The UNIVERSITY of VERMONT

CATALOGUE

2006–2007

UVM

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The Catalogue is prepared by the Provost's Office.

The Catalogue may be found at www.uvm.edu/academics/catalogue2006-07

Printed on recycled paper.

Academic Calendar

FALL 2006

Classes Begin	August 28	Monday
Labor Day Holiday	September 4	Monday
Add/Drop,Audit, Pass/No Pass Deadline	September 11	Monday
Last Day to Withdraw	October 27	Friday
Thanksgiving Recess	November 20-24	Monday-Friday
Classes End	December 7	Thursday
Reading and Exam Period	December 8-15	Friday-Friday
Reading Days	December 9, 10, 13	Saturday, Sunday, Wednesday
Exam Days	December 8, 11-12, 14-15	Fri., Mon.-Tues., Thurs.-Friday

SPRING 2007

Martin Luther King Holiday	January 15	Monday
Classes Begin	January 16	Tuesday
Add/Drop,Audit, Pass/No Pass Deadline	January 29	Monday
President's Day Holiday	February 19	Monday
Town Meeting Day Recess	March 6	Tuesday
Spring Recess	March 12-16	Monday-Friday
Last Day to Withdraw	March 23	Friday
Honors Day	April 20	Friday
Classes End	May 2	Wednesday
Reading and Exam Period	May 3-11	Thursday-Thursday, Friday
Reading Days	May 3, 5-6, 9	Thurs., Sat.-Sun.,Wednesday
Exam Days	May 4, 7-8, 10-11	Fri., Mon.-Tues., Thurs.-Fri.
Commencement	May 20	Sunday

Academic Calendar information for upcoming years is available on-line at:
http://www.uvm.edu/~rgweb/calendar/

Notes:

Refer to the policy on Class Attendance in the Academic and General Information section for information regarding observance of religious holidays and participation in intercollegiate athletics.

Students at The University of Vermont are responsible for knowing and complying with all requirements for their respective degrees as stated in the catalogue.

The University of Vermont reserves the right to make changes in the course offerings, degree requirements, charges, and regulations, and procedures contained herein as educational and financial considerations require, subject to and consistent with established procedures and authorizations for making such changes.

Although its legal title is The University of Vermont and State Agricultural College, the University is known to its students and alumni as UVM. This popular abbreviation is derived from the Latin *Universitas Viridis Montis*, University of the Green Mountains.

The colors of the University are green and gold.
The mascot is the catamount.

Introduction

THE UNIVERSITY MISSION

The mission of the University of Vermont is to prepare students to lead productive, responsible, creative lives and to create, interpret and share knowledge, applying it for the benefit of Vermont and society as a whole.
Through our efforts the University of Vermont will have a superior national reputation:

- As a university combining outstanding teaching with the research focus, faculty excellence, programmatic range and depth, and societal mission of a research university;
- As a vibrant, diverse, and intellectually engaged community on a human scale;
- As a place that emphasizes academic excellence and provides an exceptional student-centered experience extending beyond the classroom; and
- As a leader in liberal education and in the study of the environment and of health.

THE UNIVERSITY: A BRIEF HISTORY

Chartered in 1791, the same year that Vermont became the fourteenth state in the union, The University of Vermont was established as the fifth college in New England (after Harvard, Yale, Dartmouth and Brown). The initials UVM stand for the Latin term Universitas Viridis Montis, or University of the Green Mountains. The phrase appears on the university's official seal as Universitas V. Montis.

Much of the initial funding and planning for the university was undertaken by Ira Allen, who is honored as UVM's founder. His statue sits on the university's main green.

The citizens of Burlington helped fund the university's first building, and, when fire destroyed it in 1824, also paid for its replacement, Old Mill. The Marquis de Lafayette, a French general who became a commander in the American Revolution, laid the cornerstone for Old Mill, which still stands on University Row, along with Ira Allen Chapel, Billings Student Center, Williams Hall, Royall Tyler Theatre and Morrill Hall. A statue of Lafayette sits on the north end of the main green.

Although it began as a private university, UVM attained quasi-public status with the passage of the Morrill Land-Grant College Act in 1862 and the addition of the State Agricultural College. Today, the university blends the traditions of both a private and public university, drawing 21 percent of its general fund (and about 10 percent of its current operating budget) from the state of Vermont.

Throughout its history, the University of Vermont has demonstrated its commitment to fairness and equality. It was the first American college or university with a charter plainly declaring that the "rules, regulations, and by-laws shall not tend to give preference to any religious sect or denomination whatsoever."

In addition, the university was an early advocate of both women's and African-Americans' participation in higher education. In 1871, UVM defied custom and admitted two women as students. Four years later, it was the first American university to admit women to full membership into Phi Beta Kappa, the country's oldest collegiate academic honor society. Likewise, in 1877, it initiated the first African-American into the society.

Some of our most famous graduates exhibit a similar social consciousness. They include John Dewey, the late-19th-century educational philosopher; Jody Williams, recipient of the 1997 Nobel Peace Prize for the international campaign to ban landmines; John McGill, who led the U.S. section of Doctors Without Borders when it won the Nobel Peace Prize in 1999; and John Kilik, who has produced groundbreaking major motion pictures, including "Malcolm X," "Do the Right Thing" and "Dead Man Walking."

During 2005-2006, 8,784 students were enrolled in the seven undergraduate colleges and schools — the Colleges of Agriculture and Life Sciences, Arts and Sciences, Education and Social Services, Engineering and Mathematical Sciences, and Nursing and Health Sciences, The School of Business Administration, and The Rubenstein School of Environment and Natural Resources, — and 1,300 were enrolled in the Graduate College and 406 in the College of Medicine. In addition, 1,075 students enroll in courses offered by Continuing Education. The University employs over 3,600 full- and part-time faculty and staff.

The campus of The University of Vermont is located in Burlington, the State's largest city. Within a greater Burlington area of 132,000 people, the city with its population of 40,000 enjoys magnificent views of Lake Champlain and the Adirondack Mountains to the west and Vermont's Green Mountains to the east. Burlington is located approximately 200 miles northwest of Boston, 300 miles north of New York City, and 100 miles south of Montreal.

UNIVERSITY ADMINISTRATION AND GOVERNANCE

The University of Vermont combines elements of a private and public institution, a unique arrangement that is reflected in the makeup of the Board of Trustees.

The board, which has full legal responsibility and authority for the university, consists of 25 members: nine legislative; nine self-perpetuating; three gubernatorial; two students; and two ex-officio members, the governor of Vermont and the president of the university.

The trustees set and approve policies, budgets and strategic planning, and they have the authority to confer tenure on faculty members, award honorary degrees and appoint the president of the university.

The administration, led by the president and the senior vice president / provost, and the Faculty Senate share responsibility in managing the university's academic affairs.

The Staff Council works with the administration on issues and policies that affect university staff.

The Graduate College

The Graduate College of The University of Vermont is responsible for all advanced degree programs except the program leading to the degree of Doctor of Medicine. The Mission Statement for the Graduate College is as follows: The mission of the Graduate College is to provide the environment for high quality graduate education by stimulating and supporting the intellectual and professional development of a diverse faculty and student body; by promoting interdisciplinary and innovative forms of scholarship, research, and curricula; and by recognizing scholarly excellence.

Although the Graduate College was established formally in

1952, the University recognized early the value of graduate education, awarding its first master's degree in 1807. Today, the Graduate College offers 52 different master's programs of study and 22 doctoral programs. During the 2004-2005 academic year, 430 master's and 59 doctoral degrees were awarded. The College enrolls approximately 1,300 students, with about 400 of these pursuing the doctorate.

The combination of sound library holdings, laboratories, and computer facilities, along with the engaging size of the University, affords a unique opportunity to pursue high quality graduate programs in a challenging yet personable environment.

A variety of scholarships, fellowships, assistantships, and loan programs are available in limited numbers to students with solid and sustained records of academic performance.

College Of Medicine

The UVM College of Medicine is one of the oldest and most respected medical schools in the nation. Since its establishment in 1822, the College's mission has been the education of undergraduate and medical students. This has evolved to include the education of residents, graduate students, and postdoctoral fellows, as well as continuing medical education of health professionals in the state, region, and the nation. During the past 30 years the College's mission has embraced cutting-edge health research, accessible high quality patient care, and community / public service. Physicians educated or trained at the UVM College of Medicine and its affiliated health care organization — Fletcher Allen Health Care — are a vital part of the region's health care work force, accounting for nearly half of Vermont's physicians.

This catalogue includes the M.S. and Ph.D. programs that are offered in conjunction with the Graduate College. For more information on M.S., Ph.D. and M.D. programs please refer to the Online Catalogue: www.uvm.edu/academics/catalogue2006-07.

Continuing Education

Continuing Education (CE) serves the University of Vermont's commitment to lifelong learning and statewide outreach. Through the development and delivery of courses and programs on the UVM campus, online, and at designated off-campus locations (regionally, nationally, and internationally), Continuing Education connects the resources of the University with the needs of diverse non-degree students year-round and undergraduate and graduate students during the summer and winter sessions. CE's innovative courses, programs, certificates, and professional education opportunities attract more than 8,000 individuals from Vermont and beyond.

Advising services are available to anyone enrolled in Continuing Education or who may be interested in enrolling in the future. Advisors are well versed in non-traditional student issues, available to answer questions about educational opportunities at the University, and can refer potential students to the appropriate offices when necessary. In addition to discussing admission and academic requirements, advisors also help resolve administrative problems and answer questions about University policy.

The Continuing Education office is located at 322 South Prospect Street, (802) 656-2085 / (800) 639-3210. CE's web address is learn.uvm.edu and our email address is learn@uvm.edu.

University Extension

UVM Extension is one of the doors The University of Vermont for Vermonters. Extension faculty and program staff, located on-campus and in all regions of the state, offer up-to-date information to help Vermonters make informed choices, answer questions, and solve problems.

Extension provides a two-way link between the University and the people of the state — using knowledge and research to meet their needs and bringing back to the University the real-life questions and concerns needing further research. Areas of priority are agriculture; community resources and economic development; natural resources and environmental management; nutrition, food safety, and health; and youth and family development.

University Libraries

The main unit of the University libraries, Bailey/Howe Library, provides services, print, and electronic resources relating to the humanities, social sciences, and many of the sciences. This library houses the largest book, periodical, and map collection in Vermont. It is a depository for U.S. and Canadian government publications, and provides a full service Patent and Trademark Depository Library. The Special Collections Department includes a comprehensive collection of Vermont materials, the Wilbur Collection, rare books, literary and historical manuscripts, and the papers of many individuals associated with the state and federal governments. A separate Chemistry and Physics library is located in Cook Physical Sciences Building. Collections relating to medicine and the health sciences are housed in the Dana Medical Library.

Most library holdings are accessible through the online catalog Voyager and the gateway to information sources, SAGE. Many additional resources and information about the Libraries can be accessed through the Libraries web page http://library.uvm.edu. Sage provides access, in a fully integrated way, to Voyager, on-line indexes, full text magazines and reference works, and the World Wide Web.

The Library Research Annex (LRA), located just beyond Police Services (directly east of the corner of East Avenue and Carrigan Drive), contains many older and less used books, periodicals, government documents as well as the UVM archives.

Robert Hull Fleming Museum

The Fleming Museum is an important art center and multicultural resource for the UVM community. It houses a collection of more than 18,000 works, including American and European paintings and works on paper, American decorative arts and costumes, and outstanding collections of art and artifacts from African, ancient Egyptian, Pacific, and Native American cultures. In addition to the permanent galleries, changing exhibitions are shown throughout the year. Lectures, workshops, films, performances, and exhibition openings are held in conjunction with exhibitions and are free to UVM students, faculty, and staff.

The Fleming Museum provides access to the collections and exhibitions for study and research. Undergraduate and graduate students from the departments of art, history, English, education, and anthropology have assisted with the production of exhibitions, art classes for children, and community family day. Interns receive academic credit for their work. Over 40 work study students each semester work in the Museum in the areas of education, public relations and marketing, security, and exhibition design and construction.

Stocked with books, posters, and items related to the exhibitions, the Museum Store is an inviting resource at gift-giving time. The Fleming has more than 700 members, with a student membership category available.

Theatre

The Royall Tyler Theatre is the home for the season of plays presented by the Department of Theatre. Our season is made up of three main stage productions, a holiday play for children, and an evening of one-act plays directed, performed, and designed entirely by students.

The Department of Theatre, in collaboration with the University Resident Theatre Association (URTA), brings professional guest artists — performers, directors, designers — to work side-by-side with students on our main stage productions.

The arts are vital to individuals as well as civilizations, and the Department presents the fruits of the artistic work of students and faculty alike. Within the context of a liberal arts college, the theatre program in the classroom and on the stage and public platform attempts to expose its audience to its theatrical heritage. A rich curriculum is enhanced by an adventurous production schedule. The Department also offers courses and activities in public speaking and debate, the excellence of which are nationally recognized. All members of the UVM community are encouraged to participate in these programs and to share the Department's commitment to vital living theatre.

Music

Opportunities for participation and appreciation are available for students with strong musical interests. The University Choir, Choral Union, and Catamount Singers are open by audition to students seeking participation in choral ensembles. The University Band, Jazz Band, Vermont Winds, Brass, Tuba, and Percussion ensembles, Trombone Choir, and University Orchestra provide performance opportunities for instrumentalists. All perform in various public presentations during the year. On occasion, the Choir and Choral Union have been invited to perform with the Vermont Symphony Orchestra; the University Pep Band performs at athletic events, and the Band mounts a spring tour. The University Orchestra presents several varied concerts of standard orchestral literature plus concertos featuring outstanding music students or combines forces with the vocal ensembles for presentation of major choral works.

In addition to the larger ensembles, faculty and senior recitals, special departmental concerts, and guest artists are scheduled throughout the school year. Individual instruction on all orchestral instruments, piano, organ, harpsichord, guitar, and voice may be arranged (contact the Music Department office for specific information).

The offices of the Music Department are located in the Music Building on Redstone Campus. An important feature of this facility is its beautiful recital hall, which houses the C.B. Fisk organ, one of the finest instruments in the Northeast. The Music Department serves as a showcase for the musical talents of the music majors and the faculty, as well as for those students seeking musical activity as a part of their extracurricular life on campus.

The George Bishop Lane Artists' Series

Established in 1955 with a generous gift from the Lane family, the Lane Series features a diverse season of performing arts events including classical music, early music, opera, theatre, jazz, and folk music. Each year brings a variety of artists – from established international favorites to promising new talent.

Serving as a link among many constituencies, the Lane Series finds its audience, volunteers, and advisors from the students, faculty, and staff of UVM as well as the community at large. In addition to the presentation of performances, the Lane Series ensures students and public direct interaction with performers through master classes, workshops, residencies, lectures, and receptions. The Friends of the Lane Series serve as advisors and volunteer many hours of service; corporate and private sponsors throughout the state provide financial support.

The Lane Series is a part of Continuing Education. The offices are located at 460 So. Prospect St., VT (802) 656-4455. Tickets are available at the Flynn Regional Box Office (802 656-3085) or on line at www.uvm.edu/laneseries/?Page=about.html.

Lawrence Debate Union

The Lawrence Debate Union (LDU) provides an opportunity for interested students to participate in intercollegiate debating. LDU members attend debate tournaments throughout the nation, each year engaging in over 400 debates at more than a dozen tournaments. Competition of this caliber teaches skills of efficient research, rigorous thought, and effective communication. The program is designed to develop the abilities of both the experienced debater and the beginner. Outstanding performers receive recognition in the form of annual awards. The LDU sponsors a weekly television show (Flashpoint), the annual World Debate Institute Summer programs, and the world's largest debate instruction website (http://debate.uvm.edu).

Morgan Horse Farm

The Morgan Horse Farm in Weybridge, Vermont, 35 miles south of the main campus, has been a shrine for Morgan horse lovers for more than a century. The Morgan breed dates back to 1789 when the first small but powerful stallion was born to a mare owned by school teacher Justin Morgan.

The Morgan Farm was established in 1878 by Joseph Battell of Middlebury who compiled the first volume of the Morgan Horse Registry and constructed the farm landmark, an ornate Victorian barn with mansard roof. In 1907, Battell deeded the farm to the U.S. Government, which in 1951 turned the farm over to The University of Vermont.

The farm has become a laboratory for UVM students and the focal point for Morgan Horse lovers around the world. The farm continues to host thousands of visitors annually.

A versatile, highly intelligent horse, the Morgan is Vermont's State Animal. The Morgan Horse Farm is conducting crucial research on reproductive physiology and the breeding program at the Morgan Farm has produced numerous blue ribbon winners at the National Morgan Horse Show.

HONORARY AND RECOGNITION SOCIETIES

Honorary and recognition societies at The University of Vermont recognize student contributions to the UVM community and their leadership in campus life.

University honorary societies include Boulder Society, which acknowledges outstanding senior men; and TOWERR, which acknowledges outstanding senior women.

National honorary societies represented on campus are as follows:

The ***Phi Beta Kappa Society*** established the Vermont Alpha Chapter at the University in 1848 and the local chapter was the first in Phi Beta Kappa to initiate women into membership. Initiates are chosen on the basis of high scholastic standing with emphasis on a broad distribution of liberal studies. This is interpreted to mean course work in all seven

College of Arts and Sciences distribution categories including intermediate-level foreign language study. Membership criteria are published on the Web; interested students and advisors should consult the chapter president.

Mortar Board is a national society for senior women and men. Although membership in Mortar Board comes as a high honor for a UVM student in recognition of outstanding service, scholarship, and leadership, it is also a challenge for continued unselfish service in the best interests of the college campus.

Golden Key National Honor Society recognizes the top fifteen percent of juniors and seniors in all fields of study. The society emphasizes scholarship and community service.

The ***Society of the Sigma Xi,*** established in 1945, initiates those who have proven their ability to do research in one of the sciences, including students who have a high scholastic standing.

The *National Society for Collegiate Scholars (NSCS)* recognizes first- and second-year students for outstanding academic achievement.

The alpha chapter of ***Nu Delta Epsilon*** was established at UVM in 1993. It is the first national honor society to recognize non-degree students who excel academically and exhibit a strong commitment to higher education and personal achievement.

Other national honorary societies include: Alpha Kappa Delta (sociology), Alpha Omega Alpha (medical), Alpha Zeta (agriculture), Beta Gamma Sigma (business administration), Chi Epsilon (civil engineering), Eta Sigma Phi (classical studies), Delta Sigma Rho (debating), Gamma Theta Upsilon (geography), John Dewey Honors Program (College of Arts and Sciences), Justin Morrill Honors Program (College of Agriculture and Life Sciences), Kappa Delta Pi (education), Lambda Alpha (anthropology), Lola Aiken Scholars Program (School of Natural Resources), Omicron Nu (home economics), Order of Omega (fraternities and sororities), Phi Alpha Theta (history), Phi Eta Sigma (first-year students), Pi Sigma Alpha (political science honors society), Political Science Honors Program, Sigma Phi Alpha (dental hygiene), Sigma Theta Tau (nursing), Tau Beta Pi (engineering), Upsilon Pi Epsilon (computer science).

ACCREDITATIONS

The University of Vermont is accredited by the New England Association of Schools and Colleges, Inc., a nongovernmental, nationally-recognized organization whose affiliated institutes include elementary schools through collegiate institutions offering postgraduate instruction.

Accreditation of an institution by the New England Association indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer group review process. An accredited school or college is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the New England Association is not partial but applied to the institution as a whole. As such, it is not a guarantee of the quality of every course or program offered or the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the institution.

Inquiries regarding the status of an institution's accreditation by the New England Association should be directed to the administrative staff of the University. Individuals may alsocontact the New England Association of Schools and Colleges, 209 Burlington Road, Bedford, MA 01730-1433, (781) 271-0022.

Specific academic program accreditations include:

Agriculture and Life Sciences

Dietetics — Commision on Accreditation for Dietetics Education

Arts and Sciences

Chemistry — American Chemical Society

Speech-Language Pathology — American Speech-Language-Hearing Association

Clinical Psychology — American Psychological Association

Business Administration

AACSB International — The Association to Advance Collegiate Schools of Business

Education and Social Services

Athletic Training Education Program — Commission on Accreditation of Allied Health Programs

Social Work — Council on Social Work Education

Teacher Education — Vermont Department of Education

Athletic Training — Commission on Accreditation of Allied Health Education Programs

Counseling — Council for Accreditation of Counseling and Related Educational Programs

National Council for Accreditation of Teacher Education

Engineering and Mathematical Sciences

Engineering Programs — Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc.

Medicine

Liaison Committee on Medical Education, American Medical Association — Association of American Medical Colleges

Nursing and Health Sciences

Biomedical Technologies

Medical Laboratory Science — National Accrediting Agency for Clinical Laboratory Science

Nuclear Medicine Technology — Joint Review Committee on Education Programs in Nuclear Medicine Technology

National League for Nursing Accrediting Commission, Inc.

Physical Therapy — American Physical Therapy Association — Commission on Accreditation in Physical Therapy Education

Admission to the University

GENERAL ADMISSIONS CRITERIA

The University of Vermont selects those students who demonstrate the greatest potential for academic success at the University based on prior academic performance.

Recognizing the University's focus on engagement with local, state, national and global communities, admission policies focus on achieving geographic balance; variety of experience and background; and cultural/economic diversity within the fabric of its student population. As a state-assisted university, the University of Vermont has a special commitment to Vermont residents, a commitment reflected by ensuring that Vermont students receive priority consideration in the admissions process. Our commitment to forging a diverse education community is manifested in a special effort to recognize and meet the educational needs of members of ALANA (African American, Latino, Asian, and Native American) populations.

Determining potential for a student to benefit from a UVM education lies at the heart of the work of the University's Office of Undergraduate Admission. This determination is based on a blending of the academic record with other attributes in a student's background. A candidate for admission must demonstrate an ability to perform at a high level scholastically. For a first-year student, this is determined by performance in high school and on standardized examinations. Transfer and non-traditional candidates will be evaluated on the results of completed college-level course work, standing at previous institutions, and/or other educational credentials appropriate to student age and educational history. At a minimum, candidates for admission are expected to complete the entrance requirements established by the UVM faculty to ensure exposure to broad fields of intellectual inquiry; some programs require further study in areas relevant to professional development. Additionally, to form a comprehensive view of a student's candidacy, University admission staff gauge the rigor of a student's program by reviewing breadth of study and course levels (e.g. Honors and AP course work); measure the student's relative standing in the graduating class through grade point average, class rank, or other indices; observe trends in the student's performance over time; and assess the competitive nature of the high school and/or college environment. Standardized test scores are viewed as one of several indicators of student academic potential and not as a single criterion for admission to the University.

Beyond academic credentials, other characteristics and experiences in a student's background are reviewed in making an admission decision — particularly when the academic record in isolation is not decisive. Required student essays, recommendations, and other evidence of the student's life experiences are examined to more fully understand the student's potential to succeed and contribute at UVM. All achievements, both academic and non-academic, will be considered in the context of the opportunities an applicant has had, hardships or unusual circumstances faced, and the response to these. Evidence of special talents, community service, imagination and tenacity are also considered indicative of promise for future contributions to the life of the University and to its mission. Admission decisions are made without regard to family financial circumstances, although University financial aid and scholarship funding is deployed on the basis of academic merit as well as financial need.

Although University Admissions staff makes final admission decisions, consultation with academic unit representatives precedes any decision for a student whose credentials may not be clear and decisive. Admission policies are made by the Department of Admissions in collaboration with the schools and colleges that constitute The University of Vermont and are subject to review by The University of Vermont Faculty Senate and the Board of Trustees.

Admissions Requirements and Recommendations by UVM College/School

Each of the University's undergraduate colleges and schools reserves the right to set additional requirements for their majors and to recommend courses of study beyond the minimum presented below.

College of Agriculture & Life Sciences

Required courses: One year of biology and one year of chemistry for science majors.
Recommended: Candidates are strongly encouraged to take one year of physics and at least one year of math beyond Algebra II (calculus is preferred).

College of Arts & Sciences

Recommended: Course work across the span of liberal arts disciplines; four years of math, including trigonometry; foreign language study all four years of high school.

School of Business Administration

Required: Four years of mathematics with high achievement, including at least one year beyond Algebra II. Trigonometry or pre-calculus courses are preferred.
Recommended: Additional science work.

Minimum Entrance Requirements

At a minimum, candidates for all majors at UVM are expected to have met the following requirements prior to entry.

4 years of English

3 years of Mathematics (Algebra I, geometry, Algebra II, or equivalent courses)

3 years of social science

2 years of natural or physical science, including a lab science

2 years of the same foreign language; (American Sign Language meets this requirement.)

Course work not completed at the high school level may be fulfilled by equivalent college-level academic work.
In general, one semester of college work is considered the equivalent of one year of high school study.
Any exceptions to these requirements are made on a case-by-case basis.

College of Education & Social Services

Recommended: One year of biology for Human Development and Family Studies and Social Work majors.Math and science course work beyond the minimum for teacher education majors.

College of Engineering & Mathematical Sciences

Required: Four years of mathematics, including trigonometry or pre-calculus. One year of chemistry and one year of physics for all engineering majors. All other majors: two years of a laboratory-based science.

Rubenstein School of Environment and Natural Resources

Required: One year of biology.
Recommended: Fourth year of college preparatory math and additional science.

College of Nursing and Health Sciences

Required courses: One year of biology and one year of chemistry for all majors; four years of math, including trigonometry, for all majors outside of nursing; one year of physics for athletic training majors.
Recommended: One year of high school physics for Radiation Therapy; Nuclear Medicine Technology; and Medical Laboratory Science majors.

Application Deadlines, Notification Dates, and Enrollment Deadlines

(The deadlines noted below are postmark dates)

Spring Semester

November 1 — First-year and Transfer candidates. Notification is on a rolling basis no later than the end of December. Payment of a $300 acceptance fee as proof of intention to enroll is generally due 20 days beyond the date of the letter of admission.

Fall Semester

November 1 — Early Action deadline for first year candidates only. Notification is in late December. Early Action candidates have until May 1 to pay the fee; this program is non-binding.

January 15 — Regular First-Year candidates. Notification is in late March. A $300 acceptance fee is due May 1 as proof of intention to enroll.

April 1 — Transfer deadline. Notification is on a rolling basis.

International students should adhere to all application deadlines. Notification is on a rolling basis.

Application and Supporting Materials

To review an application and render a decision, the Admissions Office must receive the following by the appropriate deadlines:
The Application for Admission completed and signed by the student. Use of one of the electronic options available on the web at the Admissions Web site at: www.uvm.edu/admissions/undergraduate, is encouraged. Candidates may also use the Common Application, available online at www.commonapplication.org, or from a local high school guidance department. If using the Common Application, please complete the common application supplemental form required by UVM, available at: www.uvm.edu/admissions/undergraduate.

A non-refundable $45 application fee to the University of Vermont via check or money order or credit card (see the form bound into the Application for Admission). For candidates for whom the fee poses a financial hardship, fee waivers are available from a guidance counselor, another person familiar with the financial situation, or from the Admissions Office.

Official transcripts from all secondary and (for transfer students) postsecondary course work . Candidates may not ignore any previous academic work and are expected to provide a full, accurate accounting of the academic record. Only transcripts forwarded from the issuing agency are considered official.

Standardized testing results (First-Year Candidates only): The University requires first-year candidates to submit results from either the Scholastic Assessment Test (SAT) or ACT from the American College Testing Program. UVM's code for the SAT is 3290 and 4322 for the ACT. For further information regarding these tests, contact a high school guidance office or go directly to the following web sites: www.collegeboard.org or www.act.org.

Letter of recommendation All candidates must present at least one letter of recommendation. First-year students are encouraged to obtain a recommendation from either a guidance counselor or current teacher. Additional letters are welcome.

Essays UVM requires one extended essay as part of the admissions process.

Music Majors Candidates for the Bachelor of Music, Bachelor of Arts in Music, and Bachelor of Music Education must contact the Music Department at 802 656-3040 to arrange for an audition or to submit an audition tape before the application deadline. Tapes become property of UVM and will not be returned.

Matriculation Status

The Admissions Office requires proof of high school graduation or equivalent for all candidates entering degree programs at UVM.

High school graduates must submit a final high school transcript. Recipients of the **General Education Development (GED) Certificate** should have an official score report forwarded to the Admissions Office in addition to official transcripts of any previous high school or college-level work completed.

The University of Vermont welcomes applications from students who plan to complete high school in three years, provided all entrance requirements and other admissions criteria have been met. **Three-year graduates** are asked to submit written proof of support from the high school indicating that the school district has approved early graduation and is prepared to issue a diploma.

UVM welcomes applications from **home-schooled students**. Students are required to meet all the entrance requirements outlined in this catalogue, to submit standardized test results (First-Year candidates only), to document academic work covered by the curriculum, and provide proof of graduation. Home-schooled students must supply the Admissions Office with a copy of the information forwarded by the teacher to the state education department. If entrance requirements cannot be determined from this information, the teacher will be contacted to confirm completion. Official college transcripts are required for any college-level course work. CLEP (College Level Examination Program) results may be used to demonstrate background in required areas. An official transcript of any course work taken at a local high school is also required.

Acceptable Proof of Graduation:

High School Diploma (Some home-schooled students receive a diploma from their area secondary school.)

General Education Development (GED) certificates and state certificates.

A Certificate of Completion of a home-study program if the program is recognized by the student's home state.

For transfer students only: If a formerly home-schooled student has completed two years of college course work comparable to UVM course work and has met all entrance requirements, no proof of graduation is required.

ADMISSIONS PROGRAMS

Early Action Students applying for first-year status who wish to learn of their admission decision by late December may apply by November 1 under the Early Action program. Candidates admitted under Early Action have until May 1 to pay an Acceptance Fee and are not making a commitment to attend the University.

Early Action applicants are offered admission if their academic records are very strong. Some Early Action candidates will be deferred until the Admissions Office has reviewed all first-year applicants for fall admission. A small number of candidates will learn in late December that they have been denied admission.

New England Regional Student Program The University of Vermont participates with the other public two-and four-year institutions of higher education in the six New England states in the New England Regional Student Program, an option aimed at increasing educational opportunities for the region's students.

New England residents who enroll in UVM programs open to them under the New England Regional Student program are charged 150 percent of in-state tuition, if you were part of the program prior to the 2006-2007 academic year. If you start the program after the 2005-2006 academic year, you will be charged 175% of the in-state tuition.

UVM Bachelor's degree programs offered for the 2006-07 academic year are:

- Botany to residents of MA
- Canadian Studies to residents of CT, MA, NH, and RI
- Classical Languages (Greek and Latin) to residents of CT and RI
- Forestry to residents of CT and RI
- Latin to residents of CT and RI
- Russian to residents of CT, ME, and RI

For a full listing of programs and policies, contact the New England Board of Higher Education, 45 Temple Place, Boston, MA 02111, (617) 357-9620.

Guaranteed Admission Program (GAP) The Guaranteed Admission Program (GAP) provides an avenue of entry to the University of Vermont for students who are not yet ready to enter an undergraduate degree program. GAP provides advising services and guarantees admission after successful completion of approved academic credit courses taken through Continuing Education. The program is administered cooperatively by Continuing Education, Undergraduate Admissions, and the deans' offices of the colleges and schools within UVM.

To qualify for the Guaranteed Admission Program students must have a high school diploma or GED. Students will complete a minimum of 18 semester credits in approved courses as well as courses for the proposed major and general education requirements. Any admissions requirements lacking from high school must also be completed.

A few majors may have additional restrictions or may not be accessible through the Guaranteed Admission Program. Please contact Continuing Education (Web sit:www.uvm.edu/~learn) for a list of these programs.

Students should call the Continuing Education Office at (802) 656-2085 or (800) 639-3210 to schedule an appointment with an advisor. A high school transcript as well as a transcript for any previous college work should be provided at the appointment.

The advisor will discuss the program and begin the process of determining the courses needed to complete the contract. If a student has earned previous credits, a copy of his/her transcripts will be forwarded to the Office of Transfer Affairs to determine which courses will transfer to UVM upon admission.

UVM/Tufts B.S./D.V.M. Guaranteed Admission Program

This program allows students to apply for admission to Tufts University School of Veterinary Medicine toward the end of their sophomore year at UVM. Accepted students will be guaranteed admission to Tufts after completing a four year B.S. program at UVM. Students will receive their D.V.M. degree from Tufts after successful completion of the Tufts Veterinary School requirements.

UVM/Massey University (New Zealand) B.S./B.V.Sc. Guaranteed Admission Program

This program allows students to complete their B.S. at UVM and gain automatic admission to Massey University Veterinary School, which is accredited by the American Veterinary Medical Association. Students who have completed the basic required courses with a specific GPA, have completed a standardized test, and have had five days of experience with a veterinarian will automatically be accepted into the Massey University Program to obtain their veterinary degree. The program is limited to five students.

TRANSFER STUDENT ADMISSIONS

The University welcomes applicants who have demonstrated success at other institutions of higher education and who have met all University-wide entrance requirements either in high school or in college. For the purpose of admission, a transfer candidate is one who has taken college-level courses for credit after completion of secondary school.

All transfer students are considered for admission on a space-available, competitive basis.

In making transfer admission decisions, the Admissions Office reviews all academic information available: official transcripts of all college-level work and the high school record (or General Education Development Certificate). Submission of standardized test scores such as the **SAT** or the **ACT** is optional for transfer candidates.

Transfer candidates are subject to the minimum entrance requirements outlined for first-year candidates. Any entrance requirement not fulfilled in high school can be met by an equivalent semester-long college course.

For transfer candidates who have earned under 30 college-level credits, the quality of the high school record remains an important evaluation tool. After 30 earned credit hours, the college grade-point average and course selection are the most important factors in a decision. The Admissions Office still needs to see the high school record to determine if all University-wide entrance requirements have been met.

The minimum grade point average requirement for all transfer candidates is a 2.5 (C+) average on a four-point scale. Generally, to be competitive a 3.0 average or above is recommended.

Transfer Credit Policy

The Office of Transfer Affairs reviews each college-level course taken by transfer candidates accepted for admission. A written evaluation is sent to each transfer candidate indicating the status of each course. To receive transfer credit, a course must have been taken at an accredited college or university for credit; it must be comparable in content, nature, and intensity to a course offered at UVM; and the grade earned must be comparable to a "C" or higher as indicated on an official transcript. The dean of the college or school determines the applicability of the transfer course(s) to the student's degree requirements at the University.

All transfer credit remains provisional until the transfer student successfully completes one semester of course work as a degree student at UVM. The UVM grade-point average reflects only course work taken here. Grades from other institutions are not calculated into the UVM GPA and will not appear on a UVM transcript.

Credit through the **Advanced Placement Program (AP) of the College Board** (www.collegeboard.com/ap/students/index.html) is granted as a specific university course, or courses, with scores of 4 or 5. Scores of 3 are acceptable for some exams. Official AP score reports must be sent directly to the Office of Transfer Affairs. AP course equivalencies are determined by the faculty of the corresponding subject area and are awarded by the Office of Transfer Affairs. AP credit is assigned a UVM course equivalency and applicability to the degree program is determined by the student's dean's office.

Courses taken on a college or university campus while a student is still in high school may be eligible for transfer credit. Students should contact the Office of Transfer Affairs for assistance in determining transferability of these courses.

College-level courses taken through high school cooperatives, such as **Syracuse Project Advance** (**SUPA**), may transfer to UVM if they meet the standards set forth above by the Office of Transfer Affairs. Credit may also be obtained through a nationally-standardized examination to demonstrate college level subject mastery. Advanced Placement Examinations (AP), which can be taken while still in high school, or College Level Examination Placement (CLEP), would serve as recognized standardized examinations. A third option is the UVM Credit by Exam. Contact the Office of Transfer Affairs to see what specific subject areas are covered by these exams.
Further questions regarding transfer credit should be addressed to the Office of Transfer Affairs, 360 Waterman Building, University of Vermont, Burlington,VT 05405.

INTERNATIONAL STUDENT ADMISSIONS

The University welcomes the applications of international students.

Academic Documents International applicants must submit official transcripts of all secondary and postsecondary education, including final examination results. If documents are not in English, certified translations are required. Information regarding certified translation services can be obtained at the applicant's embassy or through **WES**: World Education Services, P.O. Box 745, Old Chelsea Station, New York, NY 10113-0745, (212) 966-6311; www.wes.org.

Transfer Credit for International Students

International students who have attended postsecondary institutions in their home country may be eligible for UVM credit under the Transfer Credit Policy guidelines. International students should submit comprehensive course descriptions and outlines, translated in English, to the Office of Transfer Affairs, 360 Waterman Building, Burlington, VT 05405, USA. Submission of these materials prior to enrollment helps the Office of Transfer Affairs prepare a full credit evaluation prior to enrollment at UVM. All translations must be certified by the school of record, or by an official government translation agency with the seal of the college over the translation. Translations must accompany all original documentation.

Standardized Tests Students applying as first-year candidates must present scores from either the SAT or the ACT. If English is not the first language, the Test of English as a Foreign Language (TOEFL) is also required. Because the University does not offer an intensive English as a Second Language (ESL) program, the Admissions Office requires a minimum TOEFL test score of 550 (213 on the computer version). For information about test dates and sites for SAT and TOEFL exams, contact the Educational Testing Service in Princeton, NJ (609) 771-7100; www.ets.org.

English as a Second Language (ESL) Programs The University of Vermont offers a few English-as-a-Second-Language courses intended to ease the transition to studying and living in an English-speaking environment. Interested students with TOEFL scores below the recommended minimum may want to consider transferring to the University of Vermont after studying at a U.S. college or university that offers intensive ESL preparation, although UVM will consider candidates on a case-by-case basis.

The ESL intensive program located the closest to the University of Vermont is at Saint Michael's College, an accredited institution of higher learning in nearby Winooski, Vermont. For full information about Saint Michael's College, write to the School for International Studies, Saint Michael's College, Winooski, VT 05404 (USA Telephone: 802 654-2000, extension 2300).

For further information concerning available programs, contact: NAFSA: Association of International Educators, 1875 Connecticut Ave. NW, Suite 100, Washington, DC 20009-5728; www.nafsa.org.

Financial Support for International Students The University offers a few partial tuition scholarships to international students each year. Most international students pay the full cost of attending UVM; and those attending on nonimmigrant student visas are charged out-of-state tuition rates. All international students are considered; no additional application is required. These are merit-based scholarships.

Form I-20 The I-20 document is used to obtain an F-1 student visa and can only be issued when the student provides certification that sufficient financial support is available to cover educational expenses for at least one full academic year at the University. Two pieces of information are required for financial certification:

- A letter or statement from the bank (or supporting agency) indicating an exact currency amount and its U.S. dollar equivalent that demonstrates the availability of adequate funding for at least the first year of studies.
- A signed letter from the sponsor (family member or agency) indicating that the funds in that bank account will be used to support educational expenses at the University of Vermont.

For more information, contact Amy Corwin, Coordinator for International Student Services, Office of International Education, 633 Main St., Burlington, VT 05405. Phone: (802)656-4296.Fax:(802)656-8553. E-mail: Amy.Corwin@uvm.edu; www.uvm.edu/~oies.

Graduate Study at the University of Vermont International students interested in pursuing a graduate degree at the University of Vermont should contact: Graduate College

Admissions Office, Waterman Building, University of Vermont, Burlington, VT 05405, (802) 656-3160.

NONTRADITIONAL STUDENT ADMISSIONS

The Admissions Office recognizes that candidates who have been out of formal schooling for a period of five years or more have life experiences that are different from traditional-age students.

While nontraditional candidates are expected to present strong academic credentials for admission, they can write to the Admissions Office to request a waiver of the standardized test score requirement, may adjust application essays to reflect their experiences, and may substitute a letter of recommendation from an employer or friend in lieu of the guidance counselor recommendation.

As with every applicant for admission, however, nontraditional candidates are required to present official documents of all academic work, including high school transcript and/or General Education Development certificate (GED) and transcripts of all college-level work attempted. The Admissions Office looks for previous academic performance that would predict success at the University.

Nontraditional applicants who are missing one or two requirements are reviewed on a case-by-case basis; if a record is otherwise acceptable, the Admissions Office may offer admission with a clause requiring completion of missing requirements prior to enrollment or concurrent with the UVM degree program. UVM does not grant college credit through portfolio assessment. Nontraditional candidates may explore credit options through the College Level Examination Program (CLEP: www.collegeboard.com/student/testing/clep/about.html) or through UVM's Credit by Examination.

Nontraditional learners considering a degree program at UVM may make an appointment with an admissions counselor to discuss the chances for admission. The Admissions Office is able to advise more accurately if individuals bring all academic records with them to the appointment. These documents are used for advising only and do not need to be official.

REAPPLYING TO THE UNIVERSITY

Applicants denied admission for a given semester may reapply for the following semester. Anyone reapplying must resubmit an application form, update any academic information, and send the appropriate application fee. Essays may be adjusted to reflect applicant's recent activities. These individuals should contact the Admissions Office to discuss academic work that would improve their chances for admission.

Under certain conditions, candidates offered admission who choose not to attend in a given semester can defer entry for up to two semesters with permission of the Admissions Office. After that period or if the admitted candidate failed to request deferred admission, another application and fee must be filed for review by the Admissions Office.

Former degree students at the University of Vermont who withdrew for any reason must see the dean of his/her former UVM college or school to request re-entry. The Admissions Office does not readmit former degree students.

RESIDENCY REGULATIONS

The Vermont Legislature has established a lower rate of tuition for students who are Vermont residents. These regulations define eligibility requirements for in-state status classification. All students at The University of Vermont and State Agricultural College (UVM) shall be assigned in-state or out-of-state status classification consistent with these regulations. A Vermont domicile must be established for a student to be eligible for in-state status.

In-State Status Classification Rules

The Vermont Legislature has established a lower rate of tuition for students who are Vermont residents. These regulations define eligibility requirements for in-state status classification. All students at The University of Vermont and State Agricultural College (UVM) shall be assigned in-state or out-of-state status classification consistent with these regulations. A Vermont domicile must be established for a student to be eligible for in-state status.

In-State Status Classification Rules

1. Domicile shall mean a person's true, fixed, and permanent home. It is the place at which one intends to remain indefinitely and to which one intends to return when absent.
2. As one element of domicile, a student must reside in Vermont continuously for one year prior to the semester for which in-state status is sought.
3. A residence established for the purpose of attending UVM shall not by itself constitute domicile.
4. An applicant becoming a student within one year of first moving to the state shall have created a rebuttable presumption that residency in Vermont is for the purpose of attending UVM and/or acquiring in-state status for tuition purposes.
5. A domicile or residency classification assigned by a public or private authority neither qualifies nor disqualifies a student for UVM in-state status. Such classification may be taken into consideration, however, in determining the student's status at UVM.
6. It shall be presumed that a student who has not reached the age of majority (18)holds the domicile of his/her parents or legal guardian(s).
7. Receipt of financial support by a student from his/her family shall create a rebuttable presumption that the student domicile is with his/her family, regardless of whether the student has reached the age of 18.
8. A student who has not reached the age of 18 whose parents are legally separated or divorced shall be rebuttably presumed to hold the domicile of the parent with legal custody.
9. A student of parents legally separated or divorced may be granted in-state status if a noncustodial or joint custodial parent is domiciled in Vermont and has contributed more than 50 percent of financial support for at least one year prior to the semester for which in-state status is sought.
10. The burden of proof as to eligibility for in-state status rests with the student. Eligibility must be established by clear and convincing evidence.

In-State Status Classification Documentation

The student must submit with the application form all relevant information.

The classification decision shall be based upon information furnished by the student, information requested of the student, and other relevant information available consistent with University policies and procedures and legal guidelines.

Testimony, written documents, affidavits, verifications, and/or other evidence may be requested.

The student's failure to produce information requested may adversely affect the decision for instate status.

A student or others furnishing information may request the

deletion from documents of irrelevant private data.

In-State Status Classification Appeals

The decision of the Residency Officer must be appealed in writing to the Residency Appellate Officer within thirty (30) calendar days of the date of the Residency Officer's written decision. Appeal to the Residency Appellate Officer is the final appeal at UVM.

In-State Status Reclassification

A student who does not qualify for in-state status classification may reapply for such classification each subsequent semester.

In-state status classification becomes effective the first semester following the date of successful application.

Re-Examination of Classification Status
Classification status may be re-examined upon the initiative of the Residency Officer in the exercise of sound discretion. Circumstances such as periodic enrollment may be cause for reexamination.

In-State Status Classification Documentation
The student must submit with the application form all relevant information.

The classification decision shall be based upon information furnished by the student, information requested of the student, and other relevant information available consistent with University policies and procedures and legal guidelines.

Testimony, written documents, affidavits, verifications, and/or other evidence may be requested.

The student's failure to produce information requested may adversely affect the decision for instate status.

A student or others furnishing information may request the deletion from documents of irrelevant private data.

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The decision of the Residency Officer must be appealed in writing to the Residency Appellate Officer within thirty (30) calendar days of the date of the Residency Officer's written decision. Appeal to the Residency Appellate Officer is the final appeal at UVM.

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In-state status classification becomes effective the first semester following the date of successful application.

Re-Examination of Classification Status
Classification status may be re-examined upon the initiative of the Residency Officer in the exercise of sound discretion. Circumstances such as periodic enrollment may be cause for reexamination.

ARTICULATION AGREEMENTS

Community College of Vermont/ University of Vermont

CCV/College of Arts and Sciences

Students who have completed an associate's degree at the Community College of Vermont can be accepted to the University of Vermont's College of Arts and Sciences under the following conditions:

- Students must complete a minimum of 60 transferable academic credits pre-approved by UVM's Office of Transfer Affairs.
- Students must present a CCV grade-point average of 2.5 (on a 4.0 scale) or better.
- Candidates for the Articulation Agreement must meet UVM's minimum entrance requirements prior to CCV graduation.
- CCV students must initiate their degree program at UVM within two years of completing the CCV associate's degree.
- While at CCV interested students must sign a letter of intent to enroll at UVM.
- CCV Associate Degree students will be held to the policies that are in effect at the time they are admitted to UVM.

CCV/College of Education and Social Services

Students who have completed a minimum of 30 transferable credits based on the transfer credit policy of the University of Vermont can be accepted into the College of Education and Social Services. The agreement includes the programs in Human Development and Family Studies, Social Work, Teacher Education programs in Art, Early Childhood Education, Elementary Education, and Secondary Education.

- Students must present a CCV grade point average of 2.5 (on a 4.0 scale) or better.
- Candidates must meet UVM's minimum entrance requirements or have prior approval from the College of Education and Social Services.
- To be eligible under the terms of the Articulation Agreement, CCV students must initiate their degree program at UVM within two years of completion of their courses at CCV. Faculty at both institutions will cooperatively certify students as eligible under the terms of the agreement.
- Co-advisement by the appropriate CESS and CCV advisors is essential. Through co-advisement, CCV students may gain secure permission to enroll in beginning-level CESS courses at UVM while enrolled at CCV.
- While at CCV interested students must sign a letter of intent to enroll at UVM.
- CCV transfer students will be held to policies that are in effect at the time they sign the CCV Intent to Transfer form.

The Process Starts at CCV Current or prospective CCV students interested in this option should meet with a CCV advisor early in their college career to develop an Articulation Plan that outlines course work and ensures completion of any UVM requirements in English, foreign language, mathematics, science, and social sciences. At this time, students will provide transcripts of all previous academic work. This allows the CCV advisor to review the record and assess UVM entrance requirements and CCV course placement.

Admissions Process at UVM CCV Articulation candidates are encouraged to meet with a transfer counselor in the UVM Admissions Office to ensure course transferability. Candidates are asked to submit a completed Application for Admission and all financial aid forms by the stated UVM deadlines.

CCV students who have signed the Articulation Agreement do not pay UVM's application fee. Articulation candidates should include a brief statement in the UVM Application for Admission indicating they are applying under this option.

Candidates for UVM admission must submit official copies of all college course work attempted for credit, including the Community College of Vermont transcript. An official high school transcript is required only for candidates who must prove completion of all UVM entrance requirements prior to CCV entry.

UVM Admissions will review articulation student applications for the minimum GPA and entrance requirements. Offers of admission will be sent to those meeting the established criteria. To become a matriculated student at UVM, CCV articulation students must pay an acceptance fee by a date stipulated in the admission letter.

Candidates whose GPAs fall below the minimum will be reviewed by UVM on a case-by-case basis. Those denied acceptance are encouraged to meet with a transfer counselor at UVM to review future options.

For a current list of transferable CCV courses and UVM equivalents, contact a CCV Advisor or a Transfer Advisor in UVM's Office of Admissions. You can also check the Registrar's Office Web site.

Recipients of a CCV associate's degree prior to 1999 may contact the UVM transfer advisors for general transfer information.

CCV graduates interested in UVM programs outside the College of Arts and Sciences and the College of Education and Social Services are encouraged to meet with a UVM transfer counselor to discuss their academic history and potential for transfer admission.

St. Michael's College and UVM Articulation Agreement

St. Michael's College (SMC) and the University of Vermont in the fall of 1994 established an articulation agreement for a Dual Degree Program in Engineering ("the Program"). This agreement guarantees students who meet specified criteria admission to a prescribed program of study in engineering at UVM. Upon successful completion of the Program and degree requirements, students receive a Bachelor of Arts or Bachelor of Science degree from SMC and a Bachelor of Science degree in the appropriate engineering area from UVM. **Students will normally complete the Program in five years.**

The academic advising, admission, transfer of credits, enrollment, and monetary conditions in this agreement applicable to students will be carried out in accordance with the following policies and procedures.

1. Initial application to the Program will be made to SMC.
2. Students will enroll in the Program by declaring a pre-engineering major at the time of admission to SMC to permit them to complete all prerequisites in a reasonable time (see SMC catalogue for pre-engineering program).
3. Students may register for any of the options in the Civil, Electrical, or Mechanical Engineering programs.
4. Students enrolling under this Program will be considered SMC students throughout the duration of the Program. Once admitted to UVM according to the policies of this Agreement, they also become UVM students for the remainder of the Program.
5. For the first three years the host institution for students in the Program will be SMC, and for the last two years the host institution will be UVM. Tuition and fees will be paid to the host institution according to its normal policies (including residence status, financial aid, etc.) Tuition for courses taken at the other institution will be paid by the host institution transferring funds based on an agreed upon amount per credit hour.
6. While students are enrolled at a host institution they will be independently responsible for appropriate fees at the other institution on a per use basis.
7. Students in the Program will make a formal application to UVM by April 1 in the spring semester of their third year at SMC.
8. Students will matriculate at UVM and will be accepted to the appropriate engineering program at UVM once they have met the following requirements: (a) completion of at least 60 credits at SMC with appropriate courses, in good standing; (b) completion of Part I of the required pre-engineering courses at SMC, as specified in the Agreement (see SMC catalogue); and (c) completion of 11-12 credits of UVM engineering courses, including the following table of courses, with a minimum GPA of 2.0 in these courses.

Civil Engineering: CE 1, 10/12, 11; ENGR 2; ME 12.
Environmental Engineering: CE 1, 11; ENGR 2; ME 12.
Electrical Engineering: EE 3, 4, 81, 82, 131; ENGR 2.
Mechanical Engineering: ME 12, 14,40, 42; ENGR 2; CE 1.
Engineering Management:
CE option: ENGR 2; CE 1, 10/12; ME 12, 14.
CE option: ENGR 2; CE 1, 10/12; ME 12, 14.
ME option: ENGR 2; ME 82, 114; MATH 124.

Vermont Technical College / University of Vermont Dairy Farm Management 2 + 2 Program Articulation Agreement

Students who have completed an associate's degree in the Vermont Technical College Dairy Farm Management program can be accepted into the University of Vermont's College of Agriculture and Life Sciences (CALS) in the Animal Sciences program, leading to a bachelor's degree. Transferable courses are limited to those directly comparable to UVM courses and meeting the requirements for both programs.

For acceptance, students must meet the following conditions:

- Students must have a 3.0 (on 4.0 scale) or better.
- Students must meet the minimum entrance requirements for the University and for the Animal Sciences program. A list of these courses can be obtained from the agreement coordinator in the College of Agriculture and Life Sciences.
- All students who do not meet the above conditions can apply for transfer admission and be reviewed on a case-by-case basis.
- Candidates applying to the University of Vermont under this agreement do not pay the application fee.

For more information about this agreement and course equivalencies, please contact the agreement coordinator in the College of Agriculture and Life Sciences at 802-6561397.

ADMITTED STUDENT INFORMATION

Orientation All entering first-year students are required to attend a two-day orientation session in June. At Orientation, new UVM students meet with a faculty advisor, select first semester classes, and learn about living options in the residence halls. Information packets are mailed to incoming students' home addresses once they pay the acceptance fee and advance tuition deposit. Transfer students attend a session just prior to the beginning of the fall semester.

Housing First-time, first-year and second-year students are required to live in on-campus housing. Entering students explore living options at orientation. The Department of Residential Life mails room assignments prior to the beginning of each semester.

Class Registration The academic advisor at Orientation helps prepare the first semester class schedule. First-year students entering fall semester register for classes at June Orientation. First-year students entering in the spring and transfer students entering either semester meet with an academic advisor at an Orientation session and may need to formally register for classes at that time.

Immunization and health history forms are sent directly to newly-admitted students and are due in the Center for Health and Well-being Student Health / Medical Clinic by June 30 of the year of entry. Vermont state law requires proof of two doses of live measles vaccine after the student's first birthday.

Student Expenses

The student expenses outlined in the following paragraphs are anticipated charges for the 2006-2007 academic year. Changing costs may require adjustment of these charges before the beginning of the fall semester. To view charges approved by the Board of Trustees after the May 2006 board meeting please visit the Web site: www.uvm.edu/studentfinances (under the tuition and expenses link.

UNDERGRADUATE TUITION AND FEES

APPLICATION FEE

A nonrefundable application fee of $45 is charged each applicant for admission to a University degree program.

ACCEPTANCE PAYMENT

To reserve a space in the class or semester admitted, students should send the Admissions Office an acceptance fee for $300 made payable to The University of Vermont.

First-year students entering in the fall have a May 1 deadline for paying the acceptance fee. Transfer candidates and all candidates admitted for the spring semester will have a payment deadline printed with their acceptance materials.

Acceptance fee refunds will be given up until May 1 for students admitted for fall semester. Transfer students and students admitted for spring semester may receive a refund up to the payment deadline noted on the enrollment card

ESTIMATED YEARLