offered: Fall 2002.

**DIT 1141 Operations Management** Concepts and techniques for problems in manufacturing and service organizations. Topics: decision-making, forecasting, resource allocation, project management, quality, materials management, technology, and strategy. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: DIT 2010 or STA 2108.

**DIT 2006 Info Systems for Mgt** Structure and applications of computer-based Management Information Systems in organizations. Topics: impact of information technology on organizations, ethical issues, technical foundations of hardware/software, management of data, and telecommunications. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**DIT 2010 Business Statistics** Statistical concepts and methods used in business and economics, including Probability, Discrete Probability, Sampling Distributions,

Confidence Intervals, Hypothesis Testing, Regression Analysis, and Chi-Square Distribution, (ANOVA). (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**DIT 2150 Operations Plan Control** Concepts and techniques for problems in production, planning and scheduling, inventory control and maintenance management. (3 cr) Prerequisites: DIT 1141.

**DIT 2160 Intro Decisions Sciences** Integrate behavioral science and quantitative approaches to decision-making; descriptive and prescriptive models in individual, group, and organizational settings, expected value, utility theory, the analytic hierarchy process, and risk analysis. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: DIT 1141 or MGT 1141.

**DIT 2165 Systems Analysis Design** This course includes tools and techniques used to document information systems. Classical and structured methodologies for describing data flow, data structure, process flow, file design input and output designs, and program specifications are applied to documenting systems. Data gathering and reporting, project management, and cost/benefit analysis are surveyed. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: MGT 2006 or DIT 2006.

**DIT 2170 Database Management** Theoretic and practical issues related to the management of a database in a business environment including: the role of databases and database applications in contemporary organizations; data modeling using the entity-relationship and semantic object models; fundamentals of the relational data model and its implementation along with SQL; and characteristics of distributed databases and Client/Server database technologies. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: CSC 1051.

**DIT 2171 Database Fundtl & CRM Integ** Practical issues related to the management of a relational database in a business environment and its role in implementing a Customer Relationship Management (CRM) application. Database architecture, design, SQL, and application management. Students will be directed to combine material from the CRM text specifically relating to the role of the data warehouse in the development of CRM applications. This course will be conducted 100% on-line using WebCT. (2 cr) Last Offered: Spring 2001.

**DIT 2172 Data Communication & Networks** Concepts and terminology of data communication and networking, encompassing both technical and managerial aspects. Fundamentals of telecommunications, data transmission mechanisms, telecommunication media and technologies, considerations for LAN and WAN implementations, the Internet and intranet applications, in the context of Customer Relationship Management (CRM) system applications. 100% online. (2 cr) Last Offered: Summer 2001.

**DIT 2173 CRM Systems Consulting** Common consulting practices and their application to Customer Relationship Management (CRM) systems. Current technologies

in the CRM marketplace, methods used in consultative selling, and building CRM consulting practices and programs. Case studies and presentations. 100% online. (2 cr) Last Offered: Fall 2001.

**DIT 2174 XML and E-Commerce** Concepts and strategic impact of eXtensible Markup language (XML). Markup languages in general, with attention to XBRL and ebXML. Hands-on experience in developing XML applications. 100% online. (2 cr) Last Offered: Spring 2002, Fall 2001.

**DIT 2175 App Decision Anal&Support Sys** Computer-based decision analysis and support models in a business environment. Potential topics include: decision analysis and support; group decision support systems; and intelligent support systems. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000. Prerequisites: CSC 1051.

**DIT 2176 Entr Computing & E-Commerce** Concepts and impact of Enterprise Computing. "Open systems" architecture, integration of data and applications, and "process review" in Enterprise Resource Planning systems (ERP). Integration of ERP systems with CRM and XML applications. 100% online. (2 cr) Last Offered: Spring 2002, Fall 2001.

**DIT 2180 Data Communications** Data communication technologies to support the effective and efficient management of information in an organization. Topics will include: the different competing data communication architectures and protocols; an overview of different network topologies and technologies such as LAN, WAN, intranets, and Value-added networks. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: and DIT 2170DIT 2165.

**DIT 2185 Advanced topics in MIS** State-of-the-art topics in information technology. Possible topics include: expert systems and applied artificial intelligence, advanced networks, etc. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: MGT 2006 or DIT 2006.

**DIT 3310 Business Admin Internship** Employment with approved business firms where various meaningful assignments are performed with appropriate training, instruction, and supervision. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**DIT 3330 Ind Study-Operations Mgt** Study with faculty member's guidance in area of special interest to student. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**DIT 3331 Ind Study - Mgt Info Sys** Study with faculty member's guidance in area of special interest to student. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ECE 2040 Fund Computer Engineering I** Computer arithmetic; Boolean algebra; logic circuit design; assembly language programming; computer architecture. Practicum includes logic circuit design exercises and assembly language programming of the 68000 microprocessor. Required first course for CPE and EE majors. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ECE 2041 Fund Computer Engineering II** Additional assembly language programming; microprocessor hardware and interfacing; interrupts; memory; input/output. Practicum includes assembly language programming of the 68000 microprocessor and interfacing exercises. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: ECE 2040.

**ECE 2050 Fund Electrical Engineering I** Basic electrical concepts; dc circuit analysis; diodes and applications; signals and amplifiers; BJT transistor and switching circuits; energy storage devices. Required first course for CPE and EE majors. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: MAT 1505.

**ECE 2051 Fund Electrical Engineering II** Transient circuit analysis; ac circuit analysis; ac power; frequency response; resonance; complex frequency. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: ECE 2050.

**ECE 2409 Fundamentals of MATLAB** Use of MATLAB, a matrix oriented, high level programming language, for the simulation and modeling of physical systems. Matrix operations, extensive 2-dimensional and 3-dimensional graphing, introduction to MATLAB toolboxes. Lectures are conducted in parallel with hands-on programming and computer simulations. One lecture hour and one laboratory period per week. (2 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ECE 2420 Eng Programming & Applications** Topics in C programming: File input/output, error recovery, bit operators, pointers, dynamic memory allocation, structures, functions and function operators. Applications: engineering numerical computations, Boolean algebra, circuits, signal processing. Introduction to Java. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: EGR 1611.

**ECE 3220 Signal Processing** Signal representation, Fourier series, Fourier transform, discrete-time systems, convolution, discrete-time Fourier transform, Z-transform. Practicum includes MATLAB exercises on transform properties and their use in modulation and filtering. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Fall 2000. Prerequisites: ECE 2051 and ECE 2409 and MAT 2705.

**ECE 3240 Discrete-Time Signals & System** Discrete-time signal and system representation; sampling of continuous signals; discrete-time Fourier and z transforms; frequency content of signals and frequency response of systems; system analysis and filtering. Practicum includes use of MATLAB on filtering, channel equalization, music synthesis and spectrum analysis. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Spring 2002, Spring 2001. Prerequisites: ECE 2051 and ECE 2409 and MAT 2705.

**ECE 3420 Expert Systems Programming** Functional, rule-based, and object-oriented features of CLIPS. Forward chaining using CLIPS. Backward chaining using Prolog. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 2000.

**ECE 3445 Computer Architecture** Basic principles of high performance computer architecture. Instruction set, data path, and control implementation, pipelining, memory hierarchy (cache, virtual memory), input/output, superscale concepts, and multiprocessing. Practicum with assembly language programming of the MIPS processor and VHDL implementation of a simple MIPS computer. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Fall 2002, Fall 2001. Prerequisites: ECE 2041.

**ECE 3450 Digital Electronics** Digital logic families with primary emphasis on external electrical characteristics of the logic devices. Applications and designs at the board-level, involving topics such as series/parallel conversion and analog/digital conversion. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: ECE 2051.

**ECE 3500 Electronic Materials & Devices** Physics of crystal structures, energy bands, Fermi level, charge carriers, the pn junction, and excess carriers. Devices: diodes, bipolar junction transistors and field effect transistors. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000. Prerequisites: ECE 2510 or ECE 2051.

**ECE 3550 Analog Electronics** Analysis, design, and simulation of analog electronic circuits. Single and multistage amplifiers, amplifier frequency response, power amplifiers, linear and nonlinear op-amp circuits, active filters, oscillators. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Spring 2002, Spring 2001. Prerequisites: ECE 2051.

**ECE 3690 Engineering Electromagnetics** Maxwell's equations, plane waves, dissipative media, reflection and transmission of waves at an interface, metallic and optical waveguides, transmission lines, linear and array antennas. Practicum includes computer projects, laboratory demonstrations and problem solving. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Fall 1999. Prerequisites: MAT 2500 and PHY 2402.

**ECE 3720 Eng Probability & Statistics** Basic set theory, axioms of probability, probability relationships. Concepts of a random variable. Joint random variables.



Selected topics in statistics from: estimation, hypothesis testing and regression. Selected topics from: functions of a random variable, random processes, Markov chains, applications (e.g. reliability, queuing, microprocessor control, digital communications, detection). Prerequisites: junior CPE or junior EE standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ECE 3770 Electrical Communications** Analog and digital communications systems: characterization of communication channels, bandwidth and signal distortion; AM and FM, FM stereo and Dolby noise reduction; sample and hold, source encoding, matched filtering, digital modulations and error control coding. Practicum includes analysis and simulation of products such as compact discs and high speed modems. (4 cr) Last Offered: Spring 2002, Spring 2001. Prerequisites: ECE 3220 or ECE 3240 and ECE 3720.

**ECE 3970 Design Seminar - EE** Areas and career paths in electrical engineering. Overview of required senior project courses and faculty project sponsors. Engineering design, project selection requirements, technical communications, information gathering. Requires selection of design project adviser, project topic, and a formal written project proposal. Junior standing. (3 cr) Last Offered: Spring 2002.

**ECE 3971 Design Seminar - CPE** Areas and career paths in computer engineering. Overview of required senior project courses and faculty project sponsors. Engineering design, project selection requirements, technical communications, information gathering. Requires selection of design project adviser, project topic, and a formal written project proposal. Junior standing. (3 cr) Last Offered: Spring 2002.

**ECE 4290 Engr System Models & Control** Modeling and analysis of electrical, mechanical, and electromechanical systems; open-loop and feedback systems; frequency domain models; state equations; linearization; time response; steady-state error; block diagrams and signal flow graphs; stability criteria; root locus method. Practicum includes laboratory experiments involving actual engineering systems. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Fall 2002, Fall 2001, Summer 2001, Fall 2000. Prerequisites: (ECE 2290 or ECE 2051) and PHY 2402.

**ECE 4420 Reliability w Eng Applications** Introduction to the theory and practice of reliability evaluation. Reliability function, hazard rates, MTTF, component reliability, reliability network modeling, various approaches to reliability evaluation, reliability of systems with repair, MTBF, approximations to systems reliability, introduction to software reliability. (3 cr) Last Offered: Fall 2002, Fall 1997, Fall 1996, Fall 1995. Prerequisites: ECE 3720.

**ECE 4470 Computer Networks** Computer network technologies including asynchronous transfer mode (ATM), Internet, and telephony; protocol layering; multiple access; switching; scheduling; naming, addressing, and routing; error and flow control; traffic management; analysis of common protocols used in Internet, and ATM networks;

protocol implementation techniques used in real networks. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Fall 2002, Fall 2001.

**ECE 4950 EE Project I** Electrical engineering design process including specifications, tradeoffs, revisions, economic constraints, organization, scheduling, test plans. Project reconfirmation from ECE 3950. Requirements: progress reports, written interim project report, oral presentation. Each design group meets once a week with adviser. (2 cr) Last Offered: Fall 2001, Summer 2001, Spring 2001, Fall 2000. Prerequisites: ECE 3950.

**ECE 4951 CPE Project I** Computer engineering design process including specifications, tradeoffs, revisions, economic constraints, organization, scheduling, test plans. Project reconfirmation from ECE 3951. Requirements: progress reports, written interim project report, oral presentation. Each design group meets once a week with adviser. (2 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998. Prerequisites: ECE 3951.

**ECE 4970 Design Project - EE** (3 cr) Last Offered: Fall 2002.

**ECE 4971 Design Project - CPE** (3 cr) Last Offered: Fall 2002.

**ECE 4990 Elect Engr Project II** Completion of the design project presented in ECE 4950. Requirements: written and oral progress reports, demonstration of achieved objectives, formal written final report, oral presentation. Each design group meets once a week with their adviser. Class meets once a week with coordinator. (4 cr) Last Offered: Spring 2002, Summer 2001, Spring 2001, Fall 2000. Prerequisites: ECE 4950.

**ECE 4991 CPE Project II** Completion of the design project presented in ECE 4951. Requirements: written and oral progress reports, demonstration of achieved objectives, formal written final report, oral presentation. Each design group meets once a week with their adviser. Class meets once a week with coordinator. (4 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: ECE 4951.

**ECE 5091 Special Topics in E E** Topics of current interest and importance in electrical engineering, including an examination of pertinent literature. (3 cr) Last Offered: Spring 2000, Spring 1999.

**ECE 5092 Special Topics in E E** Topics of current interest and importance in electrical engineering, including an examination of pertinent literature. (3 cr)

**ECE 5240 Multimedia** Algorithms and standards that make possible multimedia communication and storage over the internet, including baseline JPEG, JPEG 2000, video compression (MPEG-1, 2, 4), audio compression and MP3, DVD, video conferencing and streaming, multimedia over broadband (DSL and cable), multimedia database search and retrieval and digital watermarking for multimedia content ownership and intellectual property rights protection. Prerequisites: Senior CPE or senior EE standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001.

**ECE 5390 Control System Design** Problem formulation, design techniques and evaluations, time domain and frequency domain design methods. Incorporates computer-aided analysis and design in conjunction with required laboratory projects. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: ECE 4290.

**ECE 5430 Microcomputer System Design** Design and construction of a functional microcomputer using a lab trainer, a set of integrated circuit chips, a microprocessor, RAM, ROM, and interface components. (3 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Spring 1998. Prerequisites: ECE 3490 or ECE 2041.

**ECE 5444 Introduction to Fuzzy Logic** Applications and methodologies of fuzzy logic using MATLAB. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000.

**ECE 5445 Intro to Neural Networks** Applications and methodologies of neural networks using MATLAB. (3 cr) Last Offered: Spring 2002.

**ECE 5450 Microcontrollers & Applic** Architecture of an 8-bit microcontroller, I/O ports, serial interface, external memory and I/O, A/D converters, UARTS, pulse width modulators. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Fall 2000. Prerequisites: ECE 3490 or ECE 2041.

**ECE 5460 Intro to VLSI Design** Design disciplines for Very Large Scale Integration, switching models of MOS systems, basic device equations, combinational and sequential systems design, simulation, timing verification. UNIX CAD VLSI tools will be used for projects. (3 cr) Prerequisites: ECE 3445.

**ECE 5477 Computer Comm Security** Theory and practice of computer communications security, including cryptography, authentication, and secure electronic mail. Topics include secret and public key cryptography; message digests; password-based, address-based, and cryptographic authentication; privacy and authentication in email; PEM, PGP, and S/MIME. Use of various algorithms. Prerequisites: Senior CPE or senior EE standing. (3 cr) Last Offered: Spring 2002, Spring 2001.

**ECE 5484 Adv Digital System Design** In-depth treatment of combinational logic design, state machine design, and systems-level design. CAD tools, hardware description languages (VHDL) for design and simulation, field programmable gate arrays (FPGA). (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: or ECE 2040ECE 2490.

**ECE 5520 Audio Engineering** Selected topics in audio engineering and acoustics, tied together through their application to the problem of high-quality transmission of sound. (3 cr) Last Offered: Spring 2002, Spring 1998, Fall 1996, Fall 1995. Prerequisites: ECE 3790.

**ECE 5540 Digital Integrated Electronics** Implementation and design of high speed bipolar and MOS digital integrated circuits. TTL, ECL, CMOS, and BiCMOS logic families. Emphasis on practical design issues involving signal integrity and interfacing between logic families. (3 cr) Last Offered: Spring 1999, Spring 1998, Spring 1996. Prerequisites: ECE 3450.

**ECE 5545 Microelectronic Fabrication** Basic fabrication processes of silicon microelectronic circuits. Interrelationships between the material processing and the operational characteristics of a device. Integration of the various material processes in forming bipolar and MOS integrated circuit technologies. (3 cr) Prerequisites: ECE 3500.

**ECE 5560 Analog Systems I** Modeling of active and passive components, characterization of IC subcircuits and their applications, theory and application of op-amps in analog circuit design. Use of manufacturer's data sheets, use of CAE tools for analog circuit design and simulation, practical aspects of design are emphasized. (3 cr) Last Offered: Spring 2001, Spring 1999, Spring 1998, Spring 1997. Prerequisites: ECE 3510 or ECE 2051.

**ECE 5565 Analog Systems II** Advanced topics in analog circuit design. Linear and switching power supplies, regulators, filter specifications, design and sensitivity analysis, oscillators, A/D and D/A converters, VFC, FVC, opto-coupler/isolators, waveshaping circuits. Application of CAE tools for design, simulation and verification. Practical aspects of design and trouble shooting techniques are emphasized. (3 cr) Last Offered: Spring 1996, Spring 1995. Prerequisites: ECE 3510 or ECE 2051.

**ECE 5680 Photovoltaic Power Generation** Nature and availability of solar energy; solar cell design, including materials selection; photovoltaic modules and arrays; inverters; stand-alone systems; grid interconnection; economic considerations. (3 cr) Last Offered: Fall 1995. Prerequisites: ECE 3500.

**ECE 5690 Microwave Networks** Plane wave propagation; propagation in TEM transmission lines and waveguides; IMPATT; TRAPAT; Gunn-Effect and parametric devices; microstrip lines and microwave integrated circuits; laboratory work includes measurement of SWR, impedance, and power at microwave frequencies. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 1999. Prerequisites: ECE 3690.

**ECE 5750 Communication Electronics** Analysis of circuits used in radio frequency communication transmitters and receivers. Elements of radio systems, electrical noise, modulation, detection, oscillators, mixers, power amplifiers and design. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 1999. Prerequisites: ECE 3510 or ECE 3550 or ECE 5560.

**ECE 5760 Intro to Optoelectronics** Introduction to various optoelectronic devices, including light emitting devices, photodetectors, optical modulators, solar cells and

display devices. Applications to systems. (3 cr) Last Offered: Spring 2002, Fall 1999, Fall 1998, Fall 1997. Prerequisites: ECE 3500.

**ECE 5790 Digital Signal Processing** Review of discrete-time signals and systems; design and implementation of digital filters; Fast Fourier transform algorithms and applications; introduction to statistical signal processing; computer-aided design projects. Three lecture hours and a two-hour practicum per week. (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: ECE 3220 or ECE 3240.

**ECE 5792 Real-Time Dig Sig Processing** Real-time computation of digital signal processing including reverberation effects, band selective filtering, multirate processing, adaptive filtering, and spectrum estimation; implementation on a real-time DSP signal processing chip; chip architecture, assembly language; aliasing, data quantization, computational limitations, signal level limiting, scaling and I/O handling. (3 cr) Last Offered: Spring 2002, Spring 2001. Prerequisites: ECE 5790.

**ECE 5810 Power Systems** Three-phase circuits and power, transmission line parameters and models, transformer models, the per-unit system, power flow analysis, synchronous generator models. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Fall 2000. Prerequisites: ECE 2051.

**ECE 5820 Operation of Elec Power System** Economic operation, system stability, unbalanced fault analysis, protective relaying, voltage control, power line communication, power control. (3 cr) Last Offered: Spring 2000, Spring 1999, Spring 1998, Spring 1997. Prerequisites: ECE 5810.

**ECE 5991 Elec Eng Research I** Students work with faculty on current research topics. Weekly meetings with faculty adviser and a final written report and/or oral presentation are required. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ECE 5992 Elec Eng Research II** Continuation of ECE 5991. (3 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Spring 1998.

**ECE 6020 Intro to Electrical Systems** A survey course for non-electrical engineering students. Electrical components, dc circuits, ac circuits, power systems, electric machines, analog and digital electronics. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: PHY 2402.

**ECO 1001 Intro to Micro** The price system; demand and supply analysis; the production process; analysis of market structures. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ECO 1002 Intro to Macro** The economic system and its fundamental principles. The economic functions of government, monetary and fiscal policy, and international trade. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ECO 1103 Econ of Social Issues** Major economic and social problems facing the American economy: evaluation of the various policy alternatives for solving these problems. Topics include population, discrimination, environment, poverty and international trade. Students may receive credit for either this course or ECO 1002, not both. ECO 1104 Environmental problems and strategies to deal with them: environmental damage and economic growth; pollution and technology; pollution; air, water, and solid waste disposal. (3 cr)

**ECO 1104 Environment & Economy** Environmental problems and strategies to deal with them: environmental damage and economic growth; pollution and technology; pollution; air, water, and solid waste disposal. (3 cr) Last Offered: Fall 2001, Fall 1996.

**ECO 1903 Internship Elective** (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Fall 1999.

**ECO 1906 Internship Elective** (6 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Fall 1999.

**ECO 1909 Internship Elective** (9 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Fall 1999.

**ECO 2101 Macro-Econ Theory** The components of aggregate economic growth. Theories underlying public policies which attempt to achieve the objectives of price stability, full employment and economic growth in the United States. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (ECO 1101 or ECO 1001 or HON 1080) and (ECO 1102 or ECO 1002 or HON 1081).

**ECO 2102 Micro-Econ Theory** Economic and mathematical analysis of the equilibrium conditions of the household, the firm, and industry, in various market structures, together with a brief examination of the general equilibrium of the economy; emphasis upon developing a working knowledge of elementary mathematical analysis as it applies to present economic theory. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (ECO 1001 or HON 1080) and (ECO 1002 or HON 1081).

**ECO 2137 Economic Statistics** Development of research skills in economics through the application of economic methodology and statistics. Topics: descriptive statistics, estimation, hypothesis testing, regression analysis and time-series analysis. (3 cr) Last Offered: Fall 2002. Prerequisites: ECO 1001 and ECO 1002.

**ECO 2993 Internship** (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ECO 2996 Internship** (6 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Summer 2000.

**ECO 3106 Econ of Money & Banking** Principles of money, banking and financial markets; the relationship of the monetary and banking system to the functioning of the economy; the theory and practice of monetary policy; the function of money in international payments. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: ECO 1001 and ECO 1002.

**ECO 3109 International Economics** Comparative advantage; gains from foreign trade; Heckscher-Ohlin doctrine; technology and product cycles; tariff theory and policy; Other protection measures; economic integration; foreign exchange rates; fixed and flexible rates; balance of payments; multinational corporations. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: (ECO 1001 or HON 1080) and (ECO 1002 or HON 1081).

**ECO 3111 Hist of Economic Thought** The evolution of economic analysis within the context of contemporary economic institutions and associated social, ethical, and political thought. This is a writing enriched course. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: ECO 1001 and ECO 1002.

**ECO 3112 Public Finance** The economic role of government and the theory and practice of public expenditure and taxation. Government's impact on the allocation of resources and the distribution of income in a mixed economy. Topics include economic welfare, public expenditure analysis, tax incidence, public choice analysis, cost-benefit analysis. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 2000. Prerequisites: ECO 1001.

**ECO 3115 Alternative Econ Systems** Presentation, comparative analysis and discussion of the structure, performance, efficiency and growth aspects of various economic systems. This is a writing enriched course. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: ECO 1002.

**ECO 3118 Women and the Economy** The role of women in the economy and its implications. Economics of the household, marriage, fertility, divorce unemployment, earnings of women and occupational choice. International comparisons and current public policy issues. (3 cr) Sem 2. Prereq: ECO 1002. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999, Spring 1998. Prerequisites: ECO 1001.

**ECO 3123 Labor Economics** Economic theories concerning the employer's labor demand, the individual's labor supply, educational/occupational choices, labor unions, on-the-job training, discrimination, labor market mechanisms and wage determination. Public policies which affect the market. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: ECO 1001.

**ECO 3125 Industr Org & Public Pol** Economics of American industrial organization; market structure, conduct, and performance; the workability of competition in selected industries; the application of public policy and anti-trust law. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: ECO 1001.

**ECO 3126 Amer Econ Development** Growth of the American economy in terms of its various sectors and their interrelations; the evolution of important economic institutions and ideas and of the role of the entrepreneurs. This is a writing enriched course. (3 cr) Prerequisites: ECO 1001.

**ECO 3127 Econ Underdeveloped Area** Structural change in the process of development; growth patterns and income distribution; determinants and role of saving, investment, technological change; strategy and methods of development planning; the role of government; social institutions. This is a writing enriched course. (3 cr) Last Offered: Fall 2002, Spring 1997, Spring 1996, Spring 1995. Prerequisites: ECO 1002.

**ECO 3128 Intro Mathematical Econ** Variables and functions, matrices and determinants, difference equations, and calculus. Applications to economic and business problems, including market equilibrium, revenue and cost functions, marginal theory, maximization problems, input-output analysis, and selected deterministic models. (3 cr) Last Offered: Fall 2002. Prerequisites: ECO 1001 and ECO 1002.

**ECO 3135 Case Studies Amer Indust** Structure and conduct of selected industries in the U.S. Economy chosen from the manufacturing, finance, energy, public utility, and transportation sectors. Effects of government policies such as regulation, deregulation, antitrust, subsidization, and protection from foreign competition. This is a writing enriched course. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999, Spring 1998. Prerequisites: ECO 1001.

**ECO 3137 Intro to Econometrics** Intermediate course in stochastic methods with emphasis on applications; estimation, hypotheses testing, regression analysis, economic forecasting, time series analysis and probabilistic formulation of economic relationships such as consumption and production functions. (3 cr) Last Offered: Fall 2001, Fall 1999, Fall 1998, Fall 1997. Prerequisites: ECO 1001 and ECO 1002 and STA 2108.

**ECO 3141 Urban Economics** Economic structure of urban areas and problems associated with it; growth of urban areas; urban and suburban economic interdependence, finances, tax base and burden, urban poverty, social welfare, housing and transportation problems. This is a writing enriched course. (3 cr) Last Offered: Spring 1997, Spring 1995. Prerequisites: ECO 1001 and ECO 1002.

**ECO 4132 Seminar in Economics** Capstone course requiring students to utilize the tools of analysis and expression, including not only economic theory and applications, but also writing, speaking and mathematics. Computer skills expanded. This is a writing intensive course. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: ECO 2101 and ECO 2102 and (STA 2108 or DIT 2010).

**ECO 4200 Topics in Economics** Selected topics in economics currently of interest to faculty and students. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: ECO 1001 and ECO 1002.



**ECO 4201 Population & Eco Develop** (3 cr)

**ECO 4204 Eco Lat Amer & Caribbean** (3 cr)

**ECO 4205 Time Series Analysis** (3 cr) Last Offered: Spring 1998, Spring 1996, Spring 1995.

**ECO 4206 Eco of Religious Orgs** (3 cr)

**ECO 4207 Poverty and American Eco** An economic perspective on poverty in United States. Measurement of poverty and how it has changed. Underlying causes of poverty during past decade. Policies used to combat poverty. (3 cr) Last Offered: Spring 2002, Fall 2000, Fall 1998, Fall 1997.

**ECO 4208 Public Choice** The application of economic methodology to the subject of political science. (3 cr) Last Offered: Spring 1997, Fall 1996.

**ECO 4300 Topics in Economics** Selected topics in economics currently of interest to faculty and students. (3 cr) Last Offered: Fall 2001, Summer 2001, Spring 2001, Spring 2000. Prerequisites: (ECO 1001 or HON 1080) and (ECO 1002 or HON 1081).

**ECO 4500 Independent Study in Eco** Students with specific interests work on a tutorial basis with faculty. A departmental independent Research Proposal form must be approved by the directing faculty member and the department chairman prior to registration. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**EDU 2201 Social Foundation Educ I** Major movements in the history of education to 1600 with emphasis on their social and philosophical context; historical development of educational aims, curriculum and types of education; religious and political influences on education. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**EDU 2202 Social Foundation Edu II** Development of public and private education in America in its social and philosophical context; types of education, governmental activity in education, educational finance, religious and political influences, impact of European developments. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**EDU 3251 Psychology of Learning** The application of learning theory to classroom teaching. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**EDU 3254 Prin & Tech of Instruct** The school curriculum; principles for selecting and using instructional materials; principles of educational measurement and evaluation; practical exercises in the use of media and materials, and in educational measurement; (4 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001.

**EDU 3255 Lab Communication Skills** (3 cr)

**EDU 3258 Education & Society in 1960s** The relationship between educational developments and social change in the decade of the 1960s. The emergence of a distinctive youth culture and the educational impact of the civil rights and women's rights movements of the era. (3 cr)

**EDU 3263 Teaching the Exceptional Child** Introduction to the physical and social characteristics of disabled and handicapped persons between ages 3 and 21. Issues of inclusion and main streaming in light of recent legislation and court decisions. Problem cases, with an emphasis on the underprivileged, antisocial, and delinquent. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**EDU 4220 Spec Meth Secondary Sch** Approaches to teaching and their degrees of effectiveness; classroom management; methods applicable to the teaching of all subjects; student preparation and presentation of material for his/her own subject-matter field. (3 cr) Last Offered: Fall 2002, Fall 2000, Spring 1999, Fall 1998. Prerequisites: EDU 2201 and EDU 2202 and EDU 3251 and EDU 3254.

**EDU 4224 Language Art Elem School** (2 cr)

**EDU 4243 Read in the Sec School** (3 cr)

**EDU 4245 Read & Cur Issue Sec Edu** Techniques for evaluation of reading skills; methods of teaching reading in the subject areas; strategies for basic skill development; current issues in secondary education, and student observation in the schools. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**EDU 4281 Meth English Sec School** The curriculum, planning units and lessons in the teaching area; general methods of teaching, special methods and instructional materials in the subject, including textbooks, courses of study and reference works; application of the principles and techniques studied in Education 3254 to teaching the subject; lesson plans, units and tests in using methods, techniques, and materials in the subject; planned experiences and weekly assignments in neighboring secondary schools to observe, assist teachers, and teach pupils in the subject. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: EDU 2201 and EDU 2202 and EDU 3251 and EDU 3254.

**EDU 4282 Meth Fgn Lang Sec School** The curriculum, planning units and lessons in the teaching area; general methods of teaching, special methods, and instructional materials in the subject, including textbooks, courses of study and reference works; application of the principles and techniques studied in Education 3254 to teaching the subject; lesson plans, units and tests and in using methods, techniques, and materials in the subject; planned experiences and weekly assignments in neighboring secondary schools to observe, assist teachers and teach pupils in the subject. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: EDU 2201 and EDU 2202 and EDU 3251 and EDU 3254.

**EDU 4283 Meth Math Sec School** The curriculum, planning units, and lessons in the teaching area; general methods of teaching special methods, and instructional materials in the subject; including textbooks, courses of study and reference works; application of the principles and techniques studied in Education 3254 to teaching the subject; lesson plans, units and tests and in using methods, techniques, and materials in the subject; planned experiences and weekly assignments in neighboring secondary schools to observe, assist teachers and teach pupils in the subject. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: EDU 2201 and EDU 2202 and EDU 3251 and EDU 3254.

**EDU 4284 Meth Science Sec School** The curriculum, planning units, and lessons in the teaching area; general methods of teaching special methods and instructional materials in the subject; including textbooks, courses of study and reference works; application to the principles and techniques studied in Education 3254 to teaching the subject; lesson plans, units and tests and in using methods, techniques, and materials in the subject, planned experiences and weekly assignments in neighboring secondary schools to observe, assist teachers and teach pupils in the subject. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: EDU 2201 and EDU 2202 and EDU 3251 and EDU 3254.

**EDU 4285 Meth Soc Stud Sec School** The curriculum, planning units, and lessons in the teaching area; general/ methods of teaching, special methods, and instructional materials, in the subject, including textbooks, courses of study and reference works, application of the principles and techniques studied in Education 3254 to teaching the subject, practice in preparing lesson plans, units and tests and in using methods, techniques, and materials in the subject; planned experiences and weekly assignments in neighboring secondary schools to observe, assist teachers and teach pupils in the subject. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: EDU 2201 and EDU 2202 and EDU 3251 and EDU 3254.

**EDU 4286 Sem & Apr Sec Sch Teach** (3 cr)

**EDU 4290 Philosophy of Education** The development of a sound personal philosophy of education and practice in applying that philosophy to current educational issues. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**EDU 4291 Student Teaching** Observation and teaching under actual classroom conditions in the student's field of teaching specialization; open only to students of the Senior year who have completed all the subject matter courses in the field of specialization. (12 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: EDU 2201 and EDU 2202 and EDU 3251 and EDU 3254. Corequisites: EDU 4292.

**EDU 4292 Sen Sem & Student Teach** The student teaching experience; elements of school law; current educational issues; use of computers in the classroom; relationship of practice to theory; sharing of experiences, common problems and alternative teaching practices; open to student teachers. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall

2001, Spring 2001. Prerequisites: EDU 2201 and EDU 2202 and EDU 3251 and EDU 3254. Corequisites: EDU 4291.

**EDU 4298 Student Teaching** (6 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1998.

**EDU 4301 Humanistic Education** Principles of humanistic psychology as they apply to education: Active listening, kinesics, values clarification, motivation, classroom groups, and the teacher as a group facilitator. (3 cr)

**EDU 5000 Technology in Sec. Schools** Integrating technology in secondary classrooms. Use and discussion of basic software packages developed to help motivate students and enhance the learning process in the classroom. (3 cr) Last Offered: Spring 1999.

**EDU 5003 On-Line Communications** Basic introduction to networks, the Internet and E-mail and their application to classroom teaching. Includes discussion of and experience with terminology and academic subject specific information locations. (3 cr) Last Offered: Summer 1999.

**EDU 5005 Technology Elementary Classrms** Integrating technology in elementary classrooms. Use and discussion of basic software packages developed to help motivate students and enhance the learning process in the classroom. (3 cr) Last Offered: Spring 1999.

**EGR 1610 Engineer Design & Graphics** Introduction to: engineering, the design process, fundamental principles of orthogonal projection, orthographic and pictorial drawing and sketching, computer-aided modeling and design, engineering communication in a team environment. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**EGR 1611 Engineering Analysis** Introduction to: concepts of computer operations, computer programming using ANSI C, numerical methods, analysis of empirical data, use of computers as a tool in solving engineering problems. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**EGR 2001 Egr: Humanistic Context** A study of selected engineering achievements with emphasis on their technological innovations and impacts on society. Several case studies are examined to explore the connections between specific engineering achievements such as the computer, the DC-10, the Brooklyn Bridge, nuclear power, toxic waste disposal, and specific aspects of society, including political arrangements, art, the media, historical trends, social attitudes, and the role of specific individuals. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ENG 1010 Composition** The writing of expository prose; readings examined as aids to composition. Restricted to C&F freshman. Writing intensive. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ENG 1050 The Literary Experience** An introduction to literature and the methods of literary analysis founded upon close readings of texts from a variety of perspectives and including works from a range of genres and periods. The course is designed to instill within the student a sense of critical confidence through approaches of increasing complexity, from a mastery of the text to an understanding of the broader historical and philosophical forces in the literary work; the course thus addresses the interdisciplinary awarenesses central to the new Core. Individual courses may vary in the works chosen; all courses are writing intensive. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ENG 1903 Internship Elective** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ENG 1906 Internship Elective** (6 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**ENG 1909 Internship Elective** (9 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ENG 2000 Adv Expository Writing** Practice in writing reports, reviews, arguments, description; emphasis on organization and development. Permission of instructor required. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000.

**ENG 2005 Writing of Short Story** Instruction in writing short story. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Spring 1998.

**ENG 2006 The Writing of Poetry** Instruction in writing poetry. Limited to 15 students. Permission of instructor required. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000.

**ENG 2007 The Writing of Screenplays** Instruction in writing screenplays. Limited to 15 students. Permission of instructor required. (3 cr)

**ENG 2008 The Writing of Plays** Instruction in writing plays. Limited to 15 students. Permission of instructor required. (3 cr) Last Offered: Fall 2000.

**ENG 2010 Technical Writing** The writing of formal reports and proposals and descriptions of mechanisms and processes. (3 cr) Last Offered: Spring 1997, Spring 1996.

**ENG 2015 Business Communication** The essential elements of corporate communication, with emphasis on writing. (3 cr) Last Offered: Fall 2000.

**ENG 2020 Interpretive Journalism** News gathering and news writing; principles, rules and techniques of effective editorial writings; practical experience in the actual writing of

news stories and editorials. Permission of instructor required. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ENG 2030 Tutoring Writers** Theory and practice of Writing Center Work; writing, editing and tutoring skills. Permission of instructor required. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**ENG 2040 Literacy and Society** The social implications of reading and writing. (3 cr) Last Offered: Spring 1996.

**ENG 2045 Sp Top in Writing & Rhetoric** (3 cr)

**ENG 2050 Writing for Magazines** (3 cr) Last Offered: Fall 2002.

**ENG 2060 Desktop & Web Publishing** (3 cr) Last Offered: Fall 2002.

**ENG 2070 Legal Writing** (3 cr)

**ENG 2090 Internship: Journalism** (3 cr)

**ENG 2095 Internship: Publishing** (3 cr)

**ENG 2101 Brit Literary Trad 1** A study of the growth of British literature from Anglo-Saxon to the Neo-Classical periods. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ENG 2102 Brit Literary Trad 2** Study of British literature from the genesis of Romanticism in the 19th century to the literature of modern times. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ENG 2103 Amer Literary Trad 1** Development of American literature from the Colonial Period to the area of Walt Whitman and other writers whose lives and works largely precede the Civil War. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**ENG 2104 Amer Literary Trad 2** The development American literature from the Civil War to modern times. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ENG 2200 Hist of English Language** The development of the English language from Old English to Modern English. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**ENG 2250 Intro Literary Criticism** Principles of the study of literature; its intellectual and historic principles technical terms and cultural implications. (3 cr) Last Offered: Fall 1999, Spring 1997.

**ENG 2300 Women in Literature** Study of the place of women in literature, with emphasis on modern fiction, drama and poetry written in English. Diversity 2 requirement. Writing enriched. (3 cr) Last Offered: Fall 2002, Fall 2001, Summer 2000, Spring 2000.

**ENG 2301 Lit of Science Fiction** Science fiction as a significant genre. Writing enriched. (3 cr) Last Offered: Spring 1998, Spring 1997.

**ENG 2305 Intro to Folklore** A survey of American folklore as an academic discipline. (3 cr) Last Offered: Fall 2001, Spring 2001, Fall 2000, Spring 2000.

**ENG 2310 Study of Poetry** Concepts of poetry with detailed analyses of selected poems. Writing enriched. (3 cr) Last Offered: Summer 2001, Spring 1996, Fall 1995, Spring 1995.

**ENG 2320 Forms of the Novel** The nature of the novel as an art form in British, American, and European works. (3 cr) Last Offered: Fall 2001, Spring 2001, Spring 2000, Fall 1998.

**ENG 2330 Forms of Drama** Introduction to the main types of European and American drama. (3 cr) Last Offered: Fall 1997, Summer 1997, Summer 1996, Spring 1996.

**ENG 2340 Modern Short Story** Contributions to the short story form made by American, Irish, British, and Continental writers. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 2000.

**ENG 2400 Western World Literature I** Readings in translation of some of the classics of Western literature from the ancient world to the Renaissance, by such writers as Homer, Sophocles, Virgil, Dante, and Cervantes. Writing intensive. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**ENG 2401 Western World Literature II** Readings, chiefly in translation, of some of the classics of Western literature from the Enlightenment to today, by such writers of Moliere, Voltaire, Goethe, Flaubert, Tolstoy, Ibsen, Brecht, Kafka, and Pirandello. Western World Literature is not a prerequisite. (3 cr)

**ENG 2450 Irish Literature to 1880** A study of Irish literature from its origins in the world of Celtic mythology, epic and saga through the development of Anglo-Irish literature. Writing enriched. Irish studies requirement. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**ENG 2460 Irish Poetry since Yeats** The major Irish poets of the last fifty years, including an initial assessment of the importance of W. B. Yeats's career, and treatment of poets such as Seamus Heaney, Derek Mahon, Thomas Kinsella, and John Montague.

Writing enriched. Irish studies requirement. (3 cr) Last Offered: Fall 1999, Fall 1997, Fall 1995.

**ENG 2470 Modern Irish Drama** A study of the major Irish playwrights of the twentieth century including: Yeats, Lady Gregory, Shaw, Synge, O'Casey, Beckett, and Friel. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 1999.

**ENG 2500 Irish Renaissance** Selected readings in the drama and fiction literature of Ireland in the 20th century. Writing enriched. Irish studies requirement. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**ENG 2505 Black Literature: Poetry** The poetry of Wheatley, Harper, Dunbar, Johnson, Hughes, Brooks, Sanchez, Giovanni, Angelou, Harper, Dove, and other writers of the 18th, 19th, and 20th centuries. Diversity 1 requirement. (3 cr)

**ENG 2510 Black Literature: Novel** Novels published during Reconstruction, the Harlem Renaissance, the Black Arts Movement, and throughout the 20th century. Writing enriched. Diversity 1 requirement. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**ENG 2515 Black Literature: Drama** Major works of the Harlem Renaissance, the Black Arts Movement, and the present. Diversity 1 requirement. (3 cr) Last Offered: Spring 2000, Spring 1995.

**ENG 2520 Black Lit: Short Story** Short fiction by Chesnut, Hurston, Petry, Baldwin, McPherson, Williams, Walker, Morrison, Butler, and other writers of the 20th century. Diversity requirement. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 1999, Spring 1999.

**ENG 2610 Tutorial Readings** Program of approved readings under the supervision of a selected faculty member; examination on readings and a lengthy paper required. Restricted to senior English majors with high cumulative averages. Permission of chair required; ordinarily may not be repeated. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ENG 2620 Seminar** Individual authors or topics chosen by the instructor. Writing intensive. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ENG 2700 Studies in Literature** Specific topics vary each semester. Writing intensive. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ENG 2710 The American Revolutionary Era** The most interesting and instructive lives and writings of the American Revolutionary Era Founders. (3 cr) Last Offered: Fall 2001.



**ENG 2720 Amer Criminal Trial Narratives** Significant Modern American narratives in the sub-form of Criminal Trials and Courts Martial. (3 cr) Last Offered: Spring 2002, Spring 2001.

**ENG 2800 Teaching Practicum** Open only to senior English majors with a GPA of at least 3.5. Permission of consulting teacher and chair required. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ENG 2993 Internship** Internship (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: ENG 2020.

**ENG 2996 Internship** Prerequisite: 133-2020 (6 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: ENG 2020.

**ENG 3000 Intro to OE Lang & Lit** Old English literary works in translation and original language. (3 cr)

**ENG 3100 Anglo-Saxon Lit Culture** Material and cultural artifacts of the period ca. 450-1066 within historical, art-historical, archaeological, and literary contexts (works in translation). (3 cr)

**ENG 3101 Early Brit Lit Translatn** Literature of England, Ireland, and Scotland from the beginnings through the 15th century. (3 cr) Last Offered: Spring 1999, Spring 1998, Spring 1997, Spring 1996.

**ENG 3150 Chaucer** The Canterbury Tales, Troilus and Criseyde, and additional works. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**ENG 3200 Sem: Medieval Literature** Topics vary each semester. Consult departmental bulletin. (3 cr)

**ENG 3201 English Renaissance** Non-dramatic literature of the English Renaissance. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 2000.

**ENG 3230 Eliz & Jacobean Drama** Playwrights of the English Renaissance excluding Shakespeare. (3 cr) Last Offered: Fall 2000, Fall 1999, Fall 1998, Spring 1997.

**ENG 3250 Shakespeare** A selection of plays by Shakespeare. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ENG 3300 17th Cent Poetry & Prose** The poetry of Donne, Jonson, Lanyer, Herrick, Herbert; essays, sermons, journals, letters, pamphlets of Bacon, Donne, Milton, and others. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**ENG 3350 Milton** English poems and selected prose on issues of gender, politics, religion, culture. Women's studies requirement. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**ENG 3420 18th cent British Novel** Writings by Defoe, Fielding, Sterne, and others; and the Gothic novel of terror. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Fall 1999.

**ENG 3430 Restor & 18th cent Drama** Dramatists from Dryden to Sheridan. (3 cr) Last Offered: Fall 1999, Spring 1998.

**ENG 3450 Dryden Swift & Pope** The study of the principal works of the major Neo-Classical writers. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 1999, Fall 1997.

**ENG 3501 Early Romantic Writers** Wordsworth, Coleridge and other writers of the first half of the Romantic period. Writing intensive. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 1999, Spring 1999.

**ENG 3502 Later Romantic Writers** Byron, Shelley, Keats and other writers of the second half of the Romantic period. (3 cr) Last Offered: Fall 2001, Fall 1998, Spring 1996, Spring 1995.

**ENG 3504 19th Cent Brit Women Writers** Writings by important nineteenth-century British women novelists and poets, including Mary Shelley, Charlotte Bronte, Christina Rossetti, Elizabeth Barrett Browning, and others. (3 cr) Last Offered: Spring 2000.

**ENG 3505 Poetry & Prose 1830-1865** The poetry and prose of Carlyle, Tennyson, Browning, Newman, Arnold, and other writers of the era. (3 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Fall 1997.

**ENG 3506 Poetry & Prose 1865-1900** The poetry and prose of Ruskin, Rossetti, Swinburne, Hopkins, Pater, Hardy, and others. (3 cr) Last Offered: Spring 2002, Fall 2001, Fall 2000, Fall 1998.

**ENG 3520 19th Cent British Novel** Selected novelists from Jane Austen to Thomas Hardy. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**ENG 3525 Dickens** Selected novels by Charles Dickens. (3 cr) Last Offered: Spring 2001.

**ENG 3610 Modern British Poetry** British poetry from 1900 to the present, with emphasis on Hopkins, Hardy, Yeats, Eliot, Auden, Muir, Edith Sitwell, K3 Dylan Thomas, and Philip Larkin. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Summer 2000.

**ENG 3615 James Joyce** A study of the novels and short stories of James Joyce, with concentration on *Ulysses*. Writing enriched. Irish studies requirement. (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1999, Fall 1998.

**ENG 3616 Irish American Drama & Film** Depictions of the American Irish in popular drama and films from colonial times to the present. Popular Irish- American actors and their appeal, the Irish-American musical stage tradition, and the cross-over from popular drama to popular films such as John Ford's *The Quiet Man* and *The Informer*. Writing enriched. Irish studies requirement. (3 cr) Last Offered: Spring 2002, Fall 2000, Spring 2000, Spring 1999.

**ENG 3620 Modern British Novel** The British novel from the turn of the century to World War II. (3 cr) Last Offered: Spring 2002, Fall 2000, Spring 1999, Fall 1997.

**ENG 3621 Contemp British Novel** The development of the novel since World War II. (3 cr) Last Offered: Fall 2000, Spring 1998, Fall 1996, Spring 1995.

**ENG 3630 Modern British Drama** British drama from the 1890s to the Theatre of the Absurd. (3 cr) Last Offered: Fall 1999, Summer 1998, Spring 1998, Summer 1995.

**ENG 4001 Major Amer Writers I** The masterpieces of selected American writers from early times to the Civil War era. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2000.

**ENG 4002 Major Amer Writers II** Masterpieces of the chief American writers since the Civil War. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ENG 4040 American Short Story** Development of the short story in America from Washington Irving to the present. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Fall 2000.

**ENG 4500 American Slave Narrative** Slavery as a central paradox of American history and literature with emphasis on race and gender. Readings by Douglass, Brent, Stowe, Morrison, and others. Previous course work in American literature is recommended. Diversity requirement. Diversity requirement. (3 cr) Last Offered: Fall 2001, Fall 2000, Spring 1999, Spring 1998.

**ENG 4501 Amer Transcendentalism** An intensive analysis of Emerson, Thoreau, and other Transcendentalists. (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1996, Spring 1995.

**ENG 4510 19th Cent Amer Poetry** American poetry from its beginning to Emily Dickinson. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999, Fall 1998.

**ENG 4520 American Novel to 1895** The genesis of the American novel. (3 cr) Last Offered: Spring 2001, Spring 2000, Fall 1999, Spring 1999.

**ENG 4530 The American Renaissance** Pre-Civil War text, primarily from 1850-1855. (3 cr) Last Offered: Spring 2002, Fall 1996.

**ENG 4605 Amer Poetry: 1900-1950** American poets of the first half of the twentieth Century, including Robinson, Frost, Stevens, Cummings, Williams, Millay, Pound, Eliot, and others. (3 cr) Last Offered: Fall 2002, Spring 2001, Spring 1999, Fall 1998.

**ENG 4615 Amer Poetry since 1950** American poets since 1950, including Lowell, Plath, Sexton, Snodgrass, Ginsberg, Rich, Snyder, Baraka, and others. (3 cr) Last Offered: Fall 2001, Spring 2001, Fall 1998, Summer 1997.

**ENG 4619 The Works of Edith Wharton** Socio-sexual tensions in the world of Edith Wharton. The external world she knew: upper class New York society, its totems and taboos, tribal aspects, and sexual tension; and the internal world of Wharton herself with its repressive sexuality and psychological complexities. Diversity 2 requirement. (3 cr) Last Offered: Fall 1999, Fall 1998.

**ENG 4620 American Novel 1895-1950** Representative novelists from Crane to Steinbeck. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 1999.

**ENG 4621 Amer Novel since 1950** Novels of the late Modern Period and of the early Post- modern period. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000.

**ENG 4630 20th Cen American Drama** Major plays of the period. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ENG 4635 Contemporary American Poetry** Focused study of contemporary American poetry emphasizing gender, ethnicity, aesthetic principles or genre. (3 cr)

**ENG 4636 Contemp Amer Women's Poetry** The work of American women poets from the last forty years. Diversity 2 requirement. (3 cr) Last Offered: Spring 1999.

**ENG 4640 Contemp Amer Women's Lit** Writings by women from WW II to the present. Works by Ann Petry, Maxine Hong Kingston, Toni Morrison, Joyce Carol Oates, Kathy Acker, Bobby Ann Mason, and others. Diversity 2 requirement. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**ENG 4645 Post Modern Amer Fiction** Experimental narratives by American writers of the last four decades. Works by Vladimir Nabokov, Thomas Pynchon, Ishmael Reed, Don DeLillo, Joanna Russ, and others. (3 cr) Last Offered: Spring 2002, Summer 2001, Summer 2000, Fall 1996.

**ENG 4646 Race & Ethnicity: Amer Novel** Introduction to a variety of canonical texts that treat questions of race and ethnicity. the critical role of language and literature play

in determining how racial categories are constructed and deconstructed. (3 cr) Last Offered: Summer 2002, Spring 2001, Spring 2000, Spring 1999.

**ENG 5000 Senior Seminar** Capstone experience combining immersion in primary and secondary materials with an intensive writing experience. Limit of 15 students. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ETH 2050 Eth Trad & Contemp Life** Major Western ethical traditions as they apply to selected contemporary ethical problems, with special consideration to Jewish and Christian perspectives. This course satisfies the Arts and Sciences Writing Enriched requirement. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ETH 2051 Service Learning Practicum** Ethics Service Learning Practicum that will meet one hour each week for reflection/critique of required service commitment. Permission of the instructor. (1 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**ETH 3000 Integrating Seminar** This is a capstone course which integrates many of the themes of the concentration. It is required for all concentrators in addition to the course requirements listed in catalog. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000.

**FIN 1113 Principles of Finance** The theory and techniques of financial management. Time value of money; risk and return; financial analysis and planning; working capital management, capital budgeting; cost of capital; strategic long term financing decisions. Junior or senior standing. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: ACC 1101 and (DIT 2010 or MAT 1235 or MAT 2310 or MAT 4310 or ECE 3720).

**FIN 2114 Adv Financial Mgt** Risk and return relationships; valuation models; cost of capital; capital structure; capital budgeting; dividend policy; international financial transactions; financial statement analysis and forecasting; working capital management. Emphasis on computer applications and case studies. Junior or senior standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: FIN 1113 or HON 1113.

**FIN 2227 Financial Markets** An introduction to the structure and operation of the money, capital, mortgage, derivatives, and international financial markets; flow of funds from savers to borrowers; efficiency of financial markets; theories of interest rates; term structure of interest rates. Junior or senior standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: HON 1113 or FIN 1113.

**FIN 2230 Financial Institutions** The structure, operation, management, and regulation of commercial banks, savings and loan associations, mutual savings banks, credit unions, insurance companies, finance companies, pension funds, investment companies, and international financial institutions; structure and operation of the Federal Reserve system;

measurement and management of the risks of financial institutions. Junior or senior standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: FIN 1113 or HON 1113.

**FIN 2323 Intro to Investments** Risk and return; organization of securities markets; term structure of interest rates; valuation of bonds; bond trading; valuation of common stock using fundamental and technical analysis; options, warrants, and financial futures; real estate; precious metals. Junior or senior standing. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: FIN 1113 or HON 1113.

**FIN 2324 Portfolio Management** Advanced investment management with an emphasis on portfolio management; forecasting economic conditions; risk-return characteristics of securities; asset allocation (optimization) techniques; selecting investment goals; evaluating portfolio performance; international diversification; portfolio management with options and futures; computer applications in investment management. Senior standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: FIN 2323.

**FIN 2325 Introduction to Derivatives** (3 cr)

**FIN 2330 Corporate Restructuring** (3 cr)

**FIN 2335 Intl Financial Management** The financial operations of multinational corporations and financial institutions with an emphasis on the international financial environment, foreign exchange risk management, multinational working capital management, foreign investment analysis, financing foreign operations, and international banking. Junior or senior standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: FIN 1113 or HON 1113.

**FIN 2340 Contemporary Topics in Finance** Contemporary issues and topics in Financial Management, Financial Markets, Investments, or International Finance. Senior Standing (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001. Prerequisites: .

**FIN 3350 Finance Internship** Employment with an approved firm in the area of Finance where experience is gained with appropriate training, instruction, and supervision. Course does not fulfill the requirements for major. Prerequisites: junior or senior standing, a minimum GPA of 2.5, approval of the office of Business Relations, and written permission of the chairperson. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**FIN 3360 Independent Study - Finance** Independent study under a faculty member's guidance in an area of special interest to the student. The area of interest must be discussed with the faculty member prior to registration. Course does not fulfill the requirements for major. Prerequisites: Finance major with senior standing, and written

permission of chairperson required. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**FRE 1111 Introductory French I** Groundwork in French, including oral proficiency, aural comprehension and reading; for students with no prior knowledge of French, or one year of high school French. Supplementary language laboratory work and oral drills. (4 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**FRE 1112 Introductory French II** Groundwork in French, including oral proficiency, aural comprehension and reading; for students with no prior knowledge of French, or one year of high school French. Supplementary language laboratory work and oral skills. (4 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**FRE 1113 French-Reading Knowledge** Essentials of grammar and exercises in expository French prose to prepare students for independent research in specialized fields. (0 cr) Last Offered: Spring 1998, Spring 1997, Spring 1996, Spring 1995.

**FRE 1121 Intermediate French I** Review of grammar, composition, reading and conversation. Students should have completed FRE 1111 and 1112 or the equivalent. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**FRE 1122 Intermediate French II** Review of grammar, composition, reading and conversation. Students should have completed FRE 1121 or the equivalent. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**FRE 1131 Conversation and Composition I** Intense practice in conversation and composition with emphasis on developing advanced language skills in French. A writing enriched course. Students should have completed FRE 1121 and 1122 or the equivalent. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001.

**FRE 1132 Conversation & Composition II** Intense practice in conversation and composition with emphasis on developing advanced language skills in French. A writing enriched course. Students should have completed FRE 1131 or the equivalent. (3 cr) Last Offered: Spring 2002, Summer 2001, Spring 2001, Summer 2000.

**FRE 1133 Practical French I** Business and professional writing and readings in applicable publications. Students should have completed FRE 1121 and 1122 or the equivalent. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**FRE 1134 Practical French II** Business and professional writing and readings in applicable publications. Students should have completed FRE 1121 and 1122 or the equivalent. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**FRE 1135 Advanced Grammar** Systematic grammar analysis with comprehensive exercises and compositions. A writing enriched course. Students should have completed FRE 1121 and 1122 or the equivalent. (3 cr) Last Offered: Fall 1995.

**FRE 1136 Contemp Fren Lang I** Offered as part of the Villanova Summer Program at the University of Bourgogne/Dijon to provide practice in speaking and writing on an advanced level. The use of French in everyday situations and subject-related discussions. Students will read newspapers, magazines, advertising, and listen to broadcasts. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999.

**FRE 1137 Cont Fre Lang II** Offered as part of the Villanova Summer Program at the University of Bourgogne/Dijon to provide practice in speaking and writing on an advanced level. The use of French in everyday situations and subject-related discussions. Students will read newspapers, magazines, advertising, and listen to broadcasts. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999.

**FRE 1141 Phonetics** This course is an introduction to articulatory phonetics, phonologic analysis, and phonetization of phonemes. It comprises theoretical rules of spoken French and phonetic transcription as well as individual correction and auditory training. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Fall 2000.

**FRE 2100 French Lit in Eng Translation** The major works of French literature in translation. translation. Conducted in English. Fulfills advanced literature requirements. (3 cr)

**FRE 2101 French Lit & Film** Study of evolutionary relationship between 19th century realist Novel, pre-war poetic realism in film, post-war Nouveau Roman and Nouvelle vague cinema. Fulfills advanced literature requirements. (3 cr)

**FRE 2142 French Civilization** Study of French culture in its manifold aspects. Students should have completed FRE 1121 and 1122 or the equivalent. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**FRE 2143 Contemporary France** Offered as part of the Villanova Summer Program at the University of Bourgogne/Dijon. France's current role in the international, political, economical and cultural world, and its impact in the EEC. Oral presentations and independent research required. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999.

**FRE 2144 Explication des textes** Close analyses of and textual commentary on representative selections. Students should have completed FRE 1131 and 1132 or the equivalent. Required course for French majors. Fulfills advanced literature requirements. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Fall 2000.

**FRE 2215 French Women Writers** French women writers from the Middle Ages to the present. A writing enriched course. Satisfies Diversity Requirement. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 2000, Fall 1998, Fall 1996.



**FRE 2218 Intro to Franco Phone Lit** Representative selections of French writers of Black Africa, North Africa, the Caribbean, and Canada. Topic to be announced. Satisfies Diversity Requirement. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 2001, Fall 1999, Fall 1997, Fall 1995.

**FRE 3211 Survey of French Lit I** Close readings of representative texts from the Middle Ages to the 18th Century. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements, (3 cr) Last Offered: Fall 2002, Fall 1996, Spring 1995.

**FRE 3212 Survey of French Lit II** Close readings of representative texts from the 18th century to the 20th century. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 1997, Spring 1995.

**FRE 3411 Medieval Literature** The earliest texts, the chanson de geste, the romance, lyric, didactic, allegorical and satirical poetry and the prose writers of the Middle Ages. Fulfills advanced literature requirements. (3 cr)

**FRE 3412 Special Topics** Advanced study of topics of special interest in French literature. Topics to be arranged. Course may be repeated for credit. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**FRE 3512 The Renaissance** The Pleiade and the prose writers of the 16th Century. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr)

**FRE 3613 17th Century Literature** Analytical readings of major non-dramatic texts, 1620- 1690. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr)

**FRE 3614 Classical Theatre** Classical dramaturgy and modern interpretations of Corneille, Moliere and Racine. A writing enriched course. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr)

**FRE 3715 18th Cent Literature I** Study of the Enlightenment through the theater, novels and philosophical texts with special emphasis on Voltaire. Voltaire. A writing enriched course. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 2001, Fall 1998.

**FRE 3716 18th cent Literature II** Philosophical, revolutionary and sentimental writings with special emphasis on Rousseau. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 1999, Spring 1995.

**FRE 3717 18th-19th Century Theatre** Development of the French theatre from the Classical tradition of the eighteenth century to the Romantic drama of the nineteenth. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr)

**FRE 3818 Romanticism** The poetry, novel, short story and drama of the romantic period. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr)

**FRE 3819 Realism & Naturalism** Realism and naturalism in the French novel and theatre with emphasis on Balzac, Flaubert and Zola. Fulfills advanced literature requirements. (3 cr)

**FRE 3820 Post Romantic Poets** The development of French poetry and poetic theory from Baudelaire to Mallarme. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr)

**FRE 3921 20th Century Theatre** Major stage works in text and performance from Jarry to Koltes. Students should have completed FRE 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 1996.

**FRE 3922 20th Century Novel** Development of the novel in the first half of the 20th Century with emphasis on Proust, Gide, Mauriac, Green, etc. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 2001, Fall 1997.

**FRE 3923 Post-World War II Writers** French Literature since 1945, with emphasis on the novels and essays of Sartre, Simone de Beauvoir, Camus, Robbe-Grillet, and Le Clézio. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 2002, Spring 1999, Fall 1995.

**FRE 3950 Research Seminar** Bibliographical principles and the techniques of literary research; preparation of a paper. Writing Intensive. Require course for French majors. Fulfills advanced literature requirements. (1 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**FRE 4110 French Classical Theatre** Readings and discussions on the major dramatists and theorists of the French 17th century. Conducted in English. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 1997.

**FRE 4120 Modern French Theatre** The contemporary drama of France from its origin (King Ubu) to Beckett, Sartre, Genet, Ionesco and recent dramatists. Conducted in English. Fulfills advanced literature requirements. (3 cr)

**FRE 4130 The Modern French Novel** The search for identity and meaning in contemporary French fiction from Gide to Camus, Sartre and the new novelists. Conducted in English. Fulfills advanced literature requirements. (3 cr)

**GEN 2993 Internship** Credits may be applied to requirements for the major in General Arts in the required General Arts elective slots. Permission of Program Director. Juniors and Seniors with an overall GPA of 3.0 only. (3 cr) Last Offered: Spring 2001, Fall 2000, Summer 2000, Spring 2000.

**GEN 2996 Internship** Credits may be applied to requirements for the major in General Arts in the required General Arts elective slots. Permission of Program Director. Juniors and Seniors with an overall GPA of 3.0 only. (6 cr) Last Offered: Spring 2001, Fall 2000, Summer 2000, Spring 2000.

**GEN 5001 General Arts Seminar** Integrative seminar dealing with the relation of the social sciences and the humanities. May be viewed as similar to a "Core Seminar III" combining ancient, modern, and contemporary thought. (3 cr) Restrictions: Restricted to GEN Majors. Last Offered: Spring 2001, Fall 2000, Spring 2000, Fall 1999.

**GEN 6001 Research** Individual students with specific interdisciplinary study projects will work with a particular professor on a tutorial basis. Students must have senior status. The final research paper must be approved by the professor and the director. (3 cr) Restrictions: Restricted to GEN Majors. Last Offered: Spring 2001, Fall 2000, Spring 2000, Fall 1999.

**GEO 1001 Internatil Approach Geography** The human and physical realms of Geography. Focus on current geographic problems facing specific regions of the world. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001.

**GEO 1500 Physical Geography** World climates, water, landforms, soil, and vegetation form the basis of this global environmental approach. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**GEO 1700 Cartography** From the concept of mental mapping to computer cartography, integrated with a series of hands-on (3 cr) Last Offered: Summer 1999, Spring 1997, Fall 1996, Summer 1996.

**GEO 1903 Internship Elective** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**GEO 1906 Internship Elective** (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**GEO 1909 Internship Elective** (9 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**GEO 2000 Political Geography** Spatial attributes of political process and structure, with an emphasis on current geo-political issues in the world. (3 cr)

**GEO 2100 Economic Geography** Locational analysis of the major agricultural, manufacturing, and service industries in an increasing interdependent world. (3 cr) Last Offered: Fall 1995.

**GEO 2200 Urban Geography** The location, structure, functions and growth problems of cities; possible solutions for preserving or restoring a livable urban environment. (3 cr) Last Offered: Fall 2000, Fall 1999, Fall 1998, Fall 1997.

**GEO 2300 Population Geography** Spatial patterns of human population; population size, growth, and characteristics; vital statistics, projection and forecasting techniques, the relationship of population to environmental problems. (3 cr) Last Offered: Spring 2000, Spring 1999, Spring 1998, Spring 1997.

**GEO 2993 Internship** (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**GEO 2996 Internship** (6 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**GEO 3500 North America** The physical and cultural environments of the United States and Canada. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**GEO 3600 Europe** The strengths and weaknesses and the human and natural resources of Europe and the Common Market. (3 cr)

**GEO 3700 Africa** Major geographic problems facing contemporary Africa, with a special emphasis on spatial planning within a number of national contexts. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Fall 1999.

**GEO 3800 Islamic World** The physical environments and life patterns of the Islamic peoples in Asia and Africa. The historical and contemporary interrelationship between the Islamic World and the West. (3 cr) Last Offered: Summer 1998, Summer 1996, Spring 1996.

**GEO 3900 Geography of Asia** A regional study of the physical environment, culture, and development of Asia. (3 cr) Last Offered: Fall 2000, Spring 1999, Spring 1996.

**GEO 4050 Air Photo Interpretation** Basic skills necessary to identify a variety of phenomena on aerial photographs employing a number of film types. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1998.

**GEO 4101 Geographic Info Systems** Principles and applications of Geographic Information Systems (GIS), with an emphasis on vector data structures and relational data base management systems. Pc-based GIS provides experience with methods to store, retrieve, manipulate and manage spatial and associated attribute information in solving geographic problems. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2000, Fall 1998.

**GEO 4250 Remote Sensing** The technology used to produce reliable interpretive data about objects and environmental phenomena by recording, analyzing, and interpreting wave/force fields and patterns of transmitted, reflected, and emitted energy. New developments in imaging techniques, particularly those related to satellite, thermal infrared and radar sensor systems. (3 cr) Last Offered: Spring 2000, Spring 1999, Spring 1998, Spring 1997.

**GEO 4300 Advanced Cartography** The study and practical experience map production from conception to color proofing. Students design and execute maps of publishable quality. (3 cr)

**GEO 5100 Resource Mangt & Conservation** Problems and policies arising from the use and misuse of the environment; assessment of the consequences of applying various policies, and the development of an environmental/resource ethic. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 1999.

**GEO 5200 Geo of Land Use Management** Land-use decisions and policies: agricultural, recreational, nuclear, urban, and industrial environments. (3 cr) Last Offered: Spring 1999, Fall 1996.

**GEO 5300 Disasters: Nat Hazards** Environmental hazards that threaten health and safety at national and global levels. Mechanics, distributions, risks, mitigation control and case histories for each major hazard: earthquakes, tsunamis, volcanoes, coastal erosion, avalanches, tornadoes, hurricanes, flooding, and subsidence. (3 cr) Last Offered: Summer 2002, Spring 2002, Spring 2001, Spring 2000.

**GEO 6000 Geography Seminar** Student research on the historical development of geographic thought. (3 cr) Last Offered: Spring 1996, Spring 1995.

**GEO 6001 Seminar Geographic Educ** Readings on teaching and learning, historic and contemporary, with emphasis on geographic education. Students assist in some lower division courses and evaluate teaching philosophies and methodologies. Restricted to geography majors. (3 cr)

**GEO 6100 Geography Seminar** Student research on trends in current geographic literature. (3 cr) Last Offered: Fall 1998, Spring 1995.

**GEO 6200 Independent Study** Individual projects or studies in geography. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**GER 1111 Introductory German I** Groundwork in German, including oral, aural and reading skills. Supplementary oral drills. (4 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**GER 1112 Introductory German II** Groundwork in German, including oral, aural and reading skills. Supplementary laboratory work and oral drills. (4 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**GER 1113 German for Translation** Essentials of grammar and exercise for reading comprehension and translation. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 1999, Spring 1998.

**GER 1121 Intermediate German I** Review of grammar, composition, reading and conversation. Students should have completed GER 1111 and 1112 or the equivalent. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**GER 1122 Intermediate German II** Review of grammar, composition, reading and conversation. Students should have completed GER 1121 or the equivalent. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**GER 1131 Conversation & Composition I** Intensive practice in conversation and composition with emphasis on developing advanced language skills in German. Writing enriched. Students should have completed GER 1121 and 1122 or the equivalent. (3 cr) Last Offered: Fall 2002, Fall 2001, Summer 2001, Fall 2000.

**GER 1132 Conversation & Composition II** Intensive practice in conversation and composition with emphasis on developing language skills in German. Writing enriched. Students should have completed GER 1131 or the equivalent. (3 cr) Last Offered: Spring 2002, Summer 2001, Spring 2001, Summer 2000.

**GER 1133 Business German I** Business and professional writing and readings in applicable publications. Students should have completed GER 1121 and 1122 or the equivalent. (3 cr) Last Offered: Fall 2001, Spring 2001, Spring 2000, Fall 1999.

**GER 1134 Business German II** Business and professional writing and readings in applicable publications. Students should have completed GER 1121 and 1122 or the equivalent. (3 cr) Last Offered: Fall 1998, Spring 1997.

**GER 1135 Practical German I** Intercommunication with supplemental readings in newspapers and magazines. Students should have completed GER 1121 and 1122 or the equivalent. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1995.

**GER 1136 Practical German II** Intercommunication with supplemental readings in newspapers and magazines. Students should have completed GER 1121 and 1122 or the equivalent. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1995.

**GER 2100 German Lit in Engl Translation** The major works of German literature in translation. Conducted in English. Fulfills advanced literature requirements. (3 cr)

**GER 2142 Ger Civ and Culture to 1989** Study of German civilization and culture from their beginnings until the fall of the Berlin Wall. (3 cr) Last Offered: Summer 2002, Spring 1998, Fall 1996, Spring 1995.

**GER 2143 Ger Civ & Culture Since 1989** Contemporary German civilization and culture in their manifold aspects. Students should have completed GER 1121 and 1122 or the equivalent. (3 cr) Last Offered: Fall 1997.

**GER 3211 Survey of German Lit I** From its beginnings to 1750. Students should have completed GER 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr)

**GER 3212 Survey of German Lit II** From 1750 through 1900. Students should have completed GER 1131 or the equivalent. (3 cr) Last Offered: Fall 1999, Fall 1995.

**GER 3213 Survey of German Lit III** From 1900 through 2000. Students should have completed GER 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 1996.

**GER 3411 Medieval Masterpieces** Selections from medieval German literature read in modern German. Fulfills advanced literature requirements. (3 cr)

**GER 3412 Special Topics** Topics of interest in German literature. Topics to be arranged. Course may be repeated for credit. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**GER 3714 Enlightenment to Romanticism** Students should have completed GER 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 1997.

**GER 3716 Goethe** Study of selected works. Students should have completed GER 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr)

**GER 3717 German Drama in 19th Century** The German drama from Romanticism to Naturalism, with emphasis on the major dramatic works of Kleist, Grillparzer, Büchner and Hebbel. Fulfills advanced literature requirements. (3 cr)

**GER 3718 The German Novelle** The German Novelle as a genre from Goethe to the 20th century. Students should have completed GER 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 2002.

**GER 3818 Romanticism** The philosophy, lyric and prose of the Romantic period. Students should have completed Ger 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr)

**GER 3819 Realism** The major works of Poetic Realism. Students should have completed GER 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 1995.

**GER 3920 Austrian Literature** Selected works of Austrian literature from 1850 to the present. Students should have completed GER 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 2001, Summer 2000, Spring 1999, Fall 1995.

**GER 3921 20th Century Drama** German drama from Naturalism to the present. Students should have completed GER 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Spring 1999, Fall 1998, Summer 1995.

**GER 3922 20th Century Prose I** Novels and short stories. Students should have completed GER 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 1998, Fall 1996.

**GER 3923 20th Century Prose II** Novels and short stories. Students should have completed GER 1131 or the equivalent. Fulfills advanced literature requirements. (3 cr) Last Offered: Summer 2002, Spring 1997.

**GER 3950 Research Seminar** Bibliographical principles and the techniques of literary research; preparation of a paper. Writing Intensive. Fulfills advanced literature requirements. (1 cr) Last Offered: Spring 2001, Fall 2000, Spring 2000, Spring 1999.

**GER 4110 German Epic Theatre** Evolution of the genre culminating in the political documentary theatre. Conducted in English. Fulfills advanced literature requirements. (3 cr)

**GER 4120 German Theatre and Film** Plays by Brecht, Hasenclever, Kaiser, etc. Films such as Caligari, Nosferatu, Metropolis, M. Conducted in English. Fulfills advanced literature requirements. (3 cr)

**GER 4140 150 Years of German Drama** The main currents in German drama evolving into the modern period: Kleist, Grillparzer, Hebbel, Hauptmann, Kaiser, Brecht, Frisch, Duerrenmatt. Conducted in English. Fulfills advanced literature requirements. (3 cr)

**GER 4150 German Culture & Civilization** The culture and civilization of the German-speaking countries. Conducted in English. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 1999.

**GLY 2805 Geology for Engineers** Development and composition of minerals, rocks and soils; geologic structure and deformation of rock masses; weathering, mass wasting, erosion, groundwater, streams, ocean currents and glaciers. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000.



**GRK 1001 Intro Greek Ancient I** The basic forms, syntax and vocabulary of Ancient Attic Greek; selected prose in second semester. (5 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**GRK 1002 Elementary Greek II** The basic forms, syntax and vocabulary of Ancient Attic Greek; selected prose in second semester. (5 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**GRK 1051 New Testament Greek I** Essentials of the grammar, syntax and vocabulary of the Greek of the New Testament. Reading and writing of simple New Testament Greek. (5 cr)

**GRK 1052 New Testament Greek II** Essentials of the grammar, syntax and vocabulary of the Greek of the New Testament. Reading and writing of simple New Testament Greek. (5 cr)

**GRK 3001 Readings in Authors** Selected readings from a variety of Greek authors. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 1997.

**GRK 3002 Intermediate Greek II** Continuation of Greek 3001. (3 cr) Last Offered: Spring 2001.

**GRK 4250 Greek Historians** Selections from the works of Herodotus, Thucydides, or Polybius. Fulfills advanced literature requirements. (3 cr)

**GRK 4350 Greek Orators** Selected Orations; the style and structure of the speeches, their relations to the historical occasions for which they were composed, and the contribution of rhetoric to the intellectual life of the fourth century. (3 cr) Last Offered: Fall 1997.

**GRK 4450 Greek Philosophers** Greek philosophical thought and its vehicle, the Greek language, based on the reading of texts in the original. (3 cr)

**GRK 5250 Homer** Introduction to Homeric Greek and a study of Homeric epics. (3 cr) Last Offered: Spring 1995.

**GRK 5850 Greek Tragedy** Selected plays, read and interpreted in the light of contemporary Greek institutions and thought, with attention to their poetic and dramatic structure. (3 cr)

**GRK 5950 Greek Comedy** Selected plays, read and interpreted in the light of contemporary Greek institutions and thought, with special attention to their poetic and dramatic structure. (3 cr)

**HIS 1000 The United States to 1877** For AP elective credit only; does not fulfill Arts and Sciences core history requirements. (3 cr) Last Offered: Spring 2001, Fall 2000, Fall 1999, Fall 1998.

**HIS 1001 The United States since 1877** For AP elective credit only; does not fulfill Arts and Sciences core history requirements. (3 cr) Last Offered: Fall 2001, Summer 2001, Spring 2001, Fall 2000.

**HIS 1020 Hist of Western Civil I** For AP and transfer credit only. Does not fulfill Arts and Sciences core history requirements. (3 cr) Last Offered: Fall 1995.

**HIS 1021 Hist of Western Civil II** For AP and transfer credit only. Does not fulfill Arts and Sciences core history requirements. (3 cr) Last Offered: Spring 1997, Spring 1996.

**HIS 1040 Themes Pre Mod World History** (3 cr)

**HIS 1050 Themes in Modern World History** Introduction to the discipline of history through the investigation of major historical moments and themes in the transformation of diverse nations and regions of the world since 1500. Political, technological, and economic revolutions; cross-cultural exchange and the emergence of a global economy; environmental transformation and degradation; secularism, individualism, and values associated with modernism. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**HIS 1903 Internship Elective** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HIS 1906 Internship Elective** (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Fall 2000.

**HIS 1909 Internship Elective** (9 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HIS 2000 Investigating U.S. History I** In-depth study of American history from the pre-Columbian period to the Civil War and Reconstruction, with a particular emphasis on engaging historical problems as a process of inquiry and interpretation. Designed especially for history majors and future teachers, but open to all students. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001.

**HIS 2001 Investigating US History II** In-depth study of American history from the end of Reconstruction to the present, with a particular emphasis on engaging historical problems as a process of inquiry and interpretation. Designed especially for history majors and future teachers, but open to all students. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001.

**HIS 2151 Colonial America** The political, economic, social, and intellectual life of the American colonies and the clash of racial and ethnic groups in America to 1763. (3 cr) Last Offered: Fall 2000, Fall 1999, Fall 1996.

**HIS 2161 Revolutionary & Fed Amer** The colonial resistance to Great Britain; the making of the Constitution; and the continuing struggle, to 1810, to define the meaning of the Revolution. (3 cr) Last Offered: Fall 2001, Spring 2000, Fall 1997, Spring 1997.

**HIS 2171 Early 19th Cent America** The development of the Republic from the presidency of Jefferson through the Mexican War; the struggle of nationalism and sectionalism; the impact upon American life of an emergent democratic spirit, the ferment of reform, and Manifest Destiny. (3 cr) Last Offered: Fall 2000, Fall 1998, Fall 1997, Spring 1997.

**HIS 2181 Civil War & Reconstruct** The "irrepressible conflict"; its causes, progress, and termination; the settlement of the Reconstruction; the historiographic controversies to which the era has given rise. (3 cr) Last Offered: Summer 2002, Fall 2000, Spring 2000, Summer 1999.

**HIS 2191 America 1870-1920** Causes and results of industrialization and urbanization; responses to economic and social change, including popular protest movements and governmental regulation; rise of an urban culture of consumption. (3 cr) Last Offered: Spring 2002, Spring 1996.

**HIS 2201 United States 1914-1945** Major problems and domestic developments in the United States in World War I, the 1920s, the Great Depression and World War II. (3 cr) Last Offered: Fall 2002, Spring 1999, Summer 1998, Fall 1997.

**HIS 2202 United States since 1945** Major problems and domestic developments in the United States since 1945: reconversion, Cold War, the "Good Society" of the 1950s, turmoil of the 1960s, Vietnam War and its aftermath, contemporary challenges and problems. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998.

**HIS 2251 U. S. Foreign Rel 1776-1914** The completion of independence, hemispheric diplomacy, expansion, Civil War, and imperialism. (3 cr) Last Offered: Spring 2001, Fall 1997, Summer 1997, Summer 1996.

**HIS 2252 U.S. For Rel 1914 - Present** Diplomatic history from World War I to the present, including involvement in European and Asian struggles, cooperation in international organizations. (3 cr) Last Offered: Summer 2000, Summer 1998, Spring 1996.

**HIS 2261 Frontier in Hist of U.S.** Westward expansion from the American Revolution to 1900; the influence of expansion upon society, culture, and politics. (3 cr) Last Offered: Spring 2001, Fall 1999, Spring 1998, Spring 1995.

**HIS 2265 Amer Milit Hist to 1900** The wars of America from their European antecedents to 1900; relations between the military and society; role of the military in national development. (3 cr) Last Offered: Fall 2001, Spring 2000, Spring 1999, Spring 1998.

**HIS 2272 History of Amer Capitalism** The American colonial economy; the economic causes and consequences of the American Revolution and the movement for a national Constitution; the transportation revolution; the first industrial revolution; the beginnings of wage labor and workingmen's organizations; the transition to sustained economic growth; the separate economic system of the South and slavery; and the economic consequences of the Civil War. (3 cr) Last Offered: Fall 2002.

**HIS 2273 Amer Econ His since 1880** The American economy since 1880; urbanization; immigration; the decline of farming; the labor movement; the beginnings of government regulation; the effect of World War I on the economy; the deceptive prosperity of the 1920s; the stock market crash of 1929 and the Great Depression; the New Deal; the economic effects of World War II; post-war recovery; the Great Society; economic effects of the Vietnam War; stagflation; the Reagan years; and the national deficit. (3 cr)

**HIS 2276 American Environmental Hist** (3 cr)

**HIS 2280 Catholic Church in America** (3 cr)

**HIS 2281 Immigration in Amer Hist** Population factors in the development of the American nation; the processes of migration, assimilation and intergroup relations and their effects in society and politics; intensive study of selected ethnic groups. (3 cr) Last Offered: Spring 2002, Fall 2000, Spring 2000, Spring 1999.

**HIS 2286 Irish-American Saga** Pre-famine Irish emigration to North America; the famine; post-famine movement; Irish-American labor, politics, urban and suburban developments. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 1999.

**HIS 2291 African Amer His during Slaver** The forced migrations of Africans to the New World, the institution of slavery, and the struggle of Afro-Americans to gain equality in American society. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HIS 2292 African Amer His since Emancip** Themes of resistance and creativity with the development of the African-American communities in the era following the Civil War. Reconstruction, Northern migration, Jim Crow and segregation, and protest thought and Civil Rights. (3 cr) Last Offered: Spring 2001, Spring 2000, Fall 1998, Spring 1998.

**HIS 2296 Chng Roles Women in US** The variety of beliefs in America regarding the differences between the sexes, and the behaviors appropriate to each, from the seventeenth century to the present; gender within the context of changing forms of

production, methods of social organization, and ideas about human nature and society. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**HIS 2303 History of Philadelphia** An investigation of the city's past and present through reading historical accounts and exploring today's city. Changes and continuity in politics, economy, and social composition from 1682 to today, with particular attention to social structures and the changing physical environment of the city. (3 cr) Last Offered: Fall 2001, Fall 1999.

**HIS 2306 Culture of Indus Am 1820-1920** Cultural sources of American expansion and economic development; the effects of industrialization on patterns of life and thought and the responses of different groups to these changes. (3 cr) Last Offered: Spring 1997.

**HIS 2993 Hist Internship** An internship in a local historical archive, museum, park, or library. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**HIS 2996 Hist Internship** A more extensive internship in a local historical archive, museum, park, or library. (6 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**HIS 2998 Topics in American History** Selected topics in American history of interest to faculty and students. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001.

**HIS 3005 Ancient World to 500 AD** The formation of diverse Mediterranean societies and the emergence of the individual within those societies. Egypt, Mesopotamia, ancient Israel, and the broader Mediterranean cultures of Greece and Rome. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2000, Fall 1999.

**HIS 3006 Medieval Europe 500-1500** The evolution of the European West from its classical origins. The influence of Christianity upon the development of European institutions and culture. Relations and mutual influences of the European West with its neighbors, the new world of Islam in the Near East and North Africa, and the Christian Byzantine East of Europe and Russia. (3 cr) Last Offered: Spring 2002, Summer 2001, Spring 2000, Fall 1998.

**HIS 3007 Early Mod Europe 1500-1750** The rise of Protestantism; the emergence of national monarchies; the growth of science and technology; colonial expansionism and the impact of the New World on the West; the clash of cultures with Islam and other civilizations on the peripheries. (3 cr) Last Offered: Spring 2001, Fall 1998, Spring 1997.

**HIS 3011 Greek Civilization** The rise of Greek civilization from Mycenaean times to the Macedonian conquest of Greece by the father of Alexander the Great: Homer, the emergence of the polis, the Persian and Peloponnesian wars, and the flowering of Greek

culture at Athens during the 5th and 4th centuries. (3 cr) Last Offered: Spring 2002, Fall 2000, Summer 2000, Spring 2000.

**HIS 3014 Medit Wrld Alexander to Caesar** The interaction of cultural forces between the conquests of Alexander the Great and the consolidation of Roman rule under Caesar; Hellenistic civilization, the rise of Rome in Italy, Rome and the Greek world, and the fall of the Roman Republic. (3 cr) Last Offered: Fall 2001, Spring 2000, Fall 1998, Fall 1996.

**HIS 3017 The Roman Empire** The achievement of the Pax Romana from the reforms of Augustus to the break-up of the western Empire in the fifth century A.D. Topics treated include life in the provinces, the romanization of indigenous peoples, the legions and society, culture and decadence in the capital, and the rise of Christianity. (3 cr) Last Offered: Summer 2002, Summer 2001, Spring 2001, Fall 1999.

**HIS 3018 Pagans, Jews, and Christians** Society and religion between Alexander the Great and the coming of Islam. The classical pantheon, domestic religion, magic, the imperial cult; the variety of Judaism in Palestine and the Diaspora, Judaism and the state; the rise of Christianity, the persecutions, Constantine and the conversion of the empire. (3 cr) Last Offered: Spring 2001.

**HIS 3019 The Fall of Rome** The end of the ancient world -- ancient sources and modern theories. A multi-faceted analysis of Mediterranean society from AD 200 - 750: politics, economy, religion, urban life, art, social relations, literature. (3 cr) Last Offered: Fall 2001.

**HIS 3095 Topics in Ancient History** Selected topics in Ancient history of interest to faculty and students. (3 cr) Last Offered: Fall 2001, Fall 2000, Spring 2000, Fall 1999.

**HIS 3101 Early Medieval History** Europe from the fall of Rome to the end of the Viking Age. (3 cr) Last Offered: Fall 2000, Fall 1997, Fall 1996.

**HIS 3108 The Crusades** The medieval conflict between the rival cultures and religions of Christendom and Islam. (3 cr) Last Offered: Fall 2001, Fall 1998, Spring 1997, Spring 1995.

**HIS 3115 The High Middle Ages** The major western European institutions that took form during the classical period of medieval civilization and were bequeathed to modern European society. (3 cr) Last Offered: Fall 2002, Fall 1999, Spring 1997, Fall 1995.

**HIS 3118 Religious Poverty in Mid Ages** (3 cr)

**HIS 3121 The Renaissance** The decline of society in the Late Middle Ages and the emergence of commercial capitalism; the disintegration of the Holy Roman Empire and the evolution of city-states and new monarchies in the fifteenth century; the crisis of the Papacy and the emergence of humanism; the Italian universities in the Late Middle Ages

and the development of new tastes in literature, art, and architecture. (3 cr) Last Offered: Fall 2000, Fall 1999, Fall 1997, Spring 1996.

**HIS 3126 Hist of Italian Cities** (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Summer 2000.

**HIS 3131 The Reformation** Catholic, Protestant, and popular reform theories and religious upheaval, and the revolution of the common people in the 16th century, with emphasis on the material "structures of everyday life" and the economic, social, and political background of the "crisis of feudalism" and critique of the church and early modern state. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2000, Fall 1998.

**HIS 3142 The Enlightenment** (3 cr)

**HIS 3151 Eur Nationalism 1800-present** Constructing nations and nationalism in Europe from the Napoleonic wars to post-Yugoslavia; competing conceptions of nationality (on the basis of race, gender, politics, culture, etc.) and resulting conflicts. (3 cr) Last Offered: Fall 2000, Fall 1997, Fall 1995.

**HIS 3161 20th Century Europe** Social, political, and cultural history of Europe from the fin de siecle to European unification; world wars and revolution, East-West divide, consumer society and popular protest. (3 cr) Last Offered: Summer 2002, Summer 2001, Fall 2000, Summer 2000.

**HIS 3171 Europe since 1945** (3 cr)

**HIS 3200 Medieval Britain and Ireland** The debts England owes to the Celtic, particularly the Irish, world; changed relations, from fruitful cultural exchange to antagonism, after the Norman Conquest of England. Irish missionary and educational importance; relations between Celtic peoples; why monarchy developed in England and Scotland, but not in Wales and Ireland. (3 cr) Last Offered: Fall 2002, Spring 2001, Spring 2000, Spring 1999.

**HIS 3202 Britain 1660-1815** Emergence of Britain as the preeminent global capitalist economy and political power from the glittering court of Charles II to Britain's loss of its American colonies and its victory over revolutionary France. Connections between political-economic developments and social and cultural change including industrialization; war, economic growth and state formation; smuggling, gin, and criminality; empire; domesticity, women and the novel, high and low art in London. (3 cr) Last Offered: Fall 2000, Fall 1999, Spring 1999, Spring 1998.

**HIS 3203 Great Britain since 1815** British politics, society and culture from the triumph of Waterloo to youth culture in the post-industrial world of the Beatles. Topics include Liberalism; industrial conflict, urban poverty and radical politics; Anglo-Irish relations; degeneration and fin-de-siecle sexual anarchy; rise of Labour and Women's

movements; imperialism and decolonization; race and ethnicity; film and social change. (3 cr) Last Offered: Spring 2001, Fall 1998, Fall 1996, Spring 1996.

**HIS 3214 Early Ireland 1300-1800** Early Ireland from the Norman invasions to the Act of Union (1800); cultural history and early struggles for independence. (3 cr) Last Offered: Fall 2000, Fall 1999, Fall 1998.

**HIS 3216 Ireland since 1800** The social and political history of the Irish state in the 19th and 20th centuries. (3 cr) Last Offered: Summer 2002, Spring 2002, Fall 2001, Summer 2001.

**HIS 3221 French Rev and Napoleon** Causes, nature and course of the French Revolution, including a study of its historical interpretation, and the Napoleonic aftermath of the Revolution. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1997, Spring 1996.

**HIS 3222 History of Modern France** Major developments, problems, and policies connected with the evolution of the French nation and its empire from 1815 to the present. (3 cr) Last Offered: Fall 1996.

**HIS 3230 Modern Germany** The German lands from 1800 to the present, changing conceptions of Germany and dilemmas of German history. (3 cr) Last Offered: Summer 2002.

**HIS 3233 Hitler and Nazi Germany** Germany from the rise of Hitler to the end of the Second World War. (3 cr) Last Offered: Spring 2002, Fall 2000, Fall 1999, Spring 1999.

**HIS 3234 Two Germanies 1945-1990** The end of the Second World War, the division of Germany, the Cold War, Detente, reunification, and contemporary problems. (3 cr) Last Offered: Spring 1998, Spring 1996, Summer 1995.

**HIS 3240 Russia 1533-1801** (3 cr)

**HIS 3241 Imper Russia 1801-1917** Major political, economic and social changes in the Russian Empire from the war against Napoleon to World War I; reform from above and revolution from below; Russia's industrial revolution; social and cultural modernization; the institution of monarchy under the last Romanov tsars; Russia's expansion in the East. (3 cr) Last Offered: Spring 2002, Spring 2000, Fall 1997.

**HIS 3242 Russia in the 20th Cent** Russia from the 1917 Revolution to the present; the radical transformation of a state, economy and society in revolution and civil war, the Stalin dictatorship, the trial of World War II, and the patterns of reform and continuity in the post-Stalin and post-Soviet eras. (3 cr) Last Offered: Spring 2001, Fall 1998, Fall 1996.



**HIS 3351 19th c. European Cult & Soc** Social and cultural impact of industrialization, the evolution of mass society, changing conceptions of elite and popular culture; social conflict, revolution, and imperialism. (3 cr) Last Offered: Fall 2001, Summer 1999, Fall 1997.

**HIS 3352 20th c. European Cult & Soc** Cultural modernism and the impact of modern technology, experience and representation of war, violence, and genocide; post-World War II social transformations; Americanization and Sovietization; post-industrial society and post-modern culture. (3 cr)

**HIS 3360 Women in the Pre-Modern West** Roles of women from ancient world to revolutionary France, including analysis of the status of women in Biblical, Greek, Roman, medieval, early modern and Enlightenment cultures and times. Themes of motherhood, women's work, women in literature and women's ways of exerting control over their lives. (3 cr) Last Offered: Fall 2001, Spring 2000, Fall 1998.

**HIS 3361 Women in Modern Eur Soc** The changing roles of women in society and politics in Europe from the 18th to 20th centuries. Topics include women and the household economy; women and revolution; feminism and feminist movements; the rise of female professions; women's literature and feminist critical theory. (3 cr) Last Offered: Fall 2002, Spring 1999, Spring 1997.

**HIS 3995 Topics in European History** Selected topics in European history of interest to faculty and students. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HIS 4031 Islamic Civilization to 1800** The Islamic World from the seventh century through the eighteenth century with special emphasis on its cultural, social, and political history and contributions. (3 cr) Last Offered: Fall 2002, Spring 1999, Spring 1998, Spring 1997.

**HIS 4041 Hist Modern Middle East** The political, economic and social history of the Middle East with emphasis on the passing of imperial institutions and emergence of republics, trade and commerce, colonialism, and revolutionary movements. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998.

**HIS 4076 Jewish History** The relation of the Jews to the historical process; the Jews in relation to the larger civilizations in which they have lived; Jewish intellectual and moral contributions; Jewish history in the Christian world; the Holocaust; formation of a Jewish homeland, Israel. (3 cr) Last Offered: Spring 2002, Fall 2000, Fall 1999, Spring 1998.

**HIS 4090 Women in the Middle East** Roles of Middle Eastern women from the seventh century to the present era. Women's lives and experiences, with emphasis on their influence and contribution to the economy, politics, literature and the arts. Attention to the effects of regional, ethnic, class, and religious differences on women's status and activities. (3 cr) Last Offered: Spring 2001.

**HIS 4095 Top Middle Eastern Hist** Selected topics in Middle Eastern history of interest to faculty and students. (3 cr) Last Offered: Fall 2002, Summer 1999, Summer 1998, Spring 1998.

**HIS 4115 Roots of African Culture** Early African history and anthropology culminating in the emergence of Africa as an arena of European economic penetration, the rise of the African slave trade, and the impact of early European colonization. (3 cr) Last Offered: Spring 2002, Fall 1999, Fall 1995.

**HIS 4120 Emergence Modern Africa** The impact of 19th century European colonialism on Africa; the division of Africa into European dependencies; change and continuity in African culture; the emergence of independent African nation states after World War II; their difficulties and opportunities. (3 cr) Last Offered: Fall 2002, Spring 2000, Spring 1998, Spring 1996.

**HIS 4130 South Africa His Perspec** Development of southern Africa, with particular emphasis on the formation of South Africa; interaction of the various African peoples and the Europeans who came to settle the region and the way in which that interaction led to the establishment of, and resistance to, the system of apartheid. The collapse of apartheid. (3 cr) Last Offered: Fall 2001.

**HIS 4195 Topics African History** Selected topics in African history of interest to faculty and students. (3 cr) Last Offered: Summer 1998.

**HIS 4210 Byzantine Civilization** (3 cr)

**HIS 4315 China and Japan to 1850** The traditions and influences that formed the civilizations of China and Japan before modern times. (3 cr) Last Offered: Fall 2002, Spring 2001, Fall 1998, Fall 1997.

**HIS 4320 China Japan since 1850** Contact with the West, evolution of the modern states of East Asia, and the background of contemporary international problems. (3 cr) Last Offered: Fall 2001, Spring 1999, Spring 1998, Spring 1997.

**HIS 4330 China in 20th Century** China during its republican and Communist periods. (3 cr) Last Offered: Spring 2002, Fall 2000, Spring 1999, Fall 1997.

**HIS 4335 Japan in 20th Century** The development of the modern industrial Japanese state. (3 cr) Last Offered: Fall 2002, Spring 2001, Fall 1998, Spring 1998.

**HIS 4395 Topics in Asian History** Selected topics in Asian history of interest to faculty and students. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 2000.

**HIS 4405 The Americas & Span Conquest** (3 cr)

**HIS 4410 Colonial Latin America** Establishment and maintenance of a Hapsburg colonial state; indigenous responses to religious and secular colonization; the creation of a multicultural society from African, indigenous, and Iberian peoples from the 1580s to the 1780s. (3 cr) Last Offered: Fall 2001, Fall 1997, Spring 1995.

**HIS 4415 Revolutionary Latin America** Latin America's revolutionary century from the beginnings of political revolt in the 1780s to the beginning of economic modernization in the 1880s. Social and economic impact of the Bourbon Reforms; indigenous revolts and slave rebellions; liberal revolutionary movements culminating in the political independence but economic dependence of Spanish America; slavery and abolition. (3 cr) Last Offered: Spring 2002, Summer 1999, Spring 1999, Summer 1998.

**HIS 4420 Contemp Lat Amer History** 20th century economic inequalities, U. S. intervention and military dictatorships, cultural imperialism and immigration. Communism in Latin America, human rights within a multiracial society. (3 cr) Last Offered: Summer 1999, Fall 1998.

**HIS 4425 Mexico** Indigenous civilization and Spanish conquest; evolution of a mestizo society; independence, liberal democracy, and dictatorship; the Mexican Revolution and the one-party state; the contemporary transition to democracy and neo-liberalism. (3 cr) Last Offered: Fall 1997.

**HIS 4495 Topics Latin Amer Hist** Selected topics in Latin American history of interest to faculty and students. (3 cr) Last Offered: Summer 2002, Summer 2001, Spring 2001, Fall 2000.

**HIS 4499 Topics in World History** Selected topics in world or non-western history of interest to faculty and students. (3 cr)

**HIS 4520 World in 20th Century I** The political, diplomatic, economic, and social upheavals from 1900 to the Munich Conference. (3 cr) Last Offered: Fall 1997, Fall 1996, Fall 1995, Summer 1995.

**HIS 4525 World in 20th Century II** The Second World War, its aftermath, the Atomic Age, the emerging nations. (3 cr) Last Offered: Spring 2000, Spring 1997, Spring 1996.

**HIS 4526 Mod Science Art Invention** Interactions among science, technology and art that have shaped modern culture since the industrial revolution of the late 18th century. Special attention to the sources, styles, and contexts of creativity in various fields. (3 cr) Last Offered: Fall 2002.

**HIS 4527 Frankenstein to Artificial Life** The origins of artificial life forms by modern science, the perspective of involved scientists, literary observers, politicians and businessmen, and society as a whole. Topics include cloning, transplantation, artificial organs, genetic engineering, and artificial intelligence. (3 cr) Last Offered: Spring 2002.

**HIS 4528 Women in Mod Sci & Tech** Women in the development of modern (since 1600) science and technology, including gender issues shaping theories and research, the impact of innovation on women's lives, and women as professionals and as creative workers. (3 cr)

**HIS 4620 20th Cent Military Hist** The major wars of the 20th century: World War I, World War II, Korea and Vietnam. Cold War, wars of liberation. (3 cr) Last Offered: Fall 2002, Spring 2000, Spring 1999, Spring 1998.

**HIS 4660 World at War, 1939-1945** Visions and experiences of a global war; Nazism and a culture of total war; war and civilians; racism and the Holocaust; the atomic bomb; historical commemoration and memory. (3 cr) Last Offered: Fall 2001, Spring 2000, Spring 1999, Spring 1998.

**HIS 4700 "War Lords" of WW II** The military leaders of the Second World War in both the European and Pacific theaters. (3 cr) Last Offered: Spring 2001, Summer 2000, Fall 1999, Fall 1998.

**HIS 4701 The Cold War** (3 cr)

**HIS 4850 The War in Vietnam** The War in Vietnam in historical perspective from colonialism to the Cold War and national liberation. (3 cr) Last Offered: Spring 2001, Fall 1999, Summer 1999, Fall 1998.

**HIS 4995 Topics Comparative Hist** Selected topics in non-Western and world history of interest to faculty and students. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**HIS 5501 Sem in Historical Methodology** Student research and reports. Seminar format. Permission of department chairperson required. (3 cr) Restrictions: Restricted to HIS Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HIS 5515 Independent Research** An intensive research project under individual direction. Permission of department chairperson required. (3 cr) Restrictions: Restricted to HIS Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**HIS 5551 Senior Thesis I** An intensive research course under individual direction. Permission of department chairperson required. (3 cr) Restrictions: Restricted to HIS Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HIS 5552 Senior Thesis II** A continuation of HIS 5551. May be taken in conjunction with HIS 5551 in one semester or sequentially with it in two semesters. Permission of department chairperson required. (3 cr) Restrictions: Restricted to HIS Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 1000 Interdisc Humanities I:PHI** Major works and ideas from the classical Graeco-Roman and Christian traditions. Emphasis on philosophical ideas. Extensive reading and writing requirements. Team-taught. (3 cr) Last Offered: Fall 2000, Fall 1999, Fall 1998, Fall 1997.

**HON 1001 Interdisc Humanities I:LIT** Major works and ideas from the classical Graeco-Roman and Christian traditions. Emphasis on literature and drama. Extensive reading and writing requirements. Team-taught. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 1002 Interdisc Humanities I: HIS** Major works and ideas from the classical Graeco-Roman and Christian traditions. Emphasis on historical development. Extensive reading and writing requirements. Team-taught. (3 cr)

**HON 1003 Interdisc Humanities I: THL** Major works and ideas from the Graeco-Roman and Christian traditions. Emphasis on religious thought and development. Extensive reading and writing requirements. Team-taught. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 1004 Interdisc Hum I: Soc Sci** Major works and ideas from the Graeco-Roman and Christian traditions. Emphasis on social and political thought and development. Extensive reading and writing requirements. Team-taught. (3 cr) Last Offered: Fall 2002, Fall 2001.

**HON 1050 Interdisc Humanities II: PHI** Major works and ideas from the Medieval period to the French Revolution. Emphasis on the evolution in philosophy from medieval to modern. Extensive reading and writing requirements. Team-taught. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 1051 Interdisc Humanities II:LIT** Major works and ideas from the Medieval period to the French Revolution. Emphasis on the evolution in literature from medieval to modern. Extensive reading and writing requirements. Team Taught. (3 cr) Sem 2. Two coreq: HON 1050, 1052, 1053, 1054. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 1052 Interdisc Humanities II: HIS** Major works and ideas from the Medieval period to the French Revolution. Emphasis on the historical evolution in thought and institutions from medieval to modern. Team taught. (3 cr) Last Offered: Spring 1998, Spring 1997, Spring 1996, Spring 1995.

**HON 1053 Interdisc Humanities II:THL** Major works and ideas from the Medieval period to the French Revolution. Emphasis on the evolution in religious thought and institutions from medieval to modern. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 1054 Interdisc Hum II: PSC** Major works and ideas from the Medieval period to the French Revolution. Emphasis on the evolution in political thought from medieval to modern. Extensive reading and writing requirements. Team taught. (3 cr)

**HON 1060 Conservation, Laws & Apps.** Kinematics; Newton's laws of motion and universal law of gravitation; rotational dynamics; hydrostatics and hydrodynamics. Linear momentum, energy and angular momentum conservation: collisions, space travel, satellite and planetary motion, static equilibrium and the mechanics of the human body. Recommended for Arts majors who have had high school Algebra, Trigonometry and Geometry, or two semesters of Mathematics. (4 cr) Last Offered: Fall 2002.

**HON 1070 BIO: Biology for Today & Lab** See BIO 1505. Lecture with BIO 1505; Honors laboratory section. (4 cr) Last Offered: Fall 2001, Fall 1999, Fall 1998, Fall 1997.

**HON 1071 BIO: Science & Environ Issues** (4 cr) Last Offered: Spring 2001, Spring 2000. Corequisites: BIO 2101.

**HON 1073 BIO: Concepts of the Gene** Thematic development of concepts of the gene. Laboratory exercises include exploration of issues through problem-based learning methods. (4 cr) Last Offered: Spring 1997.

**HON 1075 BIO: Gen Biology & Laboratory** See BIO 2105. Lecture with BIO 2105; Honors laboratory section. (4 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 1076 BIO: Gen Biology II & Lab** See BIO 2106. Lecture with BIO 2106; Honors laboratory section. (4 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: HON 1075 or BIO 2105.

**HON 1080 ECO: Microeconomics** The price system; demand and supply analysis; the production process; analysis of market structures. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 1081 ECO: Macroeconomics** The economic system and its fundamental principles; economic functions of government, monetary and fiscal policy, and international trade. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 1090 BL: Legal Env Bus & Society** The sources, nature and substantive principles of American law; its moral and ethical dimensions; the judicial process; comparison with other legal system impact of government regulations. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 1095 ACC: Adv. Computer App & Actg** Communication, database, presentation, and advanced spreadsheet software; the Internet; web site design. Financial

accounting concepts and terms, transaction analysis, financial statements, and ratio analysis. Critical evaluation of new technologies. Basic proficiency in Microsoft Excel required. (3 cr) Last Offered: Fall 2000.

**HON 1100 COM: Rhetoric, Com & Publ Perf** Principles of communication related to speech composition and delivery; finding, analyzing, organizing and presenting material in ways appropriate to and effective with diverse audiences. (3 cr) Last Offered: Fall 2000.

**HON 1102 ACC: Prin of Managerial Acc** How management accounting information can be used to help firms achieve strategic goals and profitability objectives. Use of an entrepreneurial perspective to examine how managers apply risk measurement and management techniques to business planning and control systems. Case-based learning to help students develop communication, technology, and teamwork skills. (3 cr) Last Offered: Spring 2000.

**HON 1113 FIN: Principles of Finance** The theory and techniques of financial management. Time value of money; risk and return; financial analysis and planning; working capital management, capital budgeting; cost of capital; strategic long term financing decisions. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000. Prerequisites: ACC 1101 or (DIT 2010 or STA 2108 or MAT 1235).

**HON 1219 CSC: Artificial Intelligence** Formal systems, modeling of intelligent processes by computer programs, representation of knowledge; Natural Language Processing. Historical and philosophical foundations of AI. (3 cr) Last Offered: Spring 1995.

**HON 1241 CHS: Anc Med Renaiss Thought** Core humanities seminar based principally on texts and readings drawn from primary sources up to 1650. Extensive written work and seminar discussions. Required readings: Hebrew and Christian scriptures, selections from the works of Augustine, Greek and Renaissance works. Readings from different genres and disciplines. Themes developed by the instructor in accordance with the selected readings. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 1242 CHS: Mod Tht: Enlight to Pres** Core humanities seminar based principally on texts and readings drawn from primary sources, 1650 to the present. Extensive written work and seminar discussions. Readings from different genres and disciplines in each of the following five historical eras: Early Modern, Enlightenment, Romantic, Modernist, Contemporary. Themes developed by the instructor in accordance with the selected readings, including a specific Augustinian theme. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 1331 ENG: The Literary Experience** Introduction to literature and methods of literary analysis. Close readings of texts from a variety of perspectives; includes works

from a range of genres and periods. Extensive writing requirements. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 1380 ETH: Trad & Contemp Life** Major Western ethical traditions as they apply to selected contemporary ethical problems, with special consideration of Jewish and Christian perspectives. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 1381 ETH: Service Learn Practicum** Community service practicum addressing the task of needs assessment, community organizing, project planning and implementation. (1 cr) Last Offered: Fall 2002, Spring 2001, Fall 2000. Corequisites: HON 1380.

**HON 1435 HIS: Themes in Mod World His** Major historical moments and themes in the political, economic, and cultural transformation of diverse nations and regions of the world during the past several centuries. A topical and interpretive approach designed to provide a historical and cross-cultural context while exploring the origins and implications of the changes that have come to characterize the "modern" world. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 1501 CSC: Language & Computation** Introduction to linguistics and its role in the development of computer languages and technologies. Topics include conceptual issues in linguistics, computation, and grammars as generative devices for computer languages. Philosophical and historical perspectives on the "cognitive Revolution." (3 cr) Last Offered: Spring 2000, Fall 1998.

**HON 1502 CSC: The Universal Computer** Basic concepts and building blocks for the building of modern computers; important algorithms and their efficiency; idealized automata, universality, limits to computation, and the Church-Turing thesis. Fulfills math/computing core requirement. (3 cr) Last Offered: Fall 2002, Spring 2002.

**HON 1601 MAT: Mathematical Ideas** Mathematical ideas that have influenced other disciplines and the field of mathematics. Designed for students not intending further study in mathematics. Calculus not required. (3 cr) Last Offered: Fall 2000, Fall 1999, Spring 1998, Spring 1997.

**HON 1755 PHI: Intro to Philosophy** Issues of God, persons and nature, and knowledge. Special consideration of classical and Christian perspectives. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 1771 PHY: General Physics I Lab** Experiments in mechanics, heat, and sound with emphasis on individual and group research. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: PHY 1100.

**HON 1772 PHY: General Physics II Lab** Experiments in light and electricity with emphasis on individual and group research. (1 cr) Last Offered: Spring 2002, Spring



2001, Spring 2000, Spring 1999. Prerequisites: PHY 1100 and HON 1771 or PHY 1101. Corequisites: PHY 1102.

**HON 1801 PSC: Intro American Government** Fundamentals of American government: foundation in political thought, separate and collective functions of government structures, policy, role of individual in system. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 1802 PSC: Intro Internat Relations** Factors in relations between states; the nature, elements and role of power; problems faced by the modern state system. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999, Spring 1998.

**HON 1811 PSY: General Psychology** Fundamental concepts of psychology, with emphasis on the description of normal human behavior and its underlying factors. (3 cr) Last Offered: Fall 1998, Fall 1997, Spring 1995.

**HON 1825 THL: Christianity Trad & Trans** Major themes of the Christian traditions from historical, scriptural, and theological perspectives. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 1826 THL: Service Learn Practicum** Community service practicum addressing the task of needs assessment, community organizing, project planning and implementation. (1 cr) Last Offered: Spring 2001, Fall 2000. Corequisites: HON 1825.

**HON 1911 SOC: Introduction to Sociology** Fundamental concepts of sociological behavior, with emphasis on development of the social individual, collective and group behavior, social institutions and culture. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 2000 Interdisc Humanities III: PHI** Major works and ideas of the 19th and 20th centuries, with emphasis on philosophy. Extensive reading and writing requirements. Team-taught. (3 cr)

**HON 2001 Interdisc Humanities III: LIT** Major works and ideas of the 19th and 20th centuries, with emphasis on literature. Extensive reading and writing requirements. Team-taught. (3 cr) Last Offered: Fall 1995.

**HON 2002 Interdisc Humanities III: HIS** Major works and ideas of the 19th and 20th centuries, with emphasis on historical developments. Extensive reading and writing requirements. Team-taught. (3 cr) Last Offered: Fall 2002, Fall 2001.

**HON 2003 Interdisc Humanities III: THL** Major works and ideas of the 19th and 20th Centuries, with emphasis on religious thought. Extensive reading and writing requirements. Team taught. (3 cr) Last Offered: Fall 2000, Fall 1999, Fall 1998, Fall 1995.

**HON 2004 Interdisc Humanit III: SOC SC** Major works and ideas of the 19th and 20th centuries, with emphasis on social science thought. Extensive reading and writing requirements. Team-taught. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 2114 FIN: Adv Financial Management** Risk and return relationships; valuation models; cost of capital; capital structure; capital budgeting; dividend policy; international financial transactions; financial statement analysis and forecasting; working capital management. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: FIN 1113.

**HON 2140 FIN: Intro to Derivatives** Risk and return relationships, valuation models, cost of capital, capital structure, capital budgeting, dividend policy, international financial transactions, financial statement analysis and forecasting, working capital management. This course is writing-enhanced. Senior standing. (3 cr) Last Offered: Fall 2002, Spring 2002. Prerequisites: HON 2323.

**HON 2550 Humanities Seminar** Interdisciplinary study of distinctiveness of humanistic knowledge, humanist perspectives on the social and natural sciences, hermeneutics and interpretation, objectivism and relativism. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 2560 Social Science Seminar** Methodology of empirical and statistical analysis in the social sciences. Computer applications to data analysis, model designs and theory testing. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 2570 Natural Science Seminar** Methods and issues related to scientific research, including representation and evaluation of data, value questions, and the nature of scientific certainty. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1998.

**HON 2700 FIN: Topics in Finance** (3 cr) Last Offered: Fall 2001, Fall 2000.

**HON 2750 FIN: Topics in Finance** (3 cr)

**HON 2800 MKT: Topics in Marketing** (3 cr)

**HON 2850 MKT: Topics in Marketing** (3 cr)

**HON 2993 Internship** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 2996 Internship** (6 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**HON 3000 Art and Art History** (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1997.

**HON 3050 Art and Art History** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 3100 Classics** (3 cr) Last Offered: Fall 1996.

**HON 3150 Classics** (3 cr) Last Offered: Spring 1997.

**HON 3200 Economics** (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1998, Fall 1997.

**HON 3250 Economics** (3 cr) Last Offered: Spring 2002, Spring 1999, Spring 1998.

**HON 3300 Education** (3 cr) Last Offered: Fall 2000, Fall 1999.

**HON 3350 Education** (3 cr) Last Offered: Spring 2001.

**HON 3400 Communication** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 3450 Communication** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 3600 Literature** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 3601 Literature** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 1999, Fall 1998.

**HON 3602 Literature** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 1999, Fall 1997.

**HON 3650 Literature** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 3651 Literature** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 3652 Literature** (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999.

**HON 3800 Geography** (3 cr) Last Offered: Fall 1998, Spring 1995.

**HON 3850 Geography** (3 cr)

**HON 4000 History** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 4001 History** (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1999, Fall 1998.

**HON 4002 History** (3 cr) Last Offered: Fall 2000.

**HON 4050 History** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 4051 History** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 1997, Spring 1996.

**HON 4052 History** (3 cr) Last Offered: Spring 2002.

**HON 4100 Mathematics** (3 cr)

**HON 4101 Mathematics** (3 cr)

**HON 4150 Mathematics** (3 cr) Last Offered: Spring 2001, Spring 2000, Spring 1998.

**HON 4151 Mathematics** (3 cr)

**HON 4300 Philosophy** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 4301 Philosophy** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 4302 Philosophy** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1998.

**HON 4350 Philosophy** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 4351 Philosophy** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 4352 Philosophy** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 4353 Philosophy** (3 cr) Last Offered: Spring 2001, Spring 2000.

**HON 4500 Political Science** (3 cr) Last Offered: Fall 2002, Fall 1999, Fall 1998, Fall 1997.

**HON 4501 Political Science** (3 cr) Last Offered: Fall 1999.

**HON 4502 Political Science** (3 cr)

**HON 4550 Political Science** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1998.

**HON 4551 Political Science** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 1998.

**HON 4552 Political Science** (3 cr) Last Offered: Spring 2002.

**HON 4700 Psychology** (3 cr)

**HON 4701 Psychology** (3 cr)

**HON 4750 Psychology** (3 cr) Last Offered: Spring 2002, Spring 2001.

**HON 4751 Psychology** (3 cr)

**HON 4800 Theology & Religious Studies** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 4801 Theology & Religious Studies** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 1999, Fall 1998.

**HON 4850 Theology & Religious Studies** (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999, Spring 1998.

**HON 4851 Theology & Religious Studies** (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1998.

**HON 4900 Sociology** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 4901 Sociology** (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 4950 Sociology** (3 cr) Last Offered: Spring 1999, Spring 1997, Spring 1996, Spring 1995.

**HON 4951 Sociology** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 5000 BIO: Intro Ecology** (4 cr) Last Offered: Fall 1997.

**HON 5050 Biology** Advanced seminar in Biology; topics to be determined by the instructor of record. (4 cr) Last Offered: Spring 1995.

**HON 5051 Biology** Advanced seminar in Biology; topics to be determined by the instructor of record. (4 cr) Last Offered: Spring 1995.

**HON 5052 Biology** An analysis of the interplay of genetic, physiological, environmental and critical timing factors in determining the sex of an individual. Students will collect data from the primary literature of the various sub-disciplines of biology in order to

develop models and testable hypotheses as to how genetic and physiological factors interact. A modified problem-based approach will be used to guide students in their comprehension of facts and generation of testable hypotheses. (4 cr) Last Offered: Fall 1996, Fall 1995.

**HON 5200 Ideas and Texts** Six professors from as many disciplines analyze a text of significance that has had an impact on their own intellectual development. May be repeated for credit. (3 cr)

**Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 1995.** HON 5300 Psychology: Topics Phenomena of eating disorders; symptoms; psychological, physiological, and social factors. (1 cr) Last Offered: Spring 2000, Fall 1998, Fall 1997, Spring 1997.

**HON 5400 Performing Arts: Dance** Intensive experiential courses in performance, literary, and plastic arts. Individual and group participation directed toward reflexive understanding of one's self as engaged in the process of creativity. (1 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000.

**HON 5410 Performing Arts: Instrument** Intensive experiential courses in performance, literary, and plastic arts. Individual and group participation directed toward reflexive understanding of one's self as engaged in the process of creativity. (1 cr) Last Offered: Fall 2000, Spring 2000, Fall 1998, Spring 1998.

**HON 5420 Performing Arts: Theatre** Intensive experiential courses in performance, literary, and plastic arts. Individual and group participation directed toward reflexive understanding of one's self as engaged in the process of creativity. (1 cr) Last Offered: Spring 1996, Spring 1995.

**HON 5430 Performing Arts: Voice** Intensive experiential courses in performance, literary, and plastic arts. Individual and group participation directed toward reflexive understanding of one's self as engaged in the process of creativity. (1 cr) Last Offered: Fall 2001.

**HON 5435 Music Theory** The art of music as an expansion of metaphoric language, including images from the visual arts, scientific and philosophic ideas. (1 cr)

**HON 5440 Literary Arts: Poetry** Intensive experiential courses in performance, literary, and plastic arts. Individual and group participation directed toward reflexive understanding of one's self as engaged in the process of creativity. (1 cr) Last Offered: Spring 2001, Fall 1999, Spring 1997, Spring 1996.

**HON 5450 Literary Arts: Prose** Intensive experiential courses in performance, literary, and plastic arts. Individual and group participation directed toward reflexive understanding of one's self as engaged in the process of creativity. (1 cr)

**HON 5460 Plastic Arts: Painting** Intensive experiential courses in performance, literary, and plastic arts. Individual and group participation directed toward reflexive understanding of one's self as engaged in the process of creativity. (1 cr) Last Offered: Spring 2002, Fall 2000, Fall 1999, Fall 1998.

**HON 5470 Plastic Arts: Sculpture** Intensive experiential courses in performance, literary, and plastic arts. Individual and group participation directed toward reflexive understanding of one's self as engaged in the process of creativity. (1 cr)

**HON 5480 American Sign Language** The structure and production of ASL, linguistic expression through face and body. Deaf culture and literature. (1 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Fall 1997.

**HON 5500 Ind Study & Research** Independent Study and Research (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 5501 Ind Study & Research** Independent Study and Research (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 5506 Ind Study & Res Science** Independent Study and Research in Science (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HON 5507 Ind Study & Res Science** Independent Study and Research in Science (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 5600 Seminar for Visiting Professor** Seminar topic to be determined by visiting professor. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1998, Fall 1995.

**HON 5601 Seminar for Visiting Professor** (3 cr)

**HON 5700 Colloquia** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 5701 Colloquia** (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**HON 5702 Colloquia** (3 cr) Last Offered: Fall 2001, Spring 2001, Fall 2000, Fall 1999.

**HON 5703 Colloquia** (3 cr) Last Offered: Fall 2001, Fall 2000, Spring 1999, Fall 1997.

**HON 5750 Colloquia** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 5751 Colloquia** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 5752 Colloquia** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 5753 Colloquia** (3 cr) Last Offered: Spring 2002, Spring 2001.

**HON 5999 Proseminar: Research Methods** Fundamental concepts, terms, and practices of scholarly research in the humanities, including strategies for conducting exhaustive literature reviews, annotated bibliographies, and work-in-progress class presentations. Emphasis upon individual research projects in the specific disciplines of projected Senior Thesis topics. Required of students in the humanities and history who intend to pursue the six-credit Senior Thesis option. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HON 6000 Senior Thesis I** Major independent research project under the direction of a thesis advisor. The first semester includes a comprehensive proposal and bibliography, research design, detailed outline, and substantive writing sample. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 6001 Senior Thesis I** Major independent research project under the direction of a thesis advisor. The first semester includes a comprehensive proposal and bibliography, research design, and preliminary outline. (2 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HON 6002 Senior Thesis II** Major independent research project under the direction of a thesis advisor. In addition to completing the thesis, students must participate in the Senior Research Conference and thesis defense. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HS 2000 Intro:Prin & Survey Prac** (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**HS 2100 Assessment and Referral** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HS 3000 Lab Communication Skills** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HS 3100 Lab in group Process** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**HS 3500 Gerontology** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Fall 2000.

**HS 3600 Life Skills Planning** Determination of personal and professional life goals from the perspective of one's own strengths and weaknesses. Helping others in the process of selecting career paths and developing self and peer helping skills.



Recommended for undergraduate students interested in the decision-making factors in career selections. (3 cr) Restrictions: Restricted to HS Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**HS 3700 Human Service Systems** Organizational structures, trends and influences that impact Human Services Systems. Special emphasis upon managed care and case management as well as Human Resource Development. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**HS 4000 Seminar Human Services** Integration of the theoretical and practical aspects of the student's program. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: HS 2000 and HS 2100 and HS 3000 and HS 3100. Corequisites: HS 4100.

**HS 4100 Pract Human Services** Application of human service skills gained in the program through volunteer service in a community organization and structured peer counseling. The on-campus seminar will focus on tapes and case study material. (6 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**HS 4460 Fund Organization Struct** (3 cr)

**INS 1020 Prin of Risk Insurance** (3 cr)

**INS 2107 Intro Statistics I** (3 cr)

**INS 2108 Intro Statistics II** (3 cr)

**IS 4100 Spec Top in Irish Studies** Perspectives on the culture and history of Ireland. Presentations by the Resident Program Director, lectures by a range of NUI faculty, readings by noted Irish writers, performances by a local musicians, and field trips. Required of all students participating in the semester abroad program at NUI Galway, Ireland. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001.

**ITA 1111 Introductory Italian I** Groundwork in Italian, including oral proficiency, aural comprehension and reading for students with no prior knowledge of Italian. Supplementary language laboratory work and oral drills. (4 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**ITA 1112 Introductory Italian II** Groundwork in Italian, including oral proficiency, aural comprehension and reading for students with no prior knowledge of Italian. Supplementary language laboratory work and oral drills. (4 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**ITA 1121 Intermediate Italian I** Review of grammar, composition, reading and conversation. Students should have completed ITA 1111 and 1112 or the Equivalent. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ITA 1122 Intermediate Italian II** Review of grammar, composition, reading and conversation. Students should have completed ITA 1121 or the equivalent. (3 cr) Last Offered: Summer 2002, Spring 2002, Fall 2001, Summer 2001.

**ITA 1131 Grammar and Composition** Intensive practice in conversation and composition with emphasis on developing advanced language skills in Italian. Writing enriched. Course conducted in Italian. Students should have completed ITA 1121 and 1122 or the equivalent. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**ITA 1132 Conversation and Composition** Further practice in conversation and composition with focus on advanced proficiency in Italian. Writing enriched. Students should have completed ITA 1131 or the equivalent. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**ITA 2142 Italian Civilization I** Study of Italian culture in its manifold aspects: geography, history, literature to 1300's. Students should have completed ITA 1131 and 1132 or the equivalent. (3 cr)

**Last Offered: Summer 2002, Fall 2001, Summer 2001, Summer 2000.** **ITA 2143 Italian Civilization II** Italian culture in its manifold aspects: literature from Renaissance to 20th century, art, music. Students should have completed ITA 1131 and 1132 or the equivalent. (3 cr) Last Offered: Fall 2002, Spring 2001, Spring 2000.

**ITA 2211 Readings in Italian Literature** Readings in fiction, verse and drama representing various literary currents and personalities from the Renaissance to modern times. (3 cr) Last Offered: Fall 1997, Fall 1995.

**ITA 3411 Petrarca and Boccaccio** The major works of Francesco Petrarca and Giovanni Boccaccio. Students should have completed ITA 1131 and 1132 or the equivalent. (3 cr)

**ITA 3412 Special Topics** Topics of special interest in Italian literature. Topics to be arranged. Course may be repeated for credit. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999.

**ITA 3421 Dante's Divine Comedy** Dante's masterpiece with special emphasis on the "Inferno". Students should have completed ITA 1131 and 1132 or the equivalent. Course conducted in Italian. (3 cr) Last Offered: Summer 1995.

**ITA 3512 The Renaissance** Selected authors who played a major role in the development of humanistic viewpoint and in the creative achievements of the Renaissance. Students should have completed ITA 1131 and 1132 or the equivalent. (3 cr)

**ITA 4100 Ital Lit in English Transl** Major works of Italian literature in translation. Conducted in English. (3 cr)

**ITA 4110 Dante's Divine Comedy** Dante's Masterpiece in the context of the medieval vision of man and his destiny. Conducted in English. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**ITA 4115 Italy through Film** A culturally-oriented course using the film medium to explore various aspects of Italian society from the aftermath of World War II to the present. Writing enriched, fulfills core requirement for literature. Conducted in English. (3 cr) Last Offered: Spring 2002, Fall 2000.

**ITA 4120 Boccaccio** The Decameron as an expression of the individual's struggle to emerge from the collectivity of medieval society and of Boccaccio's fascination with the infinite resources of human intelligence. Conducted in English. (3 cr)

**ITA 4130 Italian Culture** The land and people of Italy; their social and cultural evolution; their achievements in the arts and their influence on art, literature and music; their contribution to the history of ideas. Conducted in English. (3 cr) Last Offered: Summer 1999.

**ITA 4140 The Image of Woman in Ita Lit** Literary works from the Medieval period to modern times. The role of the woman in Italian culture through the eyes of such literary geniuses as Dante, Petrarch and Boccaccio. Conducted in English. Satisfies Diversity and Women's Studies requirements. This course fulfills the Core requirement for advanced literature. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**ITA 4150 Italian Art and Literature** Italian literature as reflected in painting, sculpture and architecture. Course is offered as part of the Villanova summer program in Urbino, Italy. Fulfills core requirement for advanced literature. Conducted in English. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999.

**JPN 1111 Introductory Japanese I** Functional use of Japanese for students with no prior knowledge of Japanese. Communication skills (speaking and listening), reading and writing skills. Supplementary practice with computer. (6 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**JPN 1112 Introductory Japanese II** Functional use of Japanese for students with no prior knowledge of Japanese. Communication skills (speaking and listening), reading and writing skills. Supplementary practice with computer. (6 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**JPN 1121 Intermediate Japanese I** Further practice of communication skills (speaking and listening), reading and writing skills. Supplementary practice with computer. (5 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**JPN 1122 Intermediate Japanese II** Further practice of communication skills (speaking and listening), reading and writing skills. Supplementary practice with computer. (5 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**JPN 1123 Intermediate Japanese I** (3 cr)

**JPN 1124 Intermediate Japanese II** (3 cr)

**JPN 1125 Intermediate Japanese III** (3 cr)

**JPN 1131 Advanced Japanese I** Advanced practice of communication skills - oral, speech and discussion skills, reading and writing skills. Supplementary practice with computer. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**JPN 1132 Advanced Japanese II** Advanced practice of communication skills - oral, speech and discussion skills, reading and writing skills. Supplementary practice with computer. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**JPN 2100 Japanese Lit Eng Trans** The masterpieces of Japanese literature with a component on women writers. Fulfills cultural diversity requirement. Fulfills core requirements for advanced literature. Conducted in English, writing enriched. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**JPN 2142 Japanese Culture & Civil** Various aspects of Japanese culture, society, and people from the beginning to the present. Conducted in English. Satisfies Diversity Requirement. Fulfills core requirements for advanced literature. Various aspects of Japanese culture, society, and people from early history to the present. Conducted in English. Writing enriched. Satisfies Diversity Requirement. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Fall 2000.

**JPN 3412 Special Topics** Topics of special interest in Japanese language, culture, business and literature. Topics to be arranged. Course may be repeated for credit. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**LA 1903 Internship Elective** Permission of Program Director. Junior or Seniors with a 3.0 overall GPA only. (3 cr) Last Offered: Fall 2002, Fall 2001.

**LA 1906 Internship Elective** Permission of Program Director. Juniors and Seniors with 3.0 overall GPA only. (6 cr) Last Offered: Fall 2002, Fall 2001.

**LA 1909 Internship Elective** Permission of Program Director. Junior or Seniors with a 3.0 overall GPA only. (9 cr)

**LA 2993 Internship** Credits may be applied to requirements for the major in Liberal Arts in the required Liberal Arts elective slots. Permission of Program Director. Juniors and Seniors with an overall GPA of 3.0 only. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**LA 2996 Internship** Credits may be applied to requirements for the major in Liberal Arts in the required Liberal Arts elective slots. Permission of Program director. Junior and Seniors with an overall GPA of 3.0 only. (6 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**LA 5001 Liberal Arts Seminar** Integrative seminar dealing with the relation of the social sciences and the humanities. May be viewed as similar to a "Core Seminar III" combining ancient, modern, and contemporary thought. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001.

**LA 6001 Research** Individual students with specific interdisciplinary study projects will work with a particular professor on a tutorial basis. Students must have senior status. The final research paper must be approved by the professor and the director. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001.

**LAS 1100 Latin American Seminar** (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**LAS 3412 Special Topics** Study of topics of special interest in Latin American Studies. Topics to be arranged. (3 cr)

**LAS 4100 African Heritage of Latin Amer** The introduction of Africans to Latin America: causes, processes, and major social consequences for the host society. Recent trends in the social mobility patterns of groups of African origin. Special emphasis on Brazil and Cuba. (3 cr) Last Offered: Spring 2001.

**LAS 5000 Internship in Chile** Global, cross-cultural experience. Six weeks of summer practicum at a major economic, political, or cultural institution in Chile. (3 cr)

**LAS 6000 Independent Study & Research** Independent research on a topic relevant to Latin America. Cross-disciplinary. Required integration of theory and data. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001.

**LAT 1001 Introductory Latin I** Basic forms, syntax and vocabulary; selected Latin prose in second semester. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**LAT 1002 Introductory Latin II** Basic forms, syntax and vocabulary; selected Latin prose in second semester. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**LAT 2031 Intermediate Latin I** Review of Latin syntax; selected readings from prose and poetry. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**LAT 2032 Intermediate Latin II** Review of Latin syntax; selected readings from prose (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**LAT 3001 Readings in Authors** Selected readings from a variety of Latin authors. (3 cr) Last Offered: Spring 1998, Summer 1997, Fall 1995, Spring 1995.

**LAT 3050 Prose Composition** Practice in the composition of Latin in a variety of styles. (3 cr)

**LAT 3150 Latin Language** Historical Latin grammar and syntax; the syntax of classical Latin. (3 cr) Last Offered: Fall 2001.

**LAT 4051 Cicero** Reading of selected orations with special emphasis on the historical background. Selection from rhetorical and philosophical works and letters. (3 cr) Last Offered: Spring 1997.

**LAT 4150 Caesar** Reading and interpretation of Julius Caesar's commentaries. Fulfills advance literature requirements. (3 cr) Last Offered: Fall 2002.

**LAT 4350 Livy** Extensive reading in the Ab Urbe Condita; Livy as historian of Rome. (3 cr) Last Offered: Spring 2001.

**LAT 4450 Tacitus** Extensive reading in the Annales; Tacitus as historian of the early principate. Fulfills advanced literature requirements. (3 cr)

**LAT 4550 Suetonius** Reading of the major Lives; Suetonius's conception of biography, the historical and literary value of the Lives. (3 cr)

**LAT 5050 Plautus & Terence** The nature of Roman comedy. (3 cr) Last Offered: Spring 2002, Fall 1998.

**LAT 5250 Vergil** The Aeneid, read and interpreted in the light of ancient poetical theory and the epic tradition; the civilized epic as a new form; Vergilian epic techniques; careful reading of selections from the Eclogues and Georgics. (3 cr) Last Offered: Fall 2000.

**LAT 5350 Ovid** Ovid as an epic poet of the Augustan age. (3 cr) Last Offered: Fall 1999, Fall 1996.

**LAT 5450 Horace** Augustan lyric and satire. (3 cr) Last Offered: Spring 2000, Spring 1999, Fall 1997, Spring 1996.

**LAT 6001 Seminar** A reading, research, and conference course on selected topics of Roman literature and history; introduction to research in classical studies. Fulfills advanced literature requirements. (3 cr)

**MAT 1010 Math Anxiety Workshop** Techniques to reduce the negative thoughts and feelings some people have when confronted with main situations (numbers, graphs, statistics, etc.). (1 cr) Last Offered: Fall 1999, Fall 1997, Spring 1997, Fall 1996.

**MAT 1210 Mathematical Concepts** Topics selected from logic, number theory, finance, set theory, geometry, applied linear algebra, calculus. Not open to students who have completed MAT 1505. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MAT 1220 Discrete Math Social Sci** Discrete mathematics for the Liberal Arts student: voting methods, weighted voting, fair division, apportionment, circuits, network, trees, directed graphs, planning and scheduling, linear programming, growth and symmetry. Not open to students who have completed MAT 1505. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**MAT 1230 Intro Statistics I** Displaying and summarizing data, basic probability concepts normal distributions, sampling distributions, estimation for a single population parameter, hypothesis testing for a single population parameter. Not open to students who have completed MAT 1505. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MAT 1235 Intro Statistics II** Probability concepts, inferences about means, variances, and proportions, contingency tables, analysis of variance, regression and correlation. Not open to students who have completed MAT 1505. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000. Prerequisites: MAT 1230.

**MAT 1250 Stats in Health Care Research** Descriptive and inferential statistics: graphical displays, estimation, and hypothesis testing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**MAT 1300 Calculus Business Appl I** (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998.

**MAT 1310 Calc Life Sci Appl I** Functions, algebra of real functions, polynomials, allometric functions, exponential and logarithmic functions, trigonometric functions, graphing, log-log and semilog graphs, sequences, difference equations, limits, continuity, the derivative, the chain rule, higher order derivatives, maxima and minima, curve sketching, applications to biology. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**MAT 1315 Calc Life Sci Appl II** The mean-value theorem, Taylor's polynomial approximations, the anti-derivative, the definite integral, area, numerical integration,

applications of the integral, techniques of integration, indeterminate forms, L'Hospital's rule, improper integrals, introduction to differential equations with applications to biological systems, numerical solutions using the computer, applications in the life sciences. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (MAT 1310 or MAT 1500).

**MAT 1320 Calculus I for Liberal Arts** Calculus for Liberal Arts students: polynomial, rational and transcendental functions, the derivative, numerical and graphical introduction to integration. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Summer 2000.

**MAT 1325 Calculus II for Liberal Arts** Techniques of differentiation and integration, applications and further developments of calculus. (3 cr) Last Offered: Spring 2002, Summer 2001, Spring 2001, Summer 2000. Prerequisites: (MAT 1320 or MAT 1500).

**MAT 1330 Calculus I for Business** Analysis of single variable problems: problem formulation, translation between mathematical symbols and verbal descriptions, single variable modeling with real data, rates of change, techniques of differentiation, optimization, post-optimality analysis, continuous probability distributions, integrals, Fundamental Theorem of Calculus. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MAT 1335 Calculus II for Business** Analysis of multivariable problems: problem formulation, translation between mathematical symbols and verbal descriptions, multivariable modeling with real data, regression analysis, partial derivatives and unconstrained optimization, Lagrange multipliers and constrained optimization, matrix algebra, linear programming. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: (MAT 1330 or MAT 1500).

**MAT 1500 Calculus I** Limits, transcendental functions (logarithms, exponential functions, inverse trigonometric functions), differentiation (definition, tangent lines, rates of change, techniques, implicit differentiation, related rates), applications of differentiation (graphing, optimization), indeterminate forms and L'Hopital's Rule. Use of a computer algebra system, eg. MAPLE. (4 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MAT 1505 Calculus II** Integration (indefinite, definite), applications of integration (area, volume, applications to physics and economics, etc.), methods of integration, approximate integration (trapezoidal and Simpson's rules), improper integrals, differential equations, infinite sequences and series. Continued use of a computer algebra system. (4 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: MAT 1500.

**MAT 1903 Internship Elective** Internship Elective (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.



**MAT 1906 Internship Elective** Internship Elective (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**MAT 1909 Internship Elective** Internship Elective (9 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**MAT 2100 Theory of Interest** Interest measurements: accumulated and present value factors, annuities certain, amortization schedules, sinking funds, bonds and related securities. (3 cr) Last Offered: Spring 1999, Spring 1997. Prerequisites: MAT 1505.

**MAT 2310 Stat for Experimenters** The design and analysis of experiments, probability distributions, basic statistical inference, analysis of variance, block designs and factorial designs. For social and natural science majors. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (MAT 1315 or MAT 1325 or MAT 1505).

**MAT 2500 Calculus III** Parametric equations; polar, cylindrical, and spherical coordinates; vectors and the geometry of space; vector functions (derivatives, integrals, curvature, etc.); partial derivatives; optimization; multiple integration and its applications; vector calculus (line integrals, vector analysis). Continued use of a computer algebra system. (4 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: MAT 1505.

**MAT 2600 Foundation of Math I** Topics selected from natural numbers, mathematical induction, irrational and transcendental real numbers, complex numbers, Fundamental Theorem of Algebra, infinite cardinals, symbolic logic, functions and relations, iterated functions, mathematical chaos. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: MAT 1500.

**MAT 2705 Diff Equation with Linear Alg** First order and linear second order differential equations, matrices and linear equation systems, eigenvalues and eigenvectors, and linear systems of differential equations. (4 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: MAT 1505.

**MAT 2710 Advan Math analysis II** Complex number system, analytic functions, Cauchy-Riemann equation, Cauchy integral formula, power series, Laurent expansion, residues, applications to Fourier and Laplace Transforms, differential equations. (4 cr) Prerequisites: MAT 2500 and MAT 2705.

**MAT 2930 History of Mathematics** Development of mathematics from ancient times to the birth of calculus in the seventeenth century. (3 cr) Last Offered: Fall 2001, Fall 1999, Fall 1997, Fall 1995. Prerequisites: MAT 1505 and MAT 2600.

**MAT 2993 Internship** Internship (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MAT 2996 Internship** Internship (6 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MAT 3300 Advanced Calculus I** Real numbers, sequences, convergence, supremum and infimum, completeness of the reals, continuous functions, Intermediate Value Theorem, differentiable functions, Mean Value Theorem, Riemann integral, Fundamental Theorem of Calculus, Taylor's Theorem. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: MAT 2500 and MAT 2600.

**MAT 3305 Advanced Calculus II** Infinite series, absolute and conditional convergence, function sequences, pointwise and uniform convergence, series of functions, Weierstrass M-test, additional topics as time permits. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: MAT 3300.

**MAT 3400 Linear Algebra** Vector spaces, linear transformations, basis and dimension, orthogonal transformations, least squares, eigenvalues and eigenvectors, similarity, diagonalization, symmetric, applications. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: MAT 2705.

**MAT 3500 Modern Algebra I** Topics selected from groups and subgroups, cyclic groups, permutation groups, isomorphisms, direct products, cosets and Lagrange's Theorem, normal subgroups and factor groups, group homomorphisms, the Fundamental Theorem of Finite Abelian Groups, rings, fields. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: MAT 2600 and MAT 2705.

**MAT 3505 Modern Algebra II** Rings, subrings, integral domains, ideals and factor rings, ring homomorphisms, polynomial rings, fields, extensions fields, finite fields. (3 cr) Last Offered: Spring 1999, Fall 1996, Fall 1995. Prerequisites: MAT 3500.

**MAT 4110 Combinatorics** Induction, permutations and combinations, general counting methods, generating functions, recurrence relations, principle of inclusion-exclusion, graph theory, trees, planarity, crossing numbers, Hamiltonian cycles, Eulerian tours. (3 cr) Last Offered: Fall 2002. Prerequisites: MAT 1505.

**MAT 4270 Numerical Analysis** Numerical and computational aspects of root-finding methods, interpolation and polynomial approximation, numerical differentiation and integration, approximation theory. (3 cr) Last Offered: Fall 1998, Spring 1995. Prerequisites: MAT 1505.

**MAT 4310 Stat Methods** Data displays and summarization, probability distributions, point and interval estimation, hypothesis testing, categorical data analysis, regression and correlation. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: MAT 1505.

**MAT 4410 Math Modeling** Model formulation, the modeling process, graphs as models, examples from the physical and social sciences, parameter estimation,

experimental modeling, dimensional analysis, modeling discrete and continuous dynamic behavior, implementation. (3 cr) Last Offered: Spring 1997. Prerequisites: MAT 2705.

**MAT 4550 Math of Financial Derivatives** (3 cr)

**MAT 4600 Deterministic Oper Res** Deterministic methods: mathematical optimization, linear programming, formulation and solution techniques, duality, integer linear programming, transportation problem, assignment problem, network flows, dynamic programming. (3 cr) Last Offered: Spring 1999, Fall 1996. Prerequisites: MAT 2705.

**MAT 4610 Stochastic Oper Research** Probabilistic methods: brief review of probability, transient and asymptotic properties of Markov chains, queuing models and their applications, Markov decision processes, forecasting, game theory, simulation. (3 cr) Last Offered: Fall 1997. Prerequisites: MAT 2705.

**MAT 5110 Topics in Geometry** Topics selected from affine, hyperbolic, spherical, elliptic, Euclidean or projective geometry. (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1998, Fall 1996. Prerequisites: MAT 2600.

**MAT 5200 Theory of Numbers** Congruences, quadratic reciprocity, Diophantine equations; applications. (3 cr) Last Offered: Fall 2002, Spring 1995. Prerequisites: MAT 2600.

**MAT 5400 Complex Analysis** Algebra of complex numbers, analytic functions, Cauchy- Riemann equation, Laplace equations, conformal mapping, integrals of complex functions, Cauchy's theorem, power series, Taylor's theorem, Laurent's theorem, residues, entire functions. (3 cr) Last Offered: Spring 2002, Fall 1997, Spring 1996. Prerequisites: (MAT 2500 and MAT 2600). Corequisites: MAT 3305.

**MAT 5500 Topology** Topological equivalence, connectedness, compactness, topology of subsets of  $R^n$ , manifolds, topological embeddings, topological spaces. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Spring 1998. Prerequisites: MAT 2500.

**MAT 5600 Differential Geometry** Geometry of curves and surfaces, curvature, first and second fundamental forms, minimal surfaces, use of MAPLE. (3 cr) Last Offered: Spring 2001, Fall 1996. Prerequisites: MAT 2500.

**MAT 5700 Math Statistics I** Probability, random variables, joint distributions, expected values, limit theorems, distributions derived from the normal distribution. (3 cr) Last Offered: Fall 2001, Fall 1999, Fall 1997, Fall 1995. Prerequisites: MAT 2500 and MAT 2705.

**MAT 5705 Math Statistics II** Survey sampling, parameter estimation, hypothesis testing, two sample tests, analysis of variance, analysis of categorical data, linear least squares. (3 cr) Last Offered: Spring 2000, Spring 1998, Spring 1996. Prerequisites: MAT 5700.

**MAT 5900 Seminar in Mathematics** Supervised study of selected topics or problems in mathematics, student presentations. May be repeated for credit if content is different. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000. Prerequisites: MAT 3300 or MAT 3500.

**MAT 5920 Topics in Applied Mathematics** Lecture course in an area of applied mathematics. May be repeated for credit if topics are different. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000.

**MAT 5930 Topics in Pure Mathematics** Lecture course in an area of pure mathematics. May be repeated for credit if topics are different. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000.

**MAT 5991 Independent Study** Reading in a selected branch of mathematics under the direction of a member of the staff. May be repeated for credit. (1 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000. Prerequisites: MAT 1505.

**MAT 5992 Independent Study** Reading in a selected branch of mathematics under the direction of a member of the staff. May be repeated for credit. (2 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: MAT 1505.

**MAT 5993 Independent Study** Reading in a selected branch of mathematics under the direction of a member of the staff. May be repeated for credit. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: MAT 1505.

**ME 2000 Independent Study** Course provides opportunity for sophomore students to work on independent study projects such as Space Shuttle experiment. Sophomore standing. (1 cr) Last Offered: Fall 1999, Spring 1999, Fall 1998, Spring 1998.

**ME 2100 Statics** (3 cr)

**ME 2113 Manufacturing Engineering** Principles and processes of metal cutting, metal forming, metal casting and welding; related topics in materials and current manufacturing trends. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000. Corequisites: .

**ME 2500 ME Analysis & Design I** Units and dimensions, the design process, experimental design, introduction to modeling and problem-solving using case studies. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000. Prerequisites: EGR 1611 and MAT 1505.

**ME 2501 ME Analysis & Design II** Numerical and analytical solutions of mechanical engineering design problems involving series techniques, integration, curve-fitting, root-finding, analytic geometry, linear algebra, and ordinary differential equations (initial-

value-problems). (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Summer 2001. Prerequisites: MAT 2500 and ME 2500.

**ME 2502 Prof Development Seminar** Speakers from industry, academia, and government. Field trips to local facilities. Exposes students to the substance of mechanical engineering, provides stimulation and motivation early in their academic careers, provides an awareness of range of job opportunities, and initiates contact with potential employers. (1 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001.

**ME 2505 M.E. Analysis & Design** (4 cr) Last Offered: Fall 2002.

**ME 2900 ME Laboratory I** Basic experiments related to manufacturing, temperature, flow rate, pressure, and strain measurement and data analysis; includes CNC programming and data collection through a PC using LabView, test of an internal combustion engine. (1 cr) Last Offered: Spring 2002. Corequisites: ME 2113.

**ME 2950 Materials Testing** The A.S.T.M. standards and procedures in physical tests of various materials; determination of the physical properties of materials by destructive and non-destructive tests. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Corequisites: CEE 2103.

**ME 3000 Independent Study** Independent study for junior students on various projects such as the Space Shuttle. Junior standing. (1 cr) Last Offered: Fall 1999, Spring 1999, Fall 1998, Spring 1998. Corequisites: .

**ME 3100 Thermodynamics I** Elements of thermodynamics theory, system and control volumes, properties of pure substance, ideal gas, heat and work interactions, first and second laws, entropy. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: MAT 2500.

**ME 3101 Thermodynamics II** Applications of thermodynamics, theory of power and refrigeration cycles, mixtures, elements of psychrometry, combustion, Maxwell Relations, equilibrium. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: ME 3100.

**ME 3150 Introduction to Dynamics** (3 cr)

**ME 3200 Machine Design** Design and analysis of machine elements including shafts, springs, screws, welded and riveted connections, lubrication, bearings, gears and transmissions, computer-aided design, design project lab. (4 cr) Last Offered: Fall 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: ME 3401.

**ME 3300 Materials Science I** Introduction to atomic and molecular structure, origin of cohesive forces, micro and macro structures of crystalline and amorphous materials, mechanical properties, nature and influence of defects, physics of electrical, magnetic, and thermal properties, fundamentals of solid science applied to metals, ceramics, and

polymers. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.  
Prerequisites: CEE 2103 and CHM 1152.

**ME 3401 Stress Analysis I** Stress, strain, stress-strain relations, strain gauges, stress concentration, static and fatigue failure analysis, curved beams, torsion of non-circular sections, energy theorems, other advanced solid mechanics topics. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: CEE 2103.

**ME 3500 ME Analysis & Design III** Application of eigenvalue/vector problems in dynamics; introductions to: boundary value problems in stress analysis, heat transfer, and vibration; design optimization; kinematics of linkages. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: MAT 2705 and ME 2501.

**ME 3600 Fluids & Fluid Systems** (3 cr)

**ME 3900 ME Laboratory II** Test of engineering materials, experiments related to basic stress analysis, thermodynamics and materials science. (1 cr) Last Offered: Fall 2002, Fall 2001. Corequisites: ME 3300, ME 3401.

**ME 3901 ME Laboratory III** Experiments related to vibrations, fluid mechanics, and thermodynamics. Computer data acquisition and data analysis. (1 cr) Last Offered: Spring 2002. Corequisites: CEE 3111, ME 3101, ME 5202.

**ME 4101 Heat Transfer I** Steady state, unsteady state conduction in one and two dimensions, numerical methods, forced and free convection, heat exchangers, black and gray body emission and absorption of radiant energy, geometric configuration factors. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: MAT 2705 and ME 3100 and CEE 3111 (may be taken concurrently). Corequisites: .

**ME 4102 System Dynamics** Lumped modeling of basic physical systems, modeling of electromechanical and other combined physical systems, analysis of free and forced response, transfer functions, frequency response. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: MAT 2705 and ME 2501.

**ME 4800 Design Seminar in ME I** Product design; durability, economic, safety, producibility and environmental considerations; robust and quality design; decision-making, planning, scheduling and estimating; design proposal preparation. (1 cr) Restrictions: Restricted to ME Majors. Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: ME 3200.

**ME 4801 Design Seminar in ME II** Continuation of ME 4800, project design, design review process, oral presentation of design projects, preparation of final design report. Must be taken the semester following ME 4800. (3 cr) Restrictions: Restricted to ME Majors. Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: ME 3200 and ME 4101 and ME 4800. Corequisites: .

**ME 4850 Thermal-Fluid System Design** (3 cr)

**ME 5000 Selected Topics in ME** Independent study or research on a current engineering topic. Senior standing and permission of chairperson. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**ME 5010 ME Summer Internship** Academic credit for a summer internship. Requirements: Senior standing, a technical GPA of 3.0 or greater, and sponsorship by a full-time faculty member arranged prior to the start of the internship. Program details available from the Mechanical Engineering Department Chairman, Tolentine Hall, Room 111. (610-519-4980). (3 cr) Last Offered: Summer 2002.

**ME 5100 Heat Transfer II** Selected topics in heat transfer and fluid flow, boundary layers and turbulence, thermal stresses, similitude, numerical methods. (3 cr)  
Prerequisites: ME 4101.

**ME 5101 Elements of Aerodynamics** The standard atmosphere, two-dimensional incompressible flow, Reynolds and Mach number, generation of lift based on airfoil and wing platform characteristics, drag force, propulsive force, overall airplane performance, static stability and control. (3 cr) Last Offered: Fall 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: ME 3600 and ME 3100.

**ME 5102 Compressible Fluid Flow** Foundations of fluid dynamics, isentropic flow, normal shock waves, flow in constant-area ducts and friction, flow with heat exchange, unsteady flow. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 1997, Spring 1995. Prerequisites: ME 3100 and ME 3600.

**ME 5104 Energy Conversion** Cost of electricity, elements of power generating systems, fuels fossil and nuclear fuel power plants, power plant environmental impact. (3 cr) Last Offered: Fall 1997, Fall 1996, Fall 1995. Prerequisites: ME 3100.

**ME 5105 Prime Movers** Elements of steam and gas turbine design, internal combustion engines, thermodynamics of combustion, combustion charts, applications. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998. Prerequisites: ME 3100.

**ME 5107 Environmental Engineering** The engineering principles underlying the current practices of heating, ventilating, air conditioning, and refrigeration systems design. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: ME 3100.

**ME 5120 Env Control-Air Quality** Understanding of environmental issues related to air quality, sources of pollution, method of control, and air quality standards and regulations. (3 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Spring 1998.

**ME 5200 Stress Analysis II** Non-symmetrical bending, thin and thick walled pressure vessels, rotating discs and cylinders; thermal stress and strain; buckling of bars and

plates; elementary plasticity; energy methods; numerical stress analysis methods. (3 cr)  
Last Offered: Fall 1999, Fall 1997, Fall 1995. Prerequisites: ME 2501 and ME 3401.

**ME 5201 Intro to Finite Elements** Basic concepts of finite-element method, method of weighted residuals, 1-D axial and beam elements, 2-D stress and thermal elements, design projects via commercial codes. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000. Prerequisites: ME 3401. Corequisites: ME 4101.

**ME 5202 Vibrations** Free vibration of simple vibrating systems, harmonic excitation, transient vibration, introduction to multi-degree-of-freedom systems, normal modes, random vibration, applications. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: ME 3150 and MAT 2705 and ME 2501.

**ME 5203 Intro to Automatic Control** Modeling of dynamic systems, transfer functions, block diagrams, state vector concepts, feedback control, transient and frequency response, stability and root locus, controller design with output feedback. (3 cr) Last Offered: Fall 1995. Prerequisites: MAT 2705 and ME 2501 and CEE 2102.

**ME 5204 Dynamics of Flight** Static stability and control of aircraft, equations of unsteady motion, stability derivatives, uncontrolled longitudinal and lateral motion, open loop control mechanisms, closed loop control concepts. (3 cr) Last Offered: Spring 1996, Spring 1995. Prerequisites: CEE 2102 and MAT 2705 and ME 2501.

**ME 5300 Adv Topics Materials Science** Techniques for studying microstructures and failure of materials, reflected light microscopy, scanning electron microscopy, transmission electron microscopy, field ion microscopy, energy-dispersive spectroscopy, failure analysis. (3 cr) Last Offered: Spring 1995. Prerequisites: ME 3300.

**ME 5301 Fracture and Fatigue** Failure, structure of materials, stress-strain equations, mechanical testing, yielding & fracture, fracture of cracked members, fatigue of materials, stress-based approach to fatigue, fatigue crack growth, creep. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999. Prerequisites: ME 3300 and ME 3401.

**ME 5411 Mechatronics** (3 cr) Last Offered: Fall 2002.

**ME 5420 Computer Aided Mech Design** Modeling, analysis, and design of mechanical systems such as automobile suspension systems, machinery, compressors, linkages, gears, cams, robots, etc.; analytical and computational methods in kinematics and dynamics; extensive use of commercial software. (3 cr) Last Offered: Fall 2000, Fall 1999, Spring 1999, Spring 1998. Prerequisites: ME 3150 and ME 3200 and ME 3500.

**ME 5421 Introduction to Robotics** Basic principles of robotics; kinematic and dynamic concepts; actuators, sensors and practical issues; forward and inverse kinematics and dynamics of simple robotic arms; kinematics and dynamics of wheeled robots; alternative locomotion for mobile robots. (3 cr) Corequisites: ME 4102.



**ME 5430 Computer Graphics** Principles of computer graphics as supplied to the engineering profession. Topics such as manipulation of images, curve and surface fitting, hidden line removal, and shading will be covered. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998. Prerequisites: EGR 1610 and EGR 1611.

**ME 6621 Legal Problems in Engineering** American legal system; fundamentals of contracts, agency and business associations, engineer's responsibilities; real property; zoning laws and building codes; construction contracts, mechanical contracts; subcontracts and pricing; surety bonds; arbitration; machinery and equipment contracts, patents and trade secrets. Professional Development Elective. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**ME 7000 Advanced Engineering Analysis** Solutions of ordinary differential equations, series solutions, special functions, boundary-value problems, partial differential equations, vector calculus, calculus of variations, and engineering applications. Undergraduate students must obtain permission of the department chair. (3 cr) Restrictions: Graduate students and qualified undergraduates. Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**MET 1221 Fundamentals of Meteorology** The science of meteorology in its present state of development with attention to the elements of weather and climate and related atmospheric processes; atmospheric circulation, wind, cloud formation, cyclones and anti-cyclones, weather analysis and interpretation, and the meteorological aspects of air pollution. Prerequisite: MAT 1505 or above. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Summer 2000. Prerequisites: MAT 1505 and PHY 2412.

**MET 1222 Meteorology and Climatology** Fundamentals of climatology classification of climatic types and their distribution; the relation between the elements of weather and climate to biotic environment and human activities with special emphasis on air pollution. Prerequisite: MAT 1505 or above. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Fall 1997.

**MET 2001 Meteorology of the Planets** The structure and chemistry of planetary atmospheres, scattering and absorption processes, radiative transfer and planetary spectra, convective and conductive processes, fundamental timescales for planetary atmospheres, dynamical meteorology, theories of climate evolution, accretion, fragmentation and origin of the solar system. (3 cr) Last Offered: Fall 2001, Fall 1999, Fall 1997, Fall 1995. Prerequisites: (MAT 1505 and PHY 2412).

**MGT 1102 Organization & Management** Introduction to organizational structures and functions; management processes and behavior of individuals and groups in organizations. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MGT 2153 Intro Human Resources** Role of Human Resources Management in corporate strategy and success. Staffing, compensation, work design, performance

measurement, individual and career development, safety, health, and separation. Focus on HR as critical success factor in organizations. Junior or senior standing, instructor. or permission of instructor. or permission of instructor. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000. Prerequisites: MGT 1102.

**MGT 2155 Organizational Behavior** Human behavior in organizations; research and theoretical writing on organizational behavior; case discussions. Junior or senior standing. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: MGT 1102.

**MGT 2206 Management Practice** Application of management theory to problem identification and solutions. Motivation, leadership, discipline and shaping organizational cultures. Junior or senior standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001. Prerequisites: MGT 2155.

**MGT 2208 International Topic** Examination of a specific international management topic, which may vary from semester to semester, as reflected in the course title (e.g., Internatl Top: Mgt in Europe). Can be used toward the elective course requirement for the C&F IB Co-Major and IB Minor. Junior or senior standing. (3 cr)

**MGT 2210 Small Business Mgt** The environment and significance of small business in the economy, entrepreneurship, and factors leading to success or failure. Extensive focus on entrepreneurs, and writing a business plan. Senior standing. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Summer 2000.

**MGT 2350 International Compar Mgt** An elective topic dealing with the cross-cultural aspects of management. Student cases will address how politics, religion, social customs, and history shape and influence management practices. Junior or senior standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001. Prerequisites: .

**MGT 3301 Policy Formulation Admin** Strategic management of organizations. Strategic planning and cross-functional decision making. Lecture and analysis are employed. Senior standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001. Prerequisites: MGT 1102 and (DIT 1141 or MGT 1141) and (FIN 1113 or HON 1113) and MKT 1137.

**MGT 3305 International Study Tour** Class work, enrichment activities, and projects at a selected international academic institution, including visits to businesses in the surrounding region. Three-week requirements include a comprehensive research paper worthy of publication. Appropriate special section of MGT 2206. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999. Prerequisites: MGT 2206.

**MGT 3310 B.A. Internship** Employment with approved business firms where various meaningful assignments are performed with appropriate training, instruction, and

supervision. Department chair approval required. (3 cr) Restrictions: Restricted to BA Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MGT 3320 Ind Study - Admin Science** Study with faculty member's guidance and approval in area of special interest to student. Department chair approval required. (3 cr) Restrictions: Restricted to MGT Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MGT 3340 Ind Study -Internatl Busn** Study with faculty member's guidance and approval in area of special interest to student. Department chair approval required. (3 cr) Restrictions: Restricted to MGT Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Summer 2001.

**MGT 3350 Ind. Small Business** This independent study will help students understand the environment and significance of small business in the economy. Problems in starting a small business and factors faculty member. that contribute to success or failures. Permission of that contribute to success or failures. Department chair approval required. (3 cr) Restrictions: Restricted to MGT Majors. Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 2000.

**MGT 3360 Ind Top: Entrepreneurial Exp** (3 cr)

**MKT 1137 Principles of Marketing** Description and evaluation of the ways in which goods and services are developed to meet customer and consumer needs and distributed for domestic and international consumption; economic, government, social, and other environmental forces in relation to the marketing function; emphasis on relevant social problems and responsibilities. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MKT 2120 Buyer Behavior** Consumer orientation in the development and attainment of organizational goals within the framework of human behavior and its relationship to the field of marketing. Theory from psychology, sociology, and social psychology, with an emphasis on application to marketing problems in consumer and industrial environments. (3 cr) Last Offered: Spring 2002, Summer 2001, Spring 2001, Fall 1999. Prerequisites: MKT 1137.

**MKT 2197 Marketing Research** The principal internal and external procedures used in collecting, processing, and evaluating both quantitative and qualitative data; research design; management of information for decision making. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**MKT 2220 Advertising Management** Management of advertising within business firms and nonprofit organizations; production of advertisements for various media; role of the advertising agency; analysis of the impact of economic, market, ethical, and government factors on the advertising function. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 2000. Prerequisites: MKT 1137.

**MKT 2225 Sales Management** Policies and procedures for managing a sales organization; the role and characteristics of the personal selling function; techniques for selecting, training, supervising, and evaluating salespeople; ethical and legal considerations in sales force management. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: MKT 1137.

**MKT 2230 Marketing of Services** Application of marketing principles to service organizations; differences between goods and services marketing and how these differences influence marketing strategy and the tactical design of the marketing mix variables. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: MKT 1137.

**MKT 2280 Internatl Market & Trade** The world market and its implications for multinational and international marketing; the relationships of imports and exports to policies; impacts of major national cultures on foreign advertising and sales programs will be researched through multidimensional sources. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: MKT 1137.

**MKT 2349 Cont. Topics in Marketing** Contemporary issues and topics which affect a firm's marketing strategies. (3 cr) Sem 1&2; Prereq: MKT 1137 and junior or senior standing. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001. Prerequisites: MKT 1137.

**MKT 2375 Marketing Management** Analytic procedures to understand and integrate effective policies applied to demand, product research, channel selection and development, promotion, and pricing on both domestic and international levels; concentration on decision making. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: MKT 1137.

**MKT 3350 Independent Study - Marketing** Independent study under faculty guidance in an area of student's special interest. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**MKT 3450 Internship Marketing** Employment with approved firm where varied Marketing experience is gained with appropriate training, instruction and supervision. Junior/senior standing and GPA GE 2.5. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**ML 3200 Special Studies** Studies in one of the areas not included in the languages, literatures and civilizations usually offered, e.g., Polish, Romanian and Ukrainian; readings and discussions. (3 cr) Last Offered: Fall 2002, Spring 2002, Summer 1999, Summer 1998.

**NS 1000 Intro to Naval Science** Course is an introduction to the naval profession and to the concepts of seapower. The mission, organization, and warfare components of the

Navy and Marine Corps, including an overview of officer and enlisted ranks, rates, and career patterns; naval courtesy and customs, military justice, leadership, and nomenclature are discussed. Normally taken by freshmen. (2 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**NS 1100 Seapower and Maritime Affairs** Naval history from the beginnings of the age of sail through the twentieth century. The works and influence of Alfred Thayer Mahan as they relate to current and past fleet doctrine. The impact of foreign nations' maritime activities on world seapower. Normally taken by freshmen. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**NS 2100 Naval Ships Systems I** Construction and propulsion of naval ships, including design, stability, control of damage. Propulsion systems including steam, diesel, gas turbine, nuclear power plants; shipboard electrical power generation and distribution; and shipboard auxiliary systems including refrigeration, fresh water distilling plants and air compressors. Normally taken by sophomores. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**NS 2200 Naval Ships Systems II** Introduction to naval weapons systems including basics of radar, sonar, and gyroscopes; weapons systems analysis stressing the fire control problem, information flow, the servo principle, and use of computers; general operation, safety and maintenance of shipboard weapons systems. Normally taken by seniors. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**NS 3100 Navigation** The theory and technique of piloting and celestial navigation. Normally taken by juniors. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**NS 3200 Naval Operations** The maneuvering board, tactical communications, rules of the road, and seamanship. juniors. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000.

**NS 3500 Evolution of Warfare** The evolution of weapons, tactics, and military organization applicable to land operations; the classic principles and variables of land operations. (3 cr) Last Offered: Spring 2002, Spring 2000, Fall 1997, Fall 1995.

**NS 3600 Amphibious Operations** Amphibious operations throughout history to their present role in military policy. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 1998, Fall 1996.

**NS 4100 Leadership and Management** Fundamentals of leadership and management of an organization; emphasis on the Naval officer as leader and manager, concentrating on areas such as professional ethics, organizational theory, and the characteristics and roles of successful leaders. Normally taken by sophomores. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**NS 4200 Leadership and Ethics** Applications of the principles of leadership and management with a focus and emphasis on the military arena. Ethical and moral responsibility examined with emphasis on the interrelationship of authority, responsibility and accountability in an organization. Discussion intensive with oral presentations. Draws upon the experiences of a number of guest speakers, both military and civilian. (3 cr) Last Offered: Summer 2002, Spring 2002, Spring 2001, Spring 2000.

**NTR 2120 Principles of Nutrition** Principles of normal nutrition and the interrelatedness of economics, culture and health. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**NUR 1101 Intro Prof. Nursing** Development of nursing as an art, science, and profession. Current and evolving roles of the nurse in health care within a Judeo-Christian value system (2 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**NUR 1103 Intro Prof Nursing II** Use of effective communication and assessment process in professional nursing practice. (2 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**NUR 2104 Nur Process & Health Asses I** Nursing assessment and diagnosis related to environmental variables and health behaviors of individuals and families. (2 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000. Corequisites: NUR 2105.

**NUR 2105 Nur Process Hlth Lab I** Practice of selected assessment skills in a laboratory setting. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: NUR 2104.

**NUR 2106 Essentials of Nursing Practice** Identification of the health maintenance, restoration, and promotion needs of individuals from birth through senescence. Emphasis on the nursing process and the role of the nurse as an interdependent and collaborative member of the health care team. (2 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Corequisites: NUR 2107.

**NUR 2107 Prac Essen of Nsg Prac** Practice of selected assessment and nursing skills in the laboratory and clinical settings. (2 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Corequisites: NUR 2106.

**NUR 2200 Healthy Lifestyles & Human Val** Exploration of real life issues of college students, with emphasis on personal decision making and values clarification. Substance use/abuse, sexuality, depression, STD/AIDS, stress management. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**NUR 3000 Founda in Nur and Health** Concepts of health and the systems of health care. The College of Nursing philosophy as a framework of formulations of nursing diagnosis and design of care. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 2000. Corequisites: NUR 3005.

**NUR 3005 Practicum in Nur & Health** Nursing Assessment of individuals and families in laboratory and clinical practice. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 2000. Corequisites: NUR 3000.

**NUR 3030 Basic Conc Pharmacology** A classification of pharmacological agents, their actions, dosages, toxicity and interactions related to the physiological variables and life-cycle. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000. Prerequisites: CHM 1131 and CHM 1134 and BIO 1205 and BIO 1206.

**NUR 3108 Pathophysiology** Human pathogenesis from the cellular, histologic, and systemic perspectives. Emphasis on pathophysiology that is commonly experienced by the individual and frequently encountered in the clinical setting. The influence of etiologic agents, environment, and human behavior on health maintenance, health restoration, and health promotion. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: BIO 1205 and BIO 1206.

**NUR 3110 Research in Nursing** Emphasis on the methods of systematic inquiry in nursing practice. Designed to develop critical consumers of published research. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**NUR 3112 Nursing Care of Adults** Nursing interventions directed toward maintaining, restoring, and promoting health for adults and their families expressing age-related changes and other health alterations. (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**NUR 3113 Prac Nsg Care of Adults** Clinical application of nursing interventions directed towards maintaining, restoring, and promoting health of adults with health alterations in a variety of settings. (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**NUR 3116 Nur Care Adult Comp Prob** Maintenance, restoration, and promotion of health for adults families, and groups experiencing complex alterations of mental and physical health. (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Corequisites: NUR 3117.

**NUR 3117 Prac Nur Adul Comp Prob** Clinical application of nursing interventions directed toward mental health, physical health and health promotion of adults with complex health alterations in a variety of settings. (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Corequisites: NUR 3116.

**NUR 4101 Parent-Child Nursing** Nursing interventions for maintaining, restoring, and promoting health for women, infants, children and adolescents in childbearing and childbearing families. (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Corequisites: NUR 4103.

**NUR 4102 Nur & Health Promotion** Nursing and educative interventions which promote the health of groups. Focus on health needs of populations and management of health risks. (6 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Corequisites: NUR 4107.

**NUR 4103 Prac Parent-Child Nurs** Clinical application of nursing interventions toward maintaining, restoring, and promoting health of women, infants, children, and adolescents. (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Corequisites: NUR 4101.

**NUR 4107 Prac NUR Hlth Promotion** Application of health promotion strategies to groups composed of individuals, family and community members. (6 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Corequisites: NUR 4102.

**NUR 4110 Leader & Management NUR** Leadership and management principles related to the practice of nursing. (5 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**NUR 4130 Contemp Issues & Trends** Critical analysis of major issues and trends in nursing and health care. (2 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**NUR 4800 Women's Health Issues** Women's Health from physiological, psychosocial, political, historical and cultural perspectives. Open to non-nursing majors. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**NUR 4802 Issues Trend Gerontology** Aging and the effects of transitions associated with aging. Emphasis is on functional assessment, chronicity and the impact of demography. Open to nursing and other majors with interest in gerontology. (3 cr)

**NUR 4900 Guided Study in Nursing** Study or project development in a special interest area in nursing under faculty guidance. Includes tutorial sessions as necessary. Registration with the permission of the Dean. (1 cr) Last Offered: Spring 2000, Fall 1999, Spring 1999, Fall 1998.

**NUR 4901 Guided Study in Nursing** (2 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**NUR 4902 Guided Study in Nursing** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**NUR 4903 Guided Study in Nursing** (4 cr)

**NUR 4904 Guided Study in Nursing** (5 cr) Last Offered: Spring 2000, Spring 1999, Spring 1998, Fall 1997.



**NUR 4905 Guided Study in Nursing** (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**NUR 6100 Oncology Nursing** An in-depth study of the major cancers and the nurse's role in the common modalities for the treatment of cancer. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999.

**PHI 1050 Intro to Philosophy** The issues of God, persons and nature, and knowledge. Readings include sources which give special consideration to the classical and Christian perspectives. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PHI 1600 Business and Society** The role of government in business, consumer demands, corporate social responsibility. Particular emphasis placed on social justice and individual ethics. (3 cr) Last Offered: Summer 1998, Spring 1998, Fall 1997, Summer 1997.

**PHI 2015 Logic and Critical Thinking** The study of logic and critical thinking. Topics include: argument identification and analysis; formal and informal logic; fallacies; inductive argument; the role of argumentative structures in various philosophical traditions. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PHI 2115 Ethics for Health Care Prof** Rights and duties of the patient/client and the members of the health care team, death and dying, genetic engineering and manipulation. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PHI 2125 Phil of Death and Dying** Theories and conceptions of human suffering, death and life; issues of suicide, bereavement, grief and euthanasia. (3 cr) Last Offered: Fall 1999.

**PHI 2130 Business Ethics** Social justice and charity as principles of order in economic life and relationships: topics include consumer rights, corporate social responsibility, and ecology. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PHI 2140 Phil of Criminal Justice** Philosophical dimensions of criminal justice; law and morality, criminal versus civil disobedience, philosophical presuppositions of the insanity defense, philosophical problems in controlling and correcting criminal and delinquent behavior. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**PHI 2150 Engineering Ethics** Whistle-blowing, conflicts of interest, political contributions, and the social responsibility of engineers. (3 cr)

**PHI 2160 Philosophy of Biology** Key assumptions of the contemporary sciences: the meaning of life, the relevance of science, the structure of the life sciences, the "doctrine" of DNA and molecular genetics, evolutionary theory, ecology and the "Gaia" hypotheses, and the ethical and social issues spawned by new advances in biology and molecular genetics. (3 cr) Last Offered: Fall 2000.

**PHI 2170 Mass Media Ethics** The impact of the changing communications technologies on the human person and society; freedom of the press, violence; pornography and censorship, confidentiality of sources, advertising ethics and codes of ethics and standards of practice. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998.

**PHI 2180 Computer Ethics** Codes of professional ethics, unauthorized access, ownership of software, and the social responsibility of computing professionals. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000.

**PHI 2200 Philosophy and Film** Analysis of selected classics and current films from the perspective of basic philosophical concepts and questions. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Spring 2000.

**PHI 2400 Social & Political Phil** Social and political philosophers and the influence of their theories on the philosophical foundation of modern culture and society; emphasis on such conceptions as society, the state, justice and equality, and the social and political nature of persons. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PHI 2410 The Ethics of War** Just war theory, total war, nuclear deterrence and nuclear war, disarmament, genocide, war crimes and atrocities, terrorism, non-violent resistance, and pacifism. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**PHI 2425 Philosophy of Women** Nature and status of woman from ancient times to the present, with consideration of the more general context of self-identity; contemporary feminist theories; feminism as a political movement. (3 cr) Last Offered: Summer 2002, Spring 2002, Fall 2001, Summer 2001.

**PHI 2430 Eco-Feminism** Basic positions in eco-feminism as they relate to the philosophical and religious traditions of the West. (3 cr) Last Offered: Fall 2002, Spring 2000, Spring 1999, Fall 1998.

**PHI 2450 Catholic Social Thought** Catholic Social Thought from Rerum Navarum to the present. Its Aristotelean-Thomistic grounding. The Church's challenge to analyses of contemporary social, political, and economic systems. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001.

**PHI 2500 History of Ancient Phil** Plato, Aristotle and selected pre-Socratic and Hellenistic philosophers in the context of ancient and classical Greek civilization. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998.

**PHI 2510 History of Medieval Phil** Philosophical movements from the early Middle Ages to the rise of modern philosophy; the influence of later Medieval speculation upon thinkers of the modern period; readings from Augustine, Aquinas, Bonaventure, and others. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**PHI 2520 History of Modern Phil** The systems of Descartes, Spinoza, Leibniz, and the empiricists - Locke, Berkeley, and Hume; Kant; selections read and evaluated. (3 cr)  
Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**PHI 2800 American Philosophy** The growth of philosophy in America, concentrating on the thinkers of the classical period, especially Peirce, James, Royce, Dewey, and Santayana. (3 cr) Last Offered: Spring 1999, Fall 1998, Spring 1998, Fall 1997.

**PHI 2950 Topics in Philosophy** Special topic in philosophy of current interest to faculty and students. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PHI 2993 Internship** Departmentally related and academically creditable field work experience. See department chair for more information. Permission of Department Chair required. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**PHI 2996 Internship** Departmentally related and academically creditable field work experience. See department chair for more information. (6 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**PHI 3000 Plato & Aristotle** Selected texts and themes from Plato and Aristotle. (3 cr)  
Last Offered: Fall 2002, Spring 1999, Spring 1998, Summer 1997.

**PHI 3010 Majors Sem: Approaches & Meth** Preparation for advanced work in philosophy by exploring a representative variety of approaches and methods characteristic of the discipline. (3 cr) Restrictions: Restricted to PHI Majors. Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998.

**PHI 3100 Intro to St. Augustine** Life and thought of Saint Augustine; the problem of certitude, the problem of evil, the nature of history, human knowledge and God, the soul-body relations, and political philosophy. (3 cr) Last Offered: Fall 2001, Spring 1997, Fall 1995.

**PHI 3120 Augustine in Western Thought** Influences of Augustine's major teachings in shaping medieval and modern thought. Augustine's position on human nature, human freedom, sin and grace, history, and the nature and end of society. (3 cr) Last Offered: Fall 1999, Fall 1998.

**PHI 3130 Augustine & Existentialist** Existential themes in Augustine and their influence on such thinkers as Luther, Kierkegaard, Heidegger, Marcel, Camus. (3 cr)  
Last Offered: Fall 2002, Fall 2000, Fall 1997.

**PHI 3160 History of Islamic Phil** Islamic thought, concentrating particularly on Islamic medieval theology and philosophy. (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1998, Fall 1997.

**PHI 3200 Metaphysics** Questions regarding the nature and possibility of metaphysics; selected texts from Greek philosophy to the present. (3 cr) Last Offered: Spring 2000, Fall 1999, Fall 1998, Spring 1996.

**PHI 3310 Philosophy of Religion** The meaning of God, the experience of the Divine, nature of revelation, negative theology, the absence of God. (3 cr) Last Offered: Fall 1996.

**PHI 3400 Theories of Knowledge** Nature and limits of human knowledge, kinds of knowledge, the nature of perception, subjectivity, belief, doubt, truth, and certitude. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PHI 3500 Freedom** Human freedom analyzed from a metaphysical and political perspective; readings from classical and contemporary sources on such topics as determinism, slavery, rights, authority and dissent. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000.

**PHI 3525 Phil of Human Sexuality** Embodiment, the nature of sexuality, the types of love, sexual ethics, marriage, sexual differences, and sexual discrimination. (3 cr) Last Offered: Spring 2002, Fall 1998.

**PHI 3600 Philosophy of Art** The principles and causes of beauty and art with special reference to the formation of art objects and the cultural context of philosophy and art. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1997.

**PHI 3610 Phil of Contemporary Music** Critical listening to rock, pop, jazz, rap, funk, punk, dance, and ambient music; relation of music to noise; theories of Hanslick, Nietzsche, Adorno, Barthes, Foucault, Deleuze, and Cage. (3 cr) Last Offered: Fall 2002, Fall 2000.

**PHI 3620 Philosophy & Literature** Philosophical ideas in selected literary works; examination of the relation of literature to philosophy; fiction and truth, modes of communication. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PHI 3650 Philosophy of Law** The nature and function of law, relation of law to ethics, the judicial process, the role of constitutions, the rights of citizens, law and international relations. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PHI 3700 Philosophy of History** Theories concerning the nature of history, the idea of progress, historical inevitability, the role of the "great man". (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1995.

**PHI 3720 Philosophy of Marxism** Marx on the theories of human nature, freedom and history; related developments in Marxist thought. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998.

**PHI 3750 Mysticism & Philosophy** The metaphysical interpretation of God, humans and the world implicit in the writings of selected mystics; epistemological issues such as mysticism and logic, the value of mystical experience, mysticism and psychedelic experience, mysticism and ethics. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**PHI 3820 Environmental Ethics** The relation of the physical and biological environment to ethical values. Priorities among environmental, economic and political values as a basis for ethical decisions. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PHI 3825 Technology and Society** Case studies of specific technologies (such as television, automobiles, health technology) and critical examination of ethical philosophical and policy issues that these technologies raise. (3 cr) Last Offered: Spring 2002, Fall 1996.

**PHI 3850 Philosophy of Sport** Nature of play, sport and game with special emphasis on the role of sport in modern society. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2000, Summer 1999.

**PHI 4000 Phil of Social Science** The relation of social and natural science, behaviorism, models of explanation, moral and valuational implications of social science. (3 cr)

**PHI 4050 Phil of Natural Science** Philosophical implications of specific laws and theories; Newton's laws, energy, evolution, relativity, atomic theory. Methodological problems of observation, discovery, testing; scientific realism, revolutions in scientific thought. (3 cr) Last Offered: Spring 1999.

**PHI 4200 Philosophy of Language** Major classical and contemporary philosophical theories concerning language, including the relationship of language to thought, experience and reality; theories of meaning, communication, linguistics, translation, poetic and religious language. (3 cr) Last Offered: Fall 1998, Spring 1998, Fall 1997, Fall 1996.

**PHI 4300 Anglo-American Philosophy** Major themes and trends in analytic philosophy: Russell, logical positivism, Wittgenstein and present day linguistic philosophy. (3 cr) Last Offered: Spring 2000.

**PHI 4400 Amer. Indian Thought & Culture** Religious and philosophical concepts of personhood, community, and nature; contrast of European and Euro- American Indian philosophies. (3 cr) Last Offered: Fall 2002, Fall 2001.

**PHI 4500 Asian Philosophies** Sources of Eastern philosophies; aspects of Hinduism, Jainism, Buddhism, Confucianism, Taoism, and/or Sufism. (3 cr) Last Offered: Fall 2001, Spring 2001, Fall 2000, Spring 2000.

**PHI 4600 Intro to Thomas Aquinas** Historical influences in the formation of St. Thomas' thought; specific contributions of Aristotelianism and Neoplatonism; theory of knowledge, being, persons and morality. (3 cr) Last Offered: Spring 2000, Fall 1997.

**PHI 4610 Freud and Philosophy** Philosophical implications of Freudian theory as it relates to the individual and culture; the role of the unconscious; interpretation, structure of the ego, human sexuality and the foundations of civilization. (3 cr) Last Offered: Fall 2002, Fall 2000, Spring 2000, Fall 1999.

**PHI 4650 Philosophy of Mind** The nature of mind, soul, consciousness; the mind-brain relationship; classical and contemporary philosophical approaches; the nature of personal identity and moral responsibility. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001.

**PHI 4800 French Existence & Phenomenon** The development of phenomenology and existentialism in post-war France; the challenge to this thought by structuralism. Sartre, Marcel, Camus, Merleau-Ponty, Ricoeur, Levinas. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000.

**PHI 4850 German Existence & Phenomenon** Individual and mass society, freedom, our consciousness of the world, and death in the writings of Kierkegaard, Nietzsche, Husserl and Heidegger. (3 cr) Last Offered: Fall 1999, Spring 1999, Spring 1998, Spring 1997.

**PHI 4875 Hermeneutics** Problem of interpretation; the possibility of a presuppositionless interpretation, interpretation, pre-understanding and the hermeneutic circle, historical, literary, scriptural and artistic interpretation. (3 cr) Last Offered: Spring 2000, Fall 1998.

**PHI 4975 Independent Study & Research** Topic chosen by the student and approved by the professor and the chair. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PHI 5000 Adv Sem for Phil Majors** Special topic in philosophy or current interest to faculty and students (3 cr)

**PHI 6000 Research Seminar** Inquiry in depth into one major philosophical problem or into the thought of one major philosopher; practice in the use of research and bibliographical techniques. (3 cr) Restrictions: Restricted to PHI Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PHI 7000 The Pre-Socratics** An investigation of the origins and development of Western philosophy before Socrates (3 cr) Restrictions: Graduate students and qualified undergraduates. Last Offered: Spring 2002, Spring 1999, Spring 1996.

**PHY 1010 Conserv Laws & Mdrn App** Kinematics; Newton's laws of motion and universal law of gravitation; rotational dynamics; hydrostatics and hydrodynamics.

Linear momentum, energy and angular momentum conservation: collisions, space travel, satellite and planetary motion, static equilibrium and the mechanics of the human body. Recommended for Arts majors who have had high school Algebra, Trigonometry and Geometry, or two semesters of Mathematics. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: PHY 1011.

**PHY 1011 Physics Laboratory I** Elements of q-basic programming with applications to data analysis; mechanics experiments exhibiting conservation laws and testing Newton's laws of motion and universal law of gravitation. Recommended for Arts majors. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: PHY 1010.

**PHY 1012 Energy & Modern Technologies** Thermodynamics: heat pumps, refrigerators and car engines. Electricity and magnetism: energy conversion and electric power generators, electromagnetic waves (radio, TV, telecommunication). Applications of Einstein's special theory of relativity, Planck's quantization, deBroglie's wave-particle duality, Heisenberg's uncertainties and Pauli's exclusion principle include: twin paradox, photoelectric effect and solar cells, atomic energy levels, periodic table of elements, chemical bonding, fission and fusion energy, radioactivity. Recommended for Arts majors. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (PHY 1010 and PHY 1011). Corequisites: PHY 1013.

**PHY 1013 Physics Laboratory II** Heat, electromagnetism, and modern physics experiments. Recommended for Arts majors. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (PHY 1010 and PHY 1011). Corequisites: PHY 1012.

**PHY 1020 Great Ideas in Physics I** General physics at a primarily conceptual level (algebra only). History and Philosophy of science, especially physics and astronomy. Topics include mechanics, optics, and relativity. Personalities include Aristotle, Galileo, Newton, and Einstein. Recommended for Arts majors. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: PHY 1021.

**PHY 1021 Great Ideas in Physics Lab I** Experiments designed to complement the topics in PHY 1020. Recommended for Arts majors. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: PHY 1020.

**PHY 1022 Great Ideas in Phy II** A continuation of Great Ideas in Physics I. Thermodynamics, earth science, electricity and magnetism, and modern theories of physics. Personalities include Joule, Maxwell, Faraday, Bohr, and Feynman. Recommended for Arts majors. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Summer 1999. Prerequisites: (PHY 1020 and PHY 1021). Corequisites: PHY 1023.

**PHY 1023 Great Ideas in Physics Lab II** Experiments designed to complement the topics in PHY 1022. Recommended for Arts majors. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Summer 1999. Prerequisites: (PHY 1020 and PHY 1021). Corequisites: PHY 1022.

**PHY 1100 General Physics I** Mechanics, heat and sound. Recommended for Biology majors. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001. Corequisites: PHY 1101.

**PHY 1101 General Physics I Lab** Selected experiments in mechanics, heat and sound. Recommended for Biology majors. (1 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001. Corequisites: PHY 1100.

**PHY 1102 General Physics II** A continuation of PHY 1100; light, electricity and modern physics. Recommended for Biology majors. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: PHY 1100 and (MAT 1315 (may be taken concurrently) or MAT 1325 (may be taken concurrently) or MAT 1335 (may be taken concurrently)). Corequisites: PHY 1103.

**PHY 1103 General Physics II Lab** Selected experiments in light and electricity. Recommended for Biology majors. (1 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: PHY 1101. Corequisites: PHY 1102.

**PHY 1500 The Concept of Light** Historical and analytical survey of the concept of light from classical to modern view points. Designed for the students in the College of Commerce and Finance. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (MAT 1320 and MAT 1325) or (MAT 1330 and MAT 1335).

**PHY 1501 The Nature of Light** A set of experiments in optics designed to complement the principles and ideas covered in PHY 1500, The Concept of Light lectures. Designed for C & F majors. (1 cr) Corequisites: PHY 1500.

**PHY 2400 Physics I Mechanics** Introduction to Mechanics. Designed for students in the College of Engineering. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PHY 2402 Physics II Elec & Magnet** Electrostatics, DC Circuits, magnetism, and AC circuits. Designed for students in the College of Engineering. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (MAT 1505 and PHY 2400).

**PHY 2403 Phy Lab for Engineering** Selected experiments illustrating the principles of Mechanics and Electricity and Magnetism. Designed for students in the College of Engineering. (1 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: . Corequisites: .

**PHY 2410 University Phy:Mechanics** Vectors, kinematics, and dynamics of particles, rigid bodies, and fluids. Recommended for Science majors. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001. Prerequisites: . Corequisites: MAT 1500.



**PHY 2411 Lab: Mechanics** Selected experiments demonstrating the fundamental principles of Mechanics and Waves with emphasis on techniques of measurements and data analysis. Recommended for Science majors. (1 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001. Corequisites: PHY 2410.

**PHY 2412 Univ Physics: Elec & Mag** Electrostatics, DC circuits, magnetism, and AC circuits. Recommended for Science majors. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: (PHY 2410 and MAT 1505 (may be taken concurrently)).

**PHY 2413 Lab: Elec & Magnetism** Recommended for Science majors. (1 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001. Corequisites: PHY 2412.

**PHY 2414 Univ Physics: Thermo** Heat, kinetic theory of gases, first and second laws of thermodynamics, wave motion acoustics, geometrical and physical optics. Recommended for Science majors. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: (MAT 2500 (may be taken concurrently) and PHY 2410).

**PHY 2415 Lab: Thermodynamics** Selected experiments in heat, waves and optics. Recommended for Science majors. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: PHY 2414.

**PHY 2416 Modern Physics** Special theory of relativity, atomic theory, quantum physics, the Schrodinger equation, solid-state physics, nuclear physics, elementary particles and cosmology. Recommended for Science majors. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (PHY 2410 and PHY 2412 and PHY 2414) and (MAT 2500 (may be taken concurrently) or MAT 2705 (may be taken concurrently)).

**PHY 2417 Lab: Modern Physics** Interference; Franck Hertz experiment; Photoelectric effect; Michelson interferometry; Millikan oil drop experiment; Electron Spin Resonance (ESR); Ferroelectricity; Superconductivity; Low Temperature physics experiments. A writing enriched course. Recommended for Science majors. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**PHY 2601 Computational Phy Lab I** Computer applications, data analysis and presentation, algorithms and programming, numerical methods, and basic graphics for Physics and Astronomy majors. Prerequisite: Any Intro Physics course (may be taken concurrently). (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**PHY 2603 Computational Phy Lab II** Continuation of Computational Physics I. (1 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: PHY 2601.

**PHY 3310 Electronics** DC and AC analysis including network theorems, power, resonance, filters, bridge circuits, amplifiers, integrated circuits, active devices, digital logic circuits and applications. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: PHY 3311.

**PHY 3311 Electronics Lab** Laboratory experiments are chosen to supplement the Physics 3310 lectures and to give experience with sophisticated electronic equipment. A Writing Enriched course. (1 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Corequisites: PHY 3310.

**PHY 4000 Elec & Magnetism I** Electrostatics, Coulomb's and Gauss' Laws, Maxwell's first two equations, Laplace's equation and boundary value problems, dielectrics, currents in conductors. (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1998, Fall 1996. Prerequisites: (PHY 2414 and PHY 4200). Corequisites: PHY 4001.

**PHY 4001 Elec & Magnetism I Lab** Selected experiments in the field. A Writing Enriched course. (1 cr) Last Offered: Fall 2002, Fall 2000, Fall 1998, Fall 1996. Prerequisites: (PHY 2414 and PHY 4200). Corequisites: PHY 4000.

**PHY 4002 Elec & Magnetism II** Magnetism, Biot-Savart's law, Faraday's law, Maxwell's third and fourth equations, electromagnetic wave equation, radiation. (3 cr) Last Offered: Spring 2001, Spring 1999, Spring 1997, Spring 1996. Prerequisites: PHY 4000. Corequisites: PHY 4003.

**PHY 4003 Elec & Magnetism II Lab** Selected experiments in the field. A Writing Enriched course. (1 cr) Last Offered: Spring 2001, Spring 1999, Spring 1997, Spring 1995. Prerequisites: (PHY 4000 and PHY 4001). Corequisites: PHY 4002.

**PHY 4100 Mechanics I** Newtonian Mechanics, oscillations (simple, non-linear and driven), Lagrangian and Hamiltonian dynamics, central force motion and scattering, special theory of relativity. (4 cr) Last Offered: Fall 2001, Fall 1999, Fall 1997, Fall 1995. Prerequisites: PHY 2414.

**PHY 4102 Mechanics II** Dynamics of rigid bodies, coupled oscillations, wave phenomena, fluid mechanics (steady and turbulent flow, the equations of Euler and Navier-Stokes). (4 cr) Last Offered: Spring 2002, Spring 2000, Spring 1998, Spring 1996. Prerequisites: PHY 4100.

**PHY 4200 Mathematical Physics I** Vector and tensor analysis, matrices and determinants, infinite series, functions of a complex variable. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (PHY 2414 and MAT 2500).

**PHY 4202 Mathematical Physics II** A continuation of PHY 4200; second order differential equations, orthogonal functions, integral transforms, integral equations. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: PHY 4200.

**PHY 5100 Quantum Mechanics** Operators, Schrodinger Equation, one dimensional problems, harmonic oscillator, angular momentum, hydrogen atom, scattering theory. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1998, Spring 1996. Prerequisites: (PHY 4100 and PHY 4200 and PHY 4202).

**PHY 5102 Quantum Mechanics II** A continuation of Quantum Mechanics. (3 cr) Prerequisites: PHY 5100.

**PHY 5200 Thermo/Statistical Mech** Statistical methods, statistical thermodynamics, Ensembles, Partition functions. Quantum statistics. Kinetic theory of transport processes. (4 cr) Last Offered: Fall 2002, Fall 2000, Fall 1998, Fall 1996.

**PHY 5300 Nuclear Physics** A writing Intensive Course. The lecture part of the course covers structure of subatomic particles and nuclei, symmetries and conservation laws, interactions and nuclear models, radioactivity and passage of radiation through matter. The lab part covers accelerators, detectors and selected experiments in nuclear physics. (4 cr)

**Last Offered: Spring 2001, Spring 1999, Spring 1997, Spring 1995.** PHY 5500 Solid State Physics I Description of crystal structure, diffraction of X-rays, classification of solids, thermal properties of solids, dielectric properties, diamagnetism and paramagnetism, free electron theory of metals, band theory of solids. (3 cr) Prerequisites: PHY 5100.

**PHY 5502 Solid State Physics II** A continuation of PHY 5500. Brillouin zones. Band structure of solids. Semiconductor crystals, rectifiers and transistors. Ferromagnetism. Superconductivity. Applications. (3 cr) Prerequisites: PHY 5500.

**PHY 5600 Advanced Electronics** Three hours lecture a week. (3 cr)

**PHY 5601 Advanced Electronics Lab** Advanced Electronics Laboratory (1 cr) Corequisites: PHY 5600.

**PHY 5701 Advanced Lab I** Techniques and instrumentation of advanced experiments. (3 cr)

**PHY 5703 Advanced Lab II** A continuation of PHY 5701. (3 cr) Prerequisites: PHY 5701.

**PHY 5800 Advanced Mechanics** Lagrange, Hamilton and Hamilton-Jacobi forms of mechanics. (3 cr)

**PHY 5900 Adv Quantum Mechanics** Abstract formulation of quantum mechanics, perturbation and variational methods; applications to atomic and molecular structures. (3 cr)

**PHY 6000 Advanced Optics** Topics in geometrical and physical optics. (3 cr) Last Offered: Spring 1999.

**PHY 6001 Advanced Optics Lab** (1 cr) Corequisites: PHY 6000.

**PHY 6100 Acoustics** Transmission, reflection, refraction, absorption and generation of sound waves, acoustical measurements. (3 cr)

**PHY 6101 Acoustics Lab** (1 cr) Corequisites: PHY 6100.

**PHY 6400 Relativity Theory I** Introduction to Einstein's Theory of Special Relativity, Relativistic kinematics and dynamics. Lorentz invariance. Relativity and electromagnetism. Tensor analysis. (3 cr) Last Offered: Fall 1998, Spring 1996. Prerequisites: (PHY 4100 and PHY 4200).

**PHY 6402 Relativity Theory II** Introduction to Einstein's Theory of General Relativity, Newtonian Gravitational and Tidal Forces. Linear Field Approximation. Gravitational Waves. Space-Time Measurements. Riemannian Geometry. Schwarzschild Solution. Black Holes and Gravitational Collapse. Cosmology. (3 cr) Prerequisites: PHY 6400.

**PHY 6500 Supervised Study in Physics** Reading and/or laboratory work in a selected branch of physics under the direction of a member of the staff. (2 cr) Last Offered: Summer 1997, Summer 1996, Summer 1995.

**PHY 6600 Supervised Study in Physics** Same as PHY 6500 with increased number of hours. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PHY 6700 Supervised Study Physics** Same as PHY 6500 with increased number of hours. (4 cr)

**PJ 1100 Intro to Peace & Justice** Definitions and understandings of concepts such as peace, justice, racism, sexism and classism. Critical reflection on the systematic nature of justice and injustice; strategies and techniques for effective social change. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998.

**PJ 1500 Peace Keeping & The UN Lab** Peacekeeping and the United Nations is offered in conjunction with the course Intro to Peace and Justice. This one credit course will serve as a laboratory for the course, which will include alternative teaching styles, intensive learning experiences and guest speakers. (1 cr) Last Offered: Spring 1996, Spring 1995.

**PJ 2000 Selected Topics** Application of Catholic Social Teaching and the Pastorals of the American Catholic Bishops to issues of systemic justice, social analysis, and political economy. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**PJ 2100 Eco Feminism** Women's studies perspectives on environmental thought. The role of ecofeminist thought in the development of a "postmodern" societal paradigm and in a radical reconsideration of destructive and unquestioned beliefs concerning justice, peace and community. (3 cr) Last Offered: Spring 2000, Fall 1999, Spring 1999, Fall 1998.

**PJ 2200 Caring for the Earth** The richness and diversity of Planet Earth, especially in its species forms; current forms of degradation to land, water, soil, and air, and human and animal inhabitants; economic, political, religious, cultural and social causes of global environmental problems; personal and ethical/ social justice decisions necessary to care for the Earth. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 1998, Spring 1997.

**PJ 2300 The Literacy Practicum** Theories of literacy and literacy training. Literacy tutoring at correctional facilities in Philadelphia. Permission of instructor service component. (3 cr) Last Offered: Spring 1998, Spring 1997.

**PJ 2400 Service and Educ for Justice** Economic, political, cultural, and spiritual root causes of the problems students observe in service projects. Development of a deeper appreciation and respect for the poor and a more long lasting commitment to their struggle for justice. Permission of instructor service component. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PJ 2500 Education & Social Justice** American education's contribution to class, gender, and "race" inequality; political bias in school curricula: unequal treatment of students by teachers and administrators based on "race", ethnicity, class, and gender; unequal allocation of resources among public schools; the public - private school debate; possible political influences in universities; the mass media as an important component of education. (3 cr) Last Offered: Spring 2002, Fall 2000, Spring 2000, Fall 1998.

**PJ 2600 Catholic Social Teaching** One hundred years of Catholic Social Thought. Papal encyclicals, especially *Rerum Novarum* (1891) and *Sollicitudo Rei Socialis* (1987). The pastoral letters of the American Bishops, special emphasis on the *Challenge of Peace* (1983) and *Economic Justice for All* (1986). Guest lecturers will help to show the interdisciplinary nature of Catholic teaching. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PJ 3000 Selected Topics** Violence in families and society, the traditions of Just War theory, and the critiques of war from the perspective of pacifism and non-violence. The importance and role of the peacemakers of the world, the values of conflict resolution, and strategies that aid the creation of a peaceful world order. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 2000.

**PJ 3100 Amer. Indian Thought & Culture** Historical, philosophical, religious, literary and artistic contributions of the Navajo, Sioux, Iroquois, and Hopi cultures. American Indian Art and Poetry, American Indian colonial history, American Indian tribal claims,

and American Indian spirituality of the earth. Guest speakers and films. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2000, Fall 1999.

**PJ 3200 Justice and Sports** The benefits and problems of competition. The role and value of competition in contemporary sports, with attendant social justice issues. The importance of play to a wholistic human life. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 1998, Spring 1998.

**PJ 3300 Modern Peacemakers** The life, times, writings, and influence of Mohandas Gandhi, Dorothy Day, Thomas Merton, and Martin Luther King, Jr., emphasizing their nonviolent protests against modern forces of racism, militarism and economic exploitation. Guest lecturers. (3 cr) Last Offered: Spring 2002, Fall 2000, Fall 1997, Fall 1996.

**PJ 3400 War and Morality** Three traditions of moral reflection on war: "Just War" theory; Pacifism; and, the historical experience of women. Discussions focus on concrete cases (e.g., the modern world wars, Vietnam, the Persian Gulf War, Bosnia). (3 cr) Last Offered: Fall 2002.

**PJ 3500 Making Peace Work** Various theories of peace; describing, explaining, and predicting the occurrence of peace; conflict, peace-making, -keeping, -building. Computer simulations of peace process. (3 cr) Last Offered: Spring 2001, Spring 1997, Fall 1996, Fall 1995.

**PJ 4000 Selected Topics** The history of the struggle for justice and human rights in geographical locations, such as the Middle East, Ireland, Africa, and Central America, focusing on such issues as world hunger and apartheid, and culminating in an attempt to articulate systemic questions of justice. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Fall 2000.

**PJ 5000 Selected Topics** Justice and discrimination in U.S. society from social, economic, political and ethical perspectives. Strategies for the just elimination of discrimination. Topics include civil rights, gender issues of justice, etc. (3 cr) Last Offered: Summer 2002, Fall 2001, Summer 2001, Spring 2001.

**PJ 5100 Discrimination, Justice & Law** Development of discrimination and civil rights law in the United States through case materials in areas of racial discrimination, gender-based discrimination, reverse discrimination, sexual preference-based discrimination, and age discrimination, if time permits. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PJ 5200 Poverty and the Amer Economy** An interdisciplinary perspective on poverty in the United States, emphasizing the past thirty years. Trends in the extent and incidence of poverty. Underlying causes of poverty; policies that might be used to combat poverty. (3 cr) Last Offered: Spring 2002, Fall 2000, Fall 1998, Fall 1997.

**PJ 5300 Race, Class and Gender** An integrated and interdisciplinary approach to such questions as: Why are women disproportionately poor in American society? Is equality of opportunity a reality or a myth? What are the continuing effects of racial discrimination in areas of education, housing, and employment? Special attention to the way in which considerations of race, class, and gender reinforce one another to impede the realization of justice and the common good. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000.

**PJ 5400 Ethics, Justice and the Family** The moral meaning of marriage; justice, gender, and the domestic division of labor; the legal protection of marriage and the parties to it; marriage, reproductive technology, and the commodification of children; the moral meaning of "having children"; the responsibilities of parents to their children; the responsibilities of children to their parents, with special reference to care for the aged; distributive justice and the family; society's responsibilities to serving the needs of its children. Course readings will be taken from a number of disciplines, including Christian ethics, law and legal history, philosophy, and sociology. (3 cr) Last Offered: Fall 2001, Fall 1999, Spring 1998, Spring 1997.

**PJ 5500 Race and Racism in Amer Film** The depiction of African Americans, Latinos, Native Americans, Asian Americans, and Jews in American films from sociological and textual approaches. Attention to producers, directors, and audiences. Film as a cultural document. (3 cr)

**PJ 5600 Independent Study** Independent Study (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PJ 5700 The Meanings of Justice** Libertarian, socialist, welfare liberal, communitarian, feminist, and multicultural approaches to justice in contemporary literature. Consideration of recent studies of social justice in Christian ethics. (3 cr) Last Offered: Fall 2001, Fall 1998, Fall 1997.

**PSC 1100 Intro to American Government** Constitutional development; national institutions, federalism, civil rights and liberties; instruments of popular control. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PSC 1200 Intro International Relations** Factors in relations between states; the nature, elements, and role of power; problems faced by the modern state system. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PSC 1903 Internship Elective** (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PSC 1906 Internship Elective** (6 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PSC 1909 Internship Elective** (9 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PSC 2000 State & Local Government** Constitutions, institutions, instruments of popular control, and intergovernmental relations. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: .

**PSC 2100 City and Suburb** Politics and problems in metropolitan areas of the United States. (3 cr) Last Offered: Fall 2000, Fall 1999, Fall 1998, Spring 1997. Prerequisites: .

**PSC 2200 American Party Politics** The place of parties in national politics; the nature, organization, and functions of political parties; suffrage requirements and election methods; the activities of organized interests. (3 cr) Last Offered: Spring 2000. Prerequisites: .

**PSC 2250 Congress** How national politics unfolds in the U.S. Congress, focusing on decision making and voting, leadership roles, committee politics, relations with the other branches, elections, and congressional reform. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1997, Spring 1996.

**PSC 2275 U S Presidency** The nature, functions, and development of the American presidency, including relations between the president and other Washington actors, the public and the press. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 2000. Prerequisites: .

**PSC 2300 American Foreign Policy** The institutions, processes, and ideas which shape contemporary American foreign policy; the major problem areas. (3 cr) Last Offered: Spring 2002, Fall 1999, Fall 1998, Fall 1997. Prerequisites: .

**PSC 2400 National Security Policy** Development of strategic thought in the United States, arms control and disarmament, intelligence, technology, alliance policy, role of civilian and military branches of government, and related topics. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 1999, Spring 1999.

**PSC 2500 Washington Minimester** A three week series of seminars in Washington, D.C. with public officials, staff members, party leaders, and interest group representatives. See and study the workings of our government at first hand. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999.

**PSC 2600 Public Policy** Theories of public policy making, national public policies, and contemporary issues. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 2000. Prerequisites: .

**PSC 2625 Environmental Policy** Environmental policy issues regarding publicly-owned resources, energy generation and consumption, greenhouse gas emissions, biodiversity, trade agreements, international lending, economic growth and sustainable



development, agrochemical use, and nuclear and hazardous waste transport and disposal are issues of significant concern to the United States and the international community. (3 cr) Last Offered: Spring 2002, Spring 2001.

**PSC 2700 Women and Politics** Why women traditionally have been marginal to political life; the efforts of women in the past and today to change that fact; the problems that must be solved before women can translate their numerical strength into political power. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**PSC 2750 Black Politics** Analysis of black American politics, including ideology, electoral participation, movement politics, and public policy. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PSC 2800 Public Administration** Administrative politics, law, and ethics, organizational theory and technical fields, such as budgeting, planning, and personnel. (3 cr) Last Offered: Fall 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: .

**PSC 2875 Topics in American Government** Selected topics of special interest in American Government and Public Law. (3 cr)

**PSC 2900 Political Communication** The role, behavior and influence of communications in American politics. (3 cr) Last Offered: Spring 2001, Fall 2000, Fall 1999, Fall 1995. Prerequisites: .

**PSC 2993 Internship** Internship (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PSC 2996 Internship** Internship Work experience in politics. (6 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: .

**PSC 3100 Government & Business** The relations between government and business, including antitrust enforcement, regulation versus deregulation, environmentalism and consumerism, and economic policies. (3 cr) Last Offered: Spring 2002, Spring 2001, Fall 1999, Fall 1998.

**PSC 3200 Supreme Crt, Criminal Justice** An examination of the important Supreme Court decisions in the area of criminal justice. (3 cr) Last Offered: Fall 2001, Spring 2001, Spring 1999, Fall 1998.

**PSC 3300 Constitutional Law and Develop** Major Supreme Court cases concerning the powers of Congress and the president, federalism, commerce taxing, and voting. (3 cr) Last Offered: Spring 2002, Summer 2001, Fall 2000, Fall 1999.

**PSC 3400 Supreme Court & First Amend** Major Supreme Court decisions involving freedoms of speech, press, religion, church-state, and assembly. (3 cr) Last Offered: Fall 2002, Spring 2001, Spring 2000, Fall 1998.

**PSC 3500 The Supreme Court & Equality** Examination of the important Supreme Court decisions in the area of racial and gender equality. (3 cr) Last Offered: Spring 2002, Fall 2000, Spring 2000, Fall 1999.

**PSC 3600 Criminal Justice System** The political phenomena of crime, nature of law, police, courts, correction, community crime prevention, and the procedures of local, state, and national agencies as political issues. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2000, Spring 1998. Prerequisites: .

**PSC 3800 Environmental Law** The manner in which our society protects or fails to protect the environment through law and environmental regulation. The relative efficacy, costs, and benefits of various types of this regulation. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**PSC 4000 European Politics** European political institutions, changes in party systems, and impact of European integration/globalization on domestic economies. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: .

**PSC 4100 Political Movements** Comparison of civil rights, labor, fascist, environmental and women's movements in their political and historical context. (3 cr) Last Offered: Fall 1999.

**PSC 4200 South Asia** The historical development of India and Pakistan; their contemporary problems and conduct of foreign relations with the great powers. (3 cr) Last Offered: Spring 2002.

**PSC 4401 Russia** An introduction to the contemporary Russian political system emphasizing its transformation from the Communist system which preceded it. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 1999.

**PSC 4500 Japan and China** Historical and cultural factors explaining Chinese and Japanese political behavior and modern institutions. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2000, Spring 1998.

**PSC 4700 Africa** Cultural pluralism, African socialism, terrorism, politico-legal and socioeconomic development, and other problems of contemporary African states. The impact of colonial rule and socioeconomic changes on political life. (3 cr) Prerequisites: .

**PSC 4750 Latin America** Comparison of the political systems of Latin American countries. The role of the military, the church, elites, political parties, constitutions and social and economic factors which have shaped the development of the region. (3 cr) Last Offered: Fall 1999, Fall 1998, Fall 1996, Fall 1995.

**PSC 4875 Topics in Inter. Rel.** Selected topics of special interest in Comparative Government and International Relations. (3 cr) Last Offered: Spring 2002, Summer 2001, Spring 2001.

**PSC 4900 The Arab States** Political change in the principal Arab States with emphasis on the diverse forms of rule and political movements. The impact of colonial rule and socioeconomic changes on political life, leadership, social structure, political culture, and modernization. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 1999, Spring 1998.

**PSC 4950 Ireland** Irish government and politics and their socioeconomic context. The impact of Ireland's increasing association with other European countries and the special problems associated with Northern Ireland. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PSC 5000 International Law** The rules and principles of international law based on a study of treaties, diplomatic practice, and cases dealt with by international and national courts. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000.  
Prerequisites: .

**PSC 5100 International Organization** The development of international organization, the U.N., its principles, structure, and accomplishments; regional organizations; prospects for the future. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PSC 5225 US Foreign Policy Issues** Contemporary foreign policy issues facing the United States; elements of continuity and change; implementation and consequences. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: .

**PSC 5300 Democratization in Europe** Development of liberal democracy in turn of century Western Europe and end of century Eastern Europe. (3 cr) Last Offered: Spring 1997, Fall 1995, Spring 1995. Prerequisites: .

**PSC 5351 Russian Foreign Policy** The development of Russian foreign policy in the post-Soviet period, historical roots; relations with the United States, Europe, the Far East and the developing countries; diplomatic; economic and military instruments of Russian policy. (3 cr) Last Offered: Spring 2002, Fall 2000, Spring 1999, Spring 1998.  
Prerequisites: .

**PSC 5500 Africa in World Politics** Political and economic problems in Africa south of the Sahara; problems of South Africa - past, present, and future; the interaction of states in regional organizations; Pan-Africanism; response of the outside world to African nationalism. (3 cr) Last Offered: Fall 1998, Fall 1996, Fall 1995.

**PSC 5600 Human Rights** Transnational case studies of human rights; the nature and significance of human values in relation to the political process, law, and ideology. (3 cr) Last Offered: Spring 2000, Summer 1995, Spring 1995. Prerequisites: .

**PSC 5650 Peacebuilding in N. Ireland** The process of diplomacy and peacebuilding examined from the perspective of two weeks of study and work with community leaders in Northern Ireland. Theories and techniques of political decision-making in international negotiations; community reconciliation during crisis and non-crisis events. (4 cr) Last Offered: Summer 2001.

**PSC 5700 Oil/Power in Middle East** International oil policy; economic and political systems of the oil producing states in the Arabian Peninsula, Persian Gulf, and the adjoining states, i.e. the Russia, Iran, Afghanistan, and Pakistan. The foreign policies of the super powers and the regional states. (3 cr)

**PSC 5800 Politics of International Econ** The politics international trade, economic interdependence, foreign aid, monetary relations, North-South relations, and national development. (3 cr) Last Offered: Fall 2002, Spring 1998, Spring 1997, Summer 1996.

**PSC 5900 Middle East International Rels** Intra-regional and international problems facing the Middle East: the struggle for independence; the impact of the Cold War; the protracted conflict between Israelis and Arabs; and the tensions in the oil-rich Persian Gulf. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**PSC 5950 Russia and Islamic States** Four sets of Islamic states: (1) 21 autonomous states within the Russian Federation, about half of which are Turkic and Muslim; (2) Central Asia; (3) Islamic states on the periphery of the former Soviet Union; and (4) in the Middle East. (3 cr) Last Offered: Spring 1997.

**PSC 6000 Early Political Theories** The relevance of the classics of political thought for understanding modern politics from the Greeks to the modern era. (3 cr) Last Offered: Fall 2001, Spring 2001, Fall 1999, Fall 1998. Prerequisites: .

**PSC 6100 Mod Political Theories** The structure of modern political thought and developments of twentieth century political thought as an aid to understanding our age. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: .

**PSC 6120 Principles of Politics** An analytical, rather than historical, approach to the principles of politics. Justice, liberty, equality, purpose of the state, constitutionalism, political prudence, separation of powers, etc. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999.

**PSC 6130 Theories of War and Peace** The major political theories about war and peace, and the importance of ideas of justice for them in ancient, non-Western, modern and contemporary theories. (3 cr) Last Offered: Spring 2001, Fall 2000, Fall 1999, Summer 1997.

**PSC 6140 Religion and Politics** The relation of religion and politics found in either classical, modern, or contemporary literature from the Western or non-Western,

American or Latin American experience. (3 cr) Last Offered: Fall 2002, Spring 2000, Fall 1998, Fall 1997. Prerequisites: .

**PSC 6150 Politics and Literature** Politics in classical and modern literature. Sophocles, Thucydides, Plutarch, Shakespeare, Twain, Melville, Austen, Huxley, Orwell. (3 cr) Last Offered: Spring 1999, Fall 1997. Prerequisites: .

**PSC 6225 The American Founding** Issues about the nature of the federal union, sovereignty, majority faction, the extended republic, representation, the branches of government, separation of powers, checks and balances, slavery, popular government and civic responsibility during the Philadelphia Convention of 1787 and the Ratification Debates over the Constitution. (3 cr) Last Offered: Fall 2001, Spring 2001.

**PSC 6250 Jurisprudence** The nature and origin of law from historical and/or analytical perspectives. (3 cr) Prerequisites: .

**PSC 6275 Lincoln/Douglas Debates** Examination of the theoretical and practical political concerns of political leadership in a free society, with emphasis on the political understanding and statesmanship of Abraham Lincoln and Stephen Douglas. Attention to the issues of equality, sovereignty, liberty, and justice. (3 cr) Last Offered: Fall 2002, Spring 2002.

**PSC 6325 Amer Liberal-Conserv** The main strands of American liberal and conservative thought and political practice. Rawls, Galbraith, Schlesinger to Goldwater, Kirk, and Buckley. (3 cr) Prerequisites: .

**PSC 6650 Using Political Science** Research methods, no prior knowledge expected. Design and conduct study of political and social attitudes in the Villanova community, probability and random sampling, research design, hypothesis testing and intelligent use of statistics, tests of significance, and basic data analysis. (3 cr) Last Offered: Fall 2002, Spring 2001, Fall 1999. Prerequisites: .

**PSC 6800 Political Violence** The nature of political violence and conflict emphasizing the human perspective. Origins and causes of political violence; socio-psychological explanations. Manifestations include terrorism, rebellion, revolution, and war. (3 cr) Last Offered: Fall 2000, Fall 1997.

**PSC 6875 Topics in Political Theory** Selected topics of special interest in Political Theory and Behavior. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999.

**PSC 6900 Political Sci Seminar** Individual research and report on contemporary problems in political science. (3 cr) Restrictions: Restricted to PSC Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**PSC 6950 Ind Study & Research** Individual students with specific interests work on a tutorial basis with an appropriate professor. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PSC 7000 Research Concepts & Approaches** Tools needed to think critically about questions of political science; various research methods employed by political scientists; skills necessary to write cogent essays and conduct original research. (3 cr) Restrictions: Graduate students and qualified undergraduates. Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**PSY 1000 General Psychology** Introductory examination of the fundamental concepts of psychology, with particular emphasis on the description of normal human behavior and those factors that underlie it. Prerequisite to all other courses in psychology. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**PSY 2200 Developmental Psychology** Theory and research on social/personality, physical, and cognitive/ intellectual changes from infancy through old age. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: PSY 1000 or HON 1811.

**PSY 2300 Perception** Theory and application of sensory and perceptual processes such as distance perception, color vision, illusion and deafness. Open to all majors. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000. Prerequisites: PSY 1000 or HON 1811.

**PSY 2400 Cross-Cultural Psychology** Theory and research on cultural influences on human diversity in behavior and psychological processes. Satisfies diversity 3 requirement. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: PSY 1000 or HON 1811.

**PSY 2500 Psych of Personality** Theories, dynamics, and structure of personality. Intended for non-psychology majors. Students cannot receive credit for this course and PSY 5200. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: PSY 1000 or HON 1811.

**PSY 2600 Social Psychology** Survey of theory and research on altruism, attraction, social cognition, the self, attitudes and attitude change, social influence, affiliation, personal control, and aggression. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: PSY 1000 or HON 1811.

**PSY 2700 Industrial/Organizational Psy** Applications of psychological data, theories, research methods, and testing procedures to individuals in organizational settings. (3 cr) Last Offered: Summer 2002, Summer 2001, Spring 2001, Summer 2000. Prerequisites: PSY 1000 or HON 1811.

**PSY 2800 Human Factors** Application of theories of human performance (perception, cognition, and motor control) to the design of products and systems. Writing enriched. (3

*cr*) Last Offered: Fall 2002, Spring 2001, Spring 1999, Spring 1998. Prerequisites: PSY 1000 or HON 1811.

**PSY 2993 Psychology Internship** Supervised work experience in agency, hospital, school, or company. Minimum 3.0 G.P.A., Psychology major. Permission of instructor. Apply in Psychology Department office. Cannot be used to fulfill Psychology electives. Graded S/U. (3 *cr*) Restrictions: Restricted to PSY Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: PSY 1000 or HON 1811.

**PSY 2996 Psychology Internship** Supervised work experience in agency, hospital, school, or company. Minimum 3.0 G.P.A., Psychology major. Permission of instructor. Apply in Psychology department office. Cannot be used to fulfill Psychology electives. Graded S/U. (6 *cr*) Restrictions: Restricted to PSY Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: PSY 1000 or HON 1811.

**PSY 3000 Special Topics** Selected topics in psychology: critique of ESP, comparative psychology, forensic psychology, health psychology, the self, psychology of women, psychology of values, etc. (3 *cr*) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: PSY 1000 or HON 1811.

**PSY 3005 Special Topics Seminar** Selected topics in memory improvement, time management, stress management, interpersonal communication, etc. Open to all Majors. Graded S/U. Only three 1-credit seminars may be applied toward graduation. Cannot be used to fulfill Psychology electives. (1 *cr*) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001. Prerequisites: .

**PSY 4000 Intro Statistics** Basic concepts, assumptions, and applications of descriptive statistics and inferential statistics. (3 *cr*) Restrictions: Restricted to PSY Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: PSY 1000 or HON 1811.

**PSY 4050 Research Methods in Psy** Introduction to the reading, design, and reporting of psychological research. Writing intensive. (3 *cr*) Restrictions: Restricted to PSY Majors. Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: (PSY 1000 or HON 1811) and PSY 4000 (may be taken concurrently).

**PSY 4100 Foundations of Modern Psych** Overview of the major concepts and theories of psychology presented in a historical context. (3 *cr*) Restrictions: Restricted to PSY Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (PSY 1000 or HON 1811) and PSY 4000 and PSY 4050 and (PSY 4200 or PSY 4500).

**PSY 4150 Sem Professional Development** Overview of ethical and professional issues in psychology. (1 *cr*) Restrictions: Restricted to PSY Majors. Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: PSY 1000 or HON 1811.

**PSY 4200 Physiological Psychology** Theoretical and laboratory examination of basic neural and hormonal processes underlying behavior. (3 cr) Restrictions: Restricted to PSY Majors. Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (PSY 1000 or HON 1811) and PSY 4000 and PSY 4050.

**PSY 4500 Cognitive Psychology** Theory and research on human learning, memory, and cognitive processes. (3 cr) Restrictions: Restricted to PSY Majors. Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: (PSY 1000 or HON 1811) and PSY 4000 and PSY 4050.

**PSY 5100 Animal Learning & Cognition** Cognitive mechanisms responsible for simple behavior and behavioral change as they have been studied using animal subjects. (3 cr) Restrictions: Restricted to PSY Majors. Last Offered: Fall 2001, Fall 2000. Prerequisites: (PSY 1000 or HON 1811) and PSY 4050.

**PSY 5200 Personality Theory & Research** Contemporary theories of personality and the scientific investigation of personality variables. Intended for psychology majors. Students may not enroll in this course and PSY 2500. (3 cr) Restrictions: Restricted to PSY Majors. Prerequisites: (PSY 1000 or HON 1811) and PSY 4050.

**PSY 5300 Psychological Measurement** Basic principles and problems of psychological measurement in the assessment of behavior. (3 cr) Restrictions: Restricted to PSY Majors. Prerequisites: (PSY 1000 or HON 1811) and PSY 4050.

**PSY 5400 Clinical & Counseling Psych** Fundamental concepts, basic areas of professional functioning, and contemporary issues in the mental health field. (3 cr) Restrictions: Restricted to PSY Majors. Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (PSY 1000 or HON 1811) and PSY 4050.

**PSY 5500 Abnormal Psychology** Classification, etiology, and treatment of mental and behavioral disorders with emphasis on contemporary theory and research. Writing enriched in Fall. (3 cr) Restrictions: Restricted to PSY Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: (PSY 1000 or HON 1811) and PSY 4050.

**PSY 5600 Computer Use for Soc Scientist** Statistical packages (statistical software) in the analysis of social science data. Prior computer experience not necessary. (3 cr) Restrictions: Restricted to PSY Majors. Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999. Prerequisites: (PSY 1000 or HON 1811) and PSY 4000.

**PSY 5900 Undergraduate Research** Supervised research project and report. Student may register for PSY 5900 more than once; however, only 3 hours of research can be applied toward the degree requirements in psychology. (3 cr) Restrictions: Restricted to PSY Majors. Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: PSY 1000 or HON 1811.



**RAS 6000 Senior Research Project** A multi-disciplinary senior seminar or independent study which helps students integrate and expand previous study of Russia. Required of all Russian Studies Concentrators and usually taken in the second semester of senior year, stressing independent research and intensive investigation at the advanced level of a topic in Russian Studies. Permission of the director required. (3 cr)

**RUS 1111 Introductory Russian I** Functional use of Russian for students with no prior knowledge of Russian. Recitations, readings and oral drills. Supplementary language laboratory work. (6 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**RUS 1112 Introductory Russian II** Functional use of Russian for students with no prior knowledge of Russian. Recitations, readings and oral drills. Supplementary language laboratory work. (6 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**RUS 1121 Intermediate Russian I** Review of grammar and vocabulary. Recitations, readings and oral drills. Supplementary language laboratory work. (5 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**RUS 1122 Intermediate Russian II** Review of grammar and vocabulary. Recitations, readings and oral drills. Supplementary language laboratory work. (5 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**RUS 1131 Conversation Composition** Advanced communication skills including reading and discussing topics on current events. Writing enriched. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**RUS 1132 Advanced Convers & Comp** A continuation of RUS 1131. Writing Enriched. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**RUS 3412 Special Topics** Special interest topics in language, literature and culture. Course may be repeated for credit. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**RUS 4110 Russian Civilization** Understanding of Russian life and culture today by focusing on basic historical, ideological, economic, religious and cultural developments. Each student chooses one aspect of social development for further research. Conducted in English. Writing Enriched. Satisfies Diversity Requirement. (3 cr) Last Offered: Spring 1999, Spring 1998.

**RUS 4120 The Russian Short Story** Representative Russian short stories from Pushkin to Pasternak. Conducted in English. Satisfies Diversity Requirement. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000.

**RUS 4130 The Russian Novel I** Major Russian novels of the 19th century, including Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky and Tolstoy. Conducted in English. Writing Enriched. Fulfills advanced literature requirements. (3 cr) Last Offered: Fall 2001, Fall 1998.

**RUS 4140 The Russian Novel II** Major Russian Novels of the 20th century including Bely, Fedin, Olesha, Bulgakov, Sholokhov, Pasternak, and Solzhenitsyn. Conducted in English. Writing Enriched. Satisfies Diversity Requirement. Fulfills advanced literature requirements. (3 cr)

**RUS 4150 The Russian Drama** The evolution of Russian drama from the 19th century to the present. Conducted in English. Writing Enriched. Satisfies Diversity Requirement. Fulfills advanced literature requirements. (3 cr)

**SAR 1000 Introduction to Art** (3 cr)

**SAR 2009 Sounds of Slavic Spirit** The cultural heritage of the Russian people from the chants of Muscovy to the present: Byzantine rite, varied folklore, the great romantic composers, ballet, opera, movies, the soviet experience, right down to jazz and the westernizing to the present. No prerequisites or ability to read music needed. (3 cr)

**SAR 2010 Intro to Calligraphy** A practical and historical approach to the study of writing. The development of the written letter and the ability to use the newly acquired hand, with the proper materials and techniques. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SAR 2020 Basic Watercolor Techniques** Techniques of transparent watercolor painting with concentration on still life. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SAR 2021 Basic Drawing Techniques** A foundation course in drawing, emphasizing visual concepts through work in a variety of media including charcoal, pencil and ink. Direct observation of the model, composition, perspective, and theory. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SAR 2022 Basic Oil Painting** Basic techniques in the oil medium, with emphasis on understanding the nature of canvas as a vehicle, and color theory. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SAR 2113 The Charm of Music** A listening study approach to the many-faceted world of music from the great classics and their masters to the cultural explosion of the twentieth century. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SAR 2114 Words & Music: The Art of Song** Fundamentals of rhythm, harmony, melody, and formal design will be covered, followed by a student composition. (3 cr) Last Offered: Fall 2002.

**SAR 2115 Orchestral Music** The major literature of the symphony, symphonic poem and concerto from Haydn through mid-twentieth century. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999.

**SAR 2118 The Broadway Musical** The art form of American musical theatre, beginning with roots in late 19th century operetta, the emergence of jazz, folklore, big band era, up to the present. (3 cr)

**SAR 2119 Jazz: Born in the USA** A listening study of the greats of American Jazz, beginning with Ragtime, New Orleans, Big Band, Swing, Fusion and current trends. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000.

**SAR 2151 Intermediate Drawing** Creating awareness that any final product is a result of the organization of a visual language: line, form, value, space, and shape, pattern and textures in an arrangement of areas. Permission of instructor upon submission of portfolio. (3 cr) Last Offered: Spring 2002. Prerequisites: SAR 2021.

**SAR 4007 Icon History and Making** History of tradition, spiritual process, formal characteristics, language, cultural and artistic milieu; crafting in the classical, Byzantine-Russian tradition; historical and physical inquiry into iconic imagery in twentieth century visual culture. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000.

**SAR 5000 Independent Study** (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SAR 5004 Printmaking** Introduction to and the brief history of traditional methods of the fine art of making prints: Relief (e.g. Woodcut, Linoleum), Intaglio (e.g. Etching, Drypoint), Stencil (e.g. Screen Printing), and Planographic (e.g. Lithography, Aluminum). (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 2000.

**SBI 1106 Integ Bus Simulation** A team-based simulation utilizing web technology to manage a small electronics manufacturing company, employing the principles learned throughout the Institute. Determination of firm's operating strategy and a selection of its management officers (CEO, CFO, etc.) Decisions include production, finance, marketing, research & development. Integrating all company decisions with the competitive environment; generation and analysis of financial reports. Focus on interactive approaches. (1 cr) Last Offered: Summer 2002.

**SBI 1107 Financial Services Module I** Foundational principles of macroeconomics, corporate finance and financial accounting from an integrated macro-economic framework. Emphasis on linkages among these three disciplines in solving business problems. (5 cr) Last Offered: Summer 2002.

**SBI 1108 Strat Anal & Implmtn Module II** The integration among marketing, management, and business law as an approach to understanding corporate structure in

conducting business. Various business problems analyzed from a cross-disciplinary perspective; the value of ethical-based decision making. (5 cr) Last Offered: Summer 2002.

**SBI 1109 Ops Excellence Module III** Integrated approach to understanding a firm's value chain. The advantages of a cross-functional approach to running a business, seen through principles of microeconomics, managerial accounting, and operations management. Emphasis on the relationship among various functions in the value chain, and the value of a holistic and systemic approach to managing a business. (5 cr) Last Offered: Summer 2002.

**SCI 1903 Internship Elective** Permission of Program Director. Junior or senior Comprehensive Science students with a 3.0 QPA only. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SCI 1906 Internship Elective** Permission of Program Director. Junior or senior Comprehensive Science students with a 3.0 QPA only. (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SCI 2993 Internship Elective** Permission of Program Director. Junior or senior Comprehensive science students with 3.0 QPA only. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SCI 2996 Internship Elective** Permission of Program Director. Junior or senior Comprehensive Science students with a 3.0 QPA only. (6 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 1000 Intro to Sociology** Introduction to the analysis of social behavior, emphasis on socialization, collective and group behavior. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 1903 Internship Elective** (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 1906 Internship Elective** (6 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 1909 Internship Elective** (9 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 2000 Social Problems** Significant problems of American society; the sociocultural basis of social problems, the conditions facilitating their incidence, and approaches to therapeutic intervention. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 2100 Cultural Anthropology** Principles of cultural anthropology; ethnological variations in language, techniques, customs and values; problems of cultural development and change. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 2200 Sociology of Deviance** A sociological examination of rule-breaking behavior; causal theories of deviance; types of deviance and their distribution in contemporary society. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 2300 Sociology of the Family** Institutional organization of mate selection, courtship, and marriage relationships in American society; family relationships and functions; family disorganization and change. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 2400 Sociology of Social Work** History and development of social welfare; basic issues in social welfare planning and administration. The major methods of social work, practice; social casework, group work and community organization, in such areas as child welfare, family service and counseling, probation and corrections. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 2500 Sociology of Community** Concentration on the changes in the structure of the community from container to network types. Emphasis on the necessity of community as rooted in social nature. . (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 2600 Sociology of Religion** The interaction between society and religion; religion and scientific claims; investigation of human nature as social and the concept of oneness in religion. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 2700 Soc of Organizations** The structure of complex organizations and their relationship to other social institutions. Emphasis on the modern corporation, how corporations interact with labor and government, and how corporations and organizations affect our everyday lives. (3 cr) Last Offered: Fall 2000, Fall 1999, Fall 1998, Fall 1997.

**SOC 2800 Sociology of Occupations** Influence of the social milieu upon internal organizations of occupations and professional modes of selection, entrance, and training; occupational mobility and career patterns; occupational influences upon individual behavior. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000, Spring 1999.

**SOC 2900 Politics, Economy and Society** Relationships between state and society from a comparative perspective. Focuses primarily on the United States, with frequent references to the experiences of other developed nations as well as those of third world countries. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000.

**SOC 2993 Internship** Internship (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 2996 Internship** Internship (6 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 3000 Criminology** The nature and extent of crime; the factors related to criminal behavior; theories of the treatment and control of offenders; crime prevention programs. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 3020 Crim Law and Community** Survey of the aims of the criminal law in the community; the common-law and statutory law definitions of crimes; the problem of criminal responsibility; sentencing; and the comparison of criminal and civil laws in the social order. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 3100 Juvenile Delinquency** Meaning and scope of delinquency; delinquency theories; role of social institutions and social agencies; prevention, control, and treatment programs. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 2000.

**SOC 3200 Penology and Corrections** Survey of the historical and contemporary treatment of convicted offenders; analysis of the prison social system; analysis of the theory, practice and function of correctional programs. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Spring 2000.

**SOC 3300 Sociology of Law** The meaning, origin, and impact of law viewed from several sociological perspectives; the law in action and the social context of legal professions. (3 cr) Last Offered: Fall 2001, Spring 2001, Spring 2000, Fall 1999.

**SOC 3400 Medical Sociology** Sociocultural patterns in illness and accidents; social structure of training in medical professions; relations of practitioner with patients, community and society; sociocultural variation in treatment and in use of medical facilities. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**SOC 3450 Social Psychiatry** Cultural and social patterns in the causation, incidence and treatment of mental health problems; emphasis upon current approaches to mental illness and the relation of mental illness to criminal, antisocial and deviant behavior. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 3500 Soc of Gender Roles** Sex roles examined from a social learning and developmental perspective; recent changes in related attitudes and behaviors, consequences for interpersonal relationships and societal organization. (3 cr) Last Offered: Fall 2002, Spring 2001, Fall 2000, Spring 2000.

**SOC 3600 Race & Ethnic Relations** Development of race and ethnic relationships in America; the impact of power-conflict relations on race and ethnic patterns; particular attention given to development from early 1950's to present. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 3700 Urban Sociology** The nature of the city; history of urban settlement; urban form; institutions, organizational structures and processes; major problems of living in urban America. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 3750 Human Populations** The composition of and change in human populations; analysis of fertility; mortality and migration; emphasis on current population, principles, problems and policies as well as practical applications. (3 cr) Last Offered: Spring 2000, Spring 1999, Spring 1998, Spring 1997.

**SOC 3800 Collect Behav & Soc Move** Significant features of crowd, mob, and audience behavior; an analysis of their social basis and influence; examination of fads, fashions, and organized social movements as sociocultural behavior. (3 cr) Last Offered: Spring 1995.

**SOC 3900 Social Stratification** Development and influence of class structures; emphasis upon modern stratification systems and their relation to community and societal power structures. (3 cr) Last Offered: Fall 2002, Spring 1999, Spring 1997, Spring 1996.

**SOC 3950 Soc Change & Mod Society** The process of social change by which modern society and its dominant characteristics have developed. (3 cr)

**SOC 4000 Special Topics** Topics addressing special or emerging interests, chosen for their current importance and the specific expertise of an instructor. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 4100 Special Topics in Sociology** Topics addressing special or emerging interests, chosen for their current importance and the specific expertise of an instructor. (3 cr) (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SOC 5000 Nature & His of Soc Thry** The nature of sociological theory and the major theoretical developments which have shaped the field of sociology. (3 cr) Last Offered: Fall 2002, Fall 2001, Spring 2001, Fall 2000.

**SOC 5050 Soc Theory & Public Policy** Influence of sociological ideas on social policies. Students will be expected to design a theoretically driven empirical study which impacts on some public policy. (3 cr) Last Offered: Fall 2001, Spring 1999.

**SOC 5100 Contemp Thry & Research** Significant contemporary contributions to sociology theory and research. (3 cr) Last Offered: Spring 2002, Fall 2000, Spring 2000, Fall 1999.

**SOC 5200 Design of Sociol res** Basic methods of sociological research including the collection and organization of data, statistical analysis, testing hypotheses and the interpretation of data. (3 cr) Last Offered: Fall 2001, Spring 2001, Fall 2000, Spring 2000.

**SOC 5300 Data Analysis-Social Scientist** (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 1999.

**SOC 5400 Applied Res. in Soc.** The development of real-world research skills through the application of sociological methods and statistics. Special emphasis is given to sampling, measurement, applied statistics, data management and evaluative research. (3 cr) Last Offered: Spring 2002, Spring 2000, Spring 1999, Spring 1998.

**SOC 6000 Independent Study** Supervised project or research culminating in research report or major paper. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SOC 6500 Seminar** Advanced course for seniors focusing on particular substantive area; topics rotate. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SPA 1111 Introductory Spanish I** Groundwork Spanish, including oral proficiency, aural comprehension, and reading; for students with no prior knowledge of Spanish. Supplementary language laboratory work and oral drills. (4 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**SPA 1112 Introductory Spanish II** Groundwork Spanish, including oral proficiency, aural comprehension, and reading; for students with no prior knowledge of Spanish. Supplementary language laboratory work and oral drills. (4 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SPA 1121 Intermediate Spanish I** Review of grammar, composition, reading and conversation. Students should have completed SPA 1111 and 1112 or the equivalent. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SPA 1122 Intermediate Spanish II** Review of grammar, composition, reading and conversation. Students should have completed SPA 1121 or the equivalent. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SPA 1131 Conversation & Composition I** Intense practice in conversation and composition with emphasis on developing advanced language skills in Spanish. Course conducted in Spanish. Writing Enriched. Students should have completed SPA 1121 and 1122 or the equivalent. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SPA 1132 Conversation & Composition II** Further practice in conversation and composition with focus on advanced proficiency in Spanish. Course conducted in Spanish. Writing Enriched. Students should have completed SPA 1131 or the equivalent. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.



**SPA 1133 Business Spanish I** Credit documents, contracts, business correspondence, and abundant practice in letter writing. Students should have completed SPA 1131 and 1132 or the equivalent. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**SPA 1134 Business Spanish II** Corporations, their organization and function, mortgages, insurance, and taxes. Students should have completed SPA 1131 and 1132 or the equivalent. (3 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Spring 1998.

**SPA 1136 Translation Skills** An introduction to the theory and practice of translation. Students should have completed 1132 or the equivalent. (3 cr)

**SPA 1137 Spanish for Health Professions** Medical terminology and idioms with emphasis on communicative competence. Students should have completed 1132 or the equivalent. (3 cr) Last Offered: Fall 2000, Spring 2000, Fall 1999, Fall 1998.

**SPA 1138 Advanced Grammar** Intensive grammar review with special attention to literary style. Students should have completed 1132 or the equivalent. (3 cr)

**SPA 2142 Spanish Civilization** Civilization and culture of Spain. Students should have completed 1132 or the equivalent. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**SPA 2143 Span Amer Civilization** Spanish-American civilization and culture in its manifold aspects. Satisfies Diversity Requirement. Students should have completed 1132 or the equivalent. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**SPA 2211 Survey of Peninsular Lit** The foremost works of Spanish literature from the beginnings to present day. A required course for majors. Writing Enriched. Satisfies Diversity Requirement. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**SPA 2212 Survey of Span-Amer Lit** Spanish-American literature from colonial times to the present. A required course for majors. Satisfies Diversity Requirement. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001.

**SPA 2213 Spanish-American Theatre** The modern theatre in Spanish America from the turn of the century to the present. Satisfies Diversity Requirement. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Fall 1998, Spring 1997, Fall 1996.

**SPA 2214 Spanish American Novel** Reading and interpretation of Spanish-American novels from the modernist period to the present. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr)

**SPA 2215 Span Amer Short Story** The origins, development and maturity of the short story in Spanish America. Satisfies Diversity Requirement. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Spring 2000, Summer 1999, Summer 1998, Fall 1997.

**SPA 2216 Hist of Spanish Language** Spanish from its origins to the present. Students should have completed 1132 or the equivalent. (3 cr) Last Offered: Fall 1996.

**SPA 2217 Hispanic Lit through Art** Main trends and styles of Spanish and Spanish-American literature analyzed in the light of corresponding trends and styles in the visual arts. From Gonzalo de Berceo to Pablo Neruda. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr)

**SPA 2993 Internship** (3 cr) Last Offered: Fall 2002, Spring 2002.

**SPA 2996 Internship** (6 cr) Last Offered: Fall 2002.

**SPA 3411 Masterpieces of Med Lit** The Cid and other major works of the Spanish Middle Ages: early lyric, epic, ballad, prose. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Spring 2001, Spring 1997, Fall 1995.

**SPA 3412 Special Topics** Advanced study of topics of special interest in Spanish literature. Topics may be repeated for credit. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**SPA 3612 Cervantes** An interdisciplinary approach to Cervantes's work. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Spring 2002, Spring 1998.

**SPA 3613 Prose of Golden Age** 16th and 17th century prose and its cultural and ideological context. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Fall 1996.

**SPA 3614 Drama of Golden Age** The representation of the monarch, women, minority groups, etc. in Golden Age society through its drama. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr)

**SPA 3715 18th Century Literature** Prose, poetry and theatre from Feijoo to Moratin. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Spring 2001, Spring 1999.

**SPA 3717 19th Century Drama** A critical analysis of representative plays. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Fall 1995.

**SPA 3718 19th Century Novel** Reading of novels representing costumbrismo, realismo and naturalismo. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Spring 2002, Fall 1999.

**SPA 3820 Love, Desire and Death** Development of spanish poetry concentrating on early modern romanticism and modernism. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Spring 2001, Spring 1998.

**SPA 3821 La Lirica Espanola II** Contemporary Spanish lyric poetry. Writing Enriched. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Fall 1999, Fall 1995.

**SPA 3822 Spanish American Poetry** The development of Spanish-American poetry from colonial times to the present. Satisfies Diversity Requirement. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Spring 2002, Spring 1999, Fall 1996, Spring 1995.

**SPA 3920 Cont Span Short Fiction** Short fiction in the Spanish literary tradition, with greater emphasis on the fruition of the genre in contemporary Spain. Writing Enriched. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Summer 2002, Fall 2001, Summer 2001, Summer 2000.

**SPA 3921 20th Century Drama** A critical analysis of representative plays from Benavente to the present day. Writing Enriched. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Fall 2002, Fall 2000, Fall 1996, Spring 1995.

**SPA 3923 The Modern Novel** Representative trends in 20th century Spanish novels. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Spring 2000.

**SPA 3924 Spanish Films and Literature** Spanish films based on literary works as a medium will be used to better understand contemporary Spanish culture and civilization. Writing intensive. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Spring 2000, Summer 1999, Spring 1999.

**SPA 3950 Research Methodology** Principles and techniques of literary research. Overview of major Spanish and Spanish-American authors and representative works. Writing intensive. Required for Spanish majors. Students should have completed 1132 or the equivalent. Fulfills core requirements for advanced literature. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999.

**SPA 4100 Span Lit in Eng Trans** Major Works of Spanish literature in translation. Course conducted in English. Fulfills core requirements for advanced literature. (3 cr)

**SPA 4110 The Spanish Epic and Ballad** Readings and discussions in the popular literature, including the folktale. Course conducted in English. Fulfills core requirements for advanced literature. (3 cr)

**SPA 4120 Don Juan** The mythic don, his ancestors and descendants in Spanish literature, from Juan Ruiz to the present. Course conducted in English. Fulfills core requirements for advanced literature. (3 cr)

**SPA 4130 The Modern Spanish Novel** The Spanish Civil War reflected in selected contemporary novels. Course conducted in English. Fulfills core requirements for advanced literature. (3 cr)

**SPA 4140 The Latin American "Boom"** The contemporary novel and short story: Borges, Cartázar, Asturias, Fuentes, Machado de Assis, Rulfo, Garcia Marquez. Course conducted in English. Fulfills core requirements for advanced literature. (3 cr)

**SPA 4150 The Arab-Andalusian Legacy** Fulfills core requirements for advanced literature. (3 cr)

**STA 2107 Introduction to Statistics I** Descriptive statistics, elements of probability, distributions including the binomial, Poisson, hypergeometric and normal; Bayesian inference and sampling distributions; confidence intervals; index numbers; use of statistical methodology to solve business problems. (3 cr) Last Offered: Fall 2000, Summer 2000, Spring 2000, Fall 1999.

**STA 2108 Introduction to Statistics II** Estimation techniques, hypothesis testing, correlation and regression analysis employing computer applications, time series analysis, analysis of variance, and non-parametric methods, application of statistical techniques. (3 cr) Last Offered: Spring 2001, Fall 2000, Summer 2000, Spring 2000. Prerequisites: STA 2107.

**TEST 1000 Test 1** (0 cr) Last Offered: Fall 1998.

**TEST 1001 test 2** (0 cr) Last Offered: Fall 1998.

**THE 2019 The Theatrical Expernce** The variety of arts and crafts that combine to create theatre. Through hands-on experience, discussion, and performance, the interrelations among dramatic idea, stage direction, acting, design and technical elements that harmonize in a theatrical production are discovered. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**THE 2021 Theatre in Philadelphia** (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Spring 2001.

**THE 2025 Improvisational Theatre** Improvisation to explore non-verbal communication strategies and the study of theatre as a communication medium. Readings in non-verbal communication and modern theatre theory. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**THE 2029 Fund Princ of Acting** Traditional acting theories and basic techniques: games, improvisation, sensory awareness exercises and beginning work on scenes. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**THE 2030 Advan Princ of Acting** Creation of an original piece of theater. Self-selected scenes used to deepen individual growth. (3 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Spring 1998.

**THE 2032 Elements of Dance** The broad range of dance styles, dance theory, vocabulary, and body placement. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**THE 2033 Advanced Elements of Dance** Expanded study of dance styles, dance theory, vocabulary, and body placement. (3 cr) Last Offered: Spring 2001, Spring 2000, Spring 1999, Spring 1998. Prerequisites: THE 2032.

**THE 2034 Musical Theatre** Explores the conventions of musical theatre. Practical work in the application of musical performance theory to specific song, movement and stylized acting techniques. (3 cr) Last Offered: Spring 2000.

**THE 2040 Theatre Practicum** Significant and responsible participation in the department's production program. (0 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001.

**THE 2051 Creativity in Theatre** Employing writing, acting, directing, movement, film, music and mixed-media elements, the course creates an experimental definition of theatre including content, structure and form. (3 cr) Last Offered: Fall 2001, Fall 2000, Fall 1999, Fall 1998.

**THE 3006 Shakespeare on Stage** Shakespeare texts as theatrical experiences, including both traditional and modern approaches to directing Shakespeare. Practical scene work to make complex language accessible to beginning students. (3 cr) Last Offered: Spring 2002, Spring 1999, Spring 1997.

**THE 3007 Playwriting** (3 cr) Last Offered: Fall 2002, Spring 2002.

**THE 3008 Black Theatre** Focuses on the development of Black theatre as an outgrowth of African-American historical evolution with an emphasis on those plays which are enduring. (3 cr)

**THE 3020 Teaching of Acting** A laboratory course for teachers of dramatic arts at the junior and senior high school levels. Emphasis is on the development of teaching skills, including exercises in movement, improvisation and scene study. (3 cr)

**THE 3030 Spec Topics in Theatre** A specialized area of theatre studies (e.g., avant-garde, feminist, Asian, Melodrama), combining elements of theatre history, dramatic literature and criticism, as well as performance and production aspects of live theatre. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Summer 2001.

**THE 4010 Scenography** (3 cr)

**THE 4011 Directing the Play** (3 cr)

**THE 4014 Women and Theatre** The contribution of women artists to the American theatre, discussing the particular social issues, and the pertinent historical perceptions and problems encountered by women in the arts. (3 cr) Last Offered: Spring 1995.

**THE 4020 Directed Studies in Theatre** Reading and practical work in a specialized area of theatrical production or scholarship under the direction of a faculty artist or scholar. (3 cr) Last Offered: Summer 2002, Summer 2001, Spring 1999.

**THE 7000 Creative Drama -Teachers** (3 cr) Restrictions: Graduate students and qualified undergraduates.

**THL 1050 Chr:Tradition & Transitions** Required introductory course; a critical, academic introduction to the major themes of the Christian traditions from historical, scriptural and theological perspectives, including themes such as: God, Jesus, the human response to God. Required for all students at the University; Prerequisite for all other courses. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**THL 2000 Introduction to the Bible** Critical analysis of biblical books; general scriptural themes; use of textual, source, form, redaction, and literary criticism. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2050 Introduction to Old Testament** Critical analysis of Old Testament books; Creation, Convent Ten Commandments, Exodus, Conquest, Prophets, Apocalyptic Literature; historical and archaeological focus; use of textual, form, redaction, source and literary criticism. (3 cr) Last Offered: Spring 2002. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2100 Pentateuch and Early History** Moses, Abraham, Jacob, Adam and Eve, David, Solomon, Samson, Samuel and others; social, political and religious life situations of these; relevant ancient Near Eastern beliefs and customs. Prerequisite: introductory Bible course or permission of instructor. (3 cr) Last Offered: Spring 2002, Spring 2001,

Spring 2000, Spring 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2200 Hebrew Prophets** Isaiah, Jeremiah, Ezekiel and "the 12"; the meaningfulness of the Prophets in today's world; Hebrew Wisdom Literature; influence of Egyptian and Greek culture. Prerequisite: Introductory bible course or permission of instructor (*3 cr*) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2300 Intro: New Testament** Critical analysis of New Testament texts; structure, meaning historical development, continuing vitality and application; introduction to transmission of traditions, formation of New Testament canon, use of textual, source, form, redaction, and literary methods. (*3 cr*) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2000. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2310 Synoptic Gospels** Critical analysis of Matthew, Mark and Luke; structure, meaning, historical development, continuing vitality and application; use of textual, source, form, redaction and literary methods (*3 cr*) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2320 New Testament Letters** Critical analysis of Pauline and Catholic epistles; structure, meaning, continuing vitality and application; use of textual redaction, and literary methods. (*3 cr*) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2330 Johannine Literature** Critical analysis of the Gospel and Letters of John: Structure, meaning, historical, development, continuing vitality and application; use of textual, source, form redaction and literary methods. Prerequisite: Introductory bible course or permission of instructor (*3 cr*) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2400 Archaeology of the Bible** Contributions of archaeology to biblical study; the cultural context of people and places depicted in the Bible explanation of archaeological methodology and history of excavations in the ancient Near East and the Holy Land; discoveries relating to the Bible. Cross listed with Honors (*3 cr*) Last Offered: Fall 2000, Spring 1997, Fall 1995, Spring 1995. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2420 Women in the Bible** Analysis of stories about women in the Bible: traditional and feminist readings examined; use of textual, source, form, redaction and literary methods. Diversity; cross-listed with Women's Studies. (*3 cr*) Last Offered: Spring 2002, Spring 2001, Fall 2000, Spring 2000. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2480 Themes in Bible Studies** Interdisciplinary approach to biblical texts. (3 cr)  
Last Offered: Summer 1998. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2490 Bible-Advanced Topics** Critical exegesis of biblical texts: use of scholarly methods of analysis. Prerequisite: Introductory Bible course or permission of instructor. (3 cr) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2500 Ancient Christianity** Early Christian writings, controversies, councils and events growth of Christianity from persecution to official acceptance in the Roman Empire; God, creation, evil, Jesus Christ, Church, Christian living, Holy Spirit, culture. (3 cr) Last Offered: Fall 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2525 Miracles Mystics Monks** Christianization of Europe during the Middle Ages (500-1500) conversion of the Barbarians, the cult of the saints, Monasticism, the sacraments, popular religion, the crusades Heresy and Church Reform. (3 cr) Last Offered: Fall 2001, Spring 1999, Fall 1998, Fall 1995. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2550 Reformation Christianity** The breakdown of the Medieval Church (1500-1700) inaugurated by Martin Luther; the creation of Protestant Churches; the formation of Tridentine Catholicism; the beginning of the Enlightenment. (3 cr) Last Offered: Spring 2000, Fall 1999, Fall 1995. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2575 Christianity & Modern World** Christianity from 1648 to the present; emphasis on the impact from science, philosophy, psychology, socio- political theories, and criticism. (3 cr) Last Offered: Fall 2002, Spring 2001, Fall 2000, Summer 2000. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2590 Historical Themes** Selected topics in historical theology: Religion in the Age of Romanticism; Roman Catholic Modernism; Vatican II: Evolution or Revolution. (3 cr) Last Offered: Fall 2002, Spring 2002, Summer 2001, Spring 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2725 Christian Classics I** Major theological themes in classic texts of Christian History from the early church to Reformation; status and interpretation of biblical literature, grace and freedom, faith and reason, Christ and culture; texts from Augustine, Aquinas, Luther and others. Required for Majors. Restricted to majors or minors or permission of instructor. (3 cr) Last Offered: Fall 2000, Fall 1996. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2726 Christian Classics II** Christian history from seventeenth century to present: hermeneutics and relation between Christian commitment and Culture; texts from diverse theological works of Kierkegaard Rahner, Teilhard, Barth, etc. Required for Majors.



Restricted to majors and minors or permission of instructor. (3 cr) Last Offered: Fall 2001, Spring 1999, Spring 1996. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2750 St. Augustine: Life & Message** Historical context for the life and message of Augustine; significant theological issues, controversies and events, elements of influence. (3 cr) Last Offered: Fall 2002, Spring 2000, Fall 1997, Fall 1996. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2790 Themes in Patristic Studies** Courses of varying content in patristics offered on occasional basis. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 2900 Catholicism in U.S.** The history and development of Catholicism in the United States; emphasis on understanding the present and investigating the future from the perspective of the past. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3100 Christian Anthropology** The relationship between God and the human person from a variety of view points: human origins; the purpose of life; the problem of evil and the human condition; salvation as divinization - insights and approaches of recent writers. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3200 Understanding Jesus** The historical Jesus and questions of method; christologies of the early Christian sources and councils; the later tradition of Christological reflection; contemporary trajectories. (3 cr) Last Offered: Fall 2002, Summer 2002, Fall 2001, Summer 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3300 Church: Unity & Diversity** The origins of church as community and its relation to Jesus; development of the church within history; the ministry of the baptized and the ordained; teaching, leadership, service functions; the role of women; the church's relation to public discourse and practice. (3 cr) Last Offered: Spring 1998. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3325 Authentic Life in Church** Ecclesiological and pastoral issues in contemporary Christian community; authority and shared ministry; obstacles and future possibilities from perspective of scripture, tradition and phenomenology. (3 cr) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3350 Cath Cult & Cath Creed** Consideration of the relationship between Catholic belief and practice as updated and applied in the light of past and present church doctrine. (3 cr) Last Offered: Spring 1996. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3400 Sacraments** History of Christian sacraments; sacraments as celebrations of life in God; theology of worship as fulfillment of being human; present and future shapes of Christian liturgy; applications to particular sacraments, e.g., baptism, reconciliation, eucharist. (3 cr) Last Offered: Fall 2002, Spring 2000, Fall 1999, Spring 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3500 God and History's Future** The process of history as a cooperative venture of divine and human activity; creation and incarnation-God's initiatives within a future-oriented process; human suffering, the cross, resurrection; human freedom and redeemed optimism; Christians critical participants in society. (3 cr) Last Offered: Spring 2001, Summer 1999, Spring 1999, Spring 1998. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3550 Presence and Absence of God** Theism and the atheistic critiques of the nineteenth and twentieth centuries; the problem of God in western culture; contemporary retrieval of the doctrine of God as Trinity. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: THL 1050 or HON 1003 or HON 1053 or HON 1825.

**THL 3600 Christians at Prayer** What Christians do or say at prayer; prayer as the dynamic of the Christian community; Jewish roots; liturgy as prayer; prayer as the ground of theology. (3 cr) Last Offered: Summer 2001, Spring 2001, Fall 2000, Fall 1996. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3700 Catechism of the Cath Church** Theological analysis of the most recent official statement (Catechism of the Catholic Church, 1992, ET 1994) of the practices and beliefs of Roman Catholicism. (3 cr) Last Offered: Fall 1997, Fall 1996. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3710 Roman Catholic Identity** A critical exploration of the Roman Catholic tradition in the light of the student's personal experience; identity issues and church membership of young adults. Restricted to seniors or juniors or permission of instructor. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3720 Apocalypse Then and Now** The end of the world in present-day imagination; Christian hope/anxiety through the centuries; biblical apocalyptic; endtime views in the early church; significant figures and movements; beyond the millennium. (3 cr) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3730 Feminist Theology** Examination of feminist theological methods and goals; theological reconstructions of Christian understandings of nature, humanity, God, sin and salvation, the church and its mission from the perspective of women's experiences. (3 cr) Last Offered: Spring 2002, Spring 2001, Spring 2000. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3740 Liberation Theologies** Theologies emerging from specific struggles for liberation in Latin American, Africa, Asia, and North America; their context, content, and critique. (3 cr) Last Offered: Fall 2002, Spring 2002. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3750 Art and Religious Imagination** Art as orchestration of transcendence; critiques of traditional images of God; role of religious imagination in society, spirituality, and sacramentality. (3 cr) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3790 Themes in Doctrinal Studies** Current themes in the development of doctrine. (3 cr) Last Offered: Fall 2002, Fall 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 3795 Themes in Roman Cath Studies** Themes of current importance in Catholic theology or practice. (3 cr) Last Offered: Summer 2002, Spring 2002, Spring 2001, Spring 2000. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4100 Christian Ethics** Christian moral commitment; current moral problems facing the Catholic; the nature of the human person; Jesus as the model and source of moral life; the development of teachings in morality and the role of the authority of the Church. (3 cr) Last Offered: Spring 2002, Fall 2001, Spring 2001, Fall 2000. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4200 Ethics of Life and Death** Explorations of selected issues in biomedical ethics (e.g., abortion, euthanasia). (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4300 Ethical Issues in Peace & Just** Intensive study of one or two timely issues or problems in moral theology: Christian teaching on war, conscientious objection, pacifism, poverty, social justice. (3 cr) Last Offered: Summer 2002, Summer 2001, Summer 2000, Summer 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4310 War and Morality** Just war, pacifism, and feminist critique--three Christian traditions of reflection on ethics and warfare; conflicts and overlap across these traditions; close examination of historical illustrations of the conduct of war. (3 cr) Last Offered: Fall 2002, Spring 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4320 Christ. Social Teachings** Historical and systematic examination of major modern Christian movements in social ethics, e.g., the Social Gospel, Christian realism, Catholic social thought; the relevance of these schools to current reflection on war and peace, justice and injustice. (3 cr) Last Offered: Fall 2000. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4330 Theology, Ethics, & Christ Trd** The methods and sources of Christian theological ethics; classic approaches of Augustine, Aquinas, Luther, Calvin and contemporary representatives; the meaning of Christian love; Christ and the moral life; the relations between church and world. (3 cr) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4340 Ethics, Justice and the Family** Interdisciplinary investigation of the moral and theological importance of the family in Christian ethics; traditional and revisionist approaches to sexuality and marriage; the family as a school for justice and virtue. (3 cr) Last Offered: Fall 2001, Fall 1999, Spring 1998, Spring 1997. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4350 Serv Learnng Charity/Soladarity** The integration of action and critical reflection; U.S. proverty, hunger, and homelessness: its victims, roots, and remedies; the Christian moral imperative to love the neighbor; service, advocacy and solidarity (15 hours of service required) Permission of instructor (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4400 Christian Marriage** Christian marriage in the 20th century; scriptural, historical, legal, and moral issues; preparations for the wedding liturgy and Christian married life. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4500 Christian Spirituality** The Christian spiritual experience through the centuries. (3 cr) Last Offered: Fall 1997, Spring 1997, Spring 1996. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4600 Global Poverty & Justice** Promoting equitable, sustainable development: Challenges and choices; Colonialism, trade, aid, investment, population, consumption, militarism, race and gender equality, ecology. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 4690 Themes: Christian Living** Selected topics in christian living. (3 cr) Last Offered: Fall 2002, Spring 2002. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5100 Heritage of Judaism** Development of the religious tradition of the Jewish people; the Torah, the Talmud and other commentaries; Jewish ideals in ethnic literature. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 1999, Spring 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5150 Introduction to Islam** Islam: history and development; beliefs and rituals; sects and intellectual movement. Diversity, Africana Studies, concentration or minor in Arab/Islamic Studies (3 cr)

**Last Offered: Fall 2002, Spring 2002, Spring 2001, Fall 2000. Prerequisites: THL 1050** or HON 1825 or HON 1003 or HON 1053.

**THL 5160 Islamic Mysticism** Islamic Mysticism: sources; development and principles; contribution and influence; cross list with Philosophy. Diversity, concentration or minor in Arab/Islamic Studies. (3 cr) Last Offered: Spring 2000, Fall 1997. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5170 Islamic Philosophy & Theology** Islamic relationalism and the crisis of moderate and conservative Muslim theologians; the dialectical struggle between Islamic philosophy and theology. Cross listed with Philosophy. Diversity, concentration or minor in Arab/ Islamic Studies. (3 cr) Last Offered: Fall 2002, Fall 1998. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5180 Islamic Political Thought** Integration of Islamic philosophy, religion, political science and history; the state in pre-Islamic Arabia, the Qur'anic concept of the state, the crisis of succession, Muslim theorists, revival and reform. Cross listed with Philosophy. Diversity, concentration or minor in Arab/ Islamic Studies. (3 cr) Last Offered: Fall 2000, Spring 1997. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5190 Problem of Evil** Formulations of the problem and historical attempts to solve it. Diversity, medieval Philosophy, concentration or minor in Arab/Islamic Studies. (3 cr) Last Offered: Spring 2001, Spring 1999, Spring 1998. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5260 Mysticism: East & West** A comparison of non-institutional forms of religion through the mystical texts from the Indian, Chinese, Buddhist and Christian traditions. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5270 Rel in India & S E Asia** The doctrinal and social history of the religious traditions of India and Southeast Asia: Hinduism, Buddhism, Jainism, Islam and Sikhism; the role of these religious in contemporary Indian and Southeast Asian societies. (3 cr) Last Offered: Spring 2002, Fall 2000, Spring 1999, Spring 1997. Prerequisites: HON 1825 or THL 1050 or HON 1003 or HON 1053.

**THL 5280 Rel in China & Japan** The doctrinal and social history of the religious traditions of East Asia: Confucianism, Taoism, Shinto, Buddhism; popular religion and state cults; the role of these religions in contemporary Asian societies. (3 cr) Last Offered: Fall 2001, Spring 2000, Fall 1998, Fall 1996. Prerequisites: HON 1825 or THL 1050 or HON 1003 or HON 1053.

**THL 5285 Buddhist Tradition** The doctrinal and social history of Buddhism: its origins in India, its current forms in Central, East and Southeast Asia; the role of Buddhism in

contemporary Asian societies. (3 cr) Last Offered: Fall 2002, Spring 2001, Fall 1999, Fall 1997. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5300 East Christian Life & Thought** The historical and theological developments of the Eastern Christian tradition, relationship with other contemporary religious traditions. (3 cr) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5400 Science & Religion** The interaction of science and religion from Galileo to the contemporary period. Theological implications of recent developments in the natural sciences. (3 cr) Last Offered: Fall 2002, Spring 2001, Fall 2000, Summer 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5500 One Church, Many churches** The issues that divided Christians in the past; developments in the major traditions since the divisions; factors which may aid in the reunion of Christians; confront issues at this time. (3 cr) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5510 Religion in Russia** The history, mind, spirit and life of Russia Orthodoxy; its influence in its adherents in the modern, complex and pluralistic world. (3 cr) Diversity; Russian Concentration. (3 cr) Last Offered: Spring 2002, Fall 2001, Fall 2000, Fall 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5700 Black Religious Experience** Black religious experience and heritage; African and Afro-American perspectives. (3 cr) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5800 Religion and Literature** Religious attitudes and experience in contemporary literature. (3 cr) Last Offered: Spring 2001, Fall 2000, Spring 2000, Fall 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5820 Rel & Ed in America** The role of religion and education in the formation of American culture; historical perspectives on Catholic and Protestant strategies in the education of the public; contemporary issues of religious pluralism and the search for the common good; religion and education in a culture of disbelief. (3 cr) (3 cr) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5840 Feminist Ethics** Theories of moral development and the cultural construction of identity; impact of women's ways of being and knowing on ethical decision making. (3 cr) Diversity; Women Studies. (3 cr) Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5850 Women in Rel & Society** Examination of women's experiences in religious traditions with special emphasis on Christianity. Diversity, Women's Studies. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Spring 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5900 Religion & Psychology** Attempts of James, Freud, Jung, Fromm, Allport, Maslow, Erikson and others to relate religion and psychology. (3 cr) Last Offered: Spring 1999, Fall 1998, Spring 1997, Summer 1996. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5950 Death and Dying** Psychological, philosophical, and theological contributions to the search for meaning regarding dying, death, and belief in afterlife; practical issues; biblical perspectives; the views of other religions; contemporary Christian theological reflections. (3 cr) Last Offered: Summer 2002, Spring 2002, Summer 2001, Fall 2000. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 5990 Ecumen & Cultural Studies** Courses of varying content of ecumenical and cultural studies offered on an occasional basis. (3 cr) Last Offered: Spring 2002, Summer 2001, Fall 2000, Summer 1999. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 6400 Independent Study** Permission of chairperson required. (3 cr) Last Offered: Fall 2002, Spring 2002, Fall 2001, Summer 2001. Prerequisites: THL 1050 or HON 1825 or HON 1003 or HON 1053.

**THL 7000 Foundational Theology** Basic questions in the contemporary theological project; historical and hermeneutical consciousness, the question of God, religious experience, revelation and faith, the relationship between scripture and tradition, etc. Contemporary theology studied by appropriating the various "turns" in recent thought: "turns to the subject," "the socio-political turn," and "symbolico-linguistic turn." Restricted to Deacon Formation Programs. (3 cr) Restrictions: Graduate students and qualified undergraduates. Last Offered: Fall 1998.

**WS 3000 Independent Study** Approval of Women's Studies Director required. (3 cr) Last Offered: Fall 2002, Summer 2002, Spring 2002, Fall 2001.

**WS 5000 Integrating Seminar** An interdisciplinary course that focuses on a topic through a methodology that requires Women's Studies minors to provide input from the research areas of their majors. Approval of Director of Women's Studies required. (3 cr) Last Offered: Fall 2002, Spring 2002, Spring 2001, Spring 2000.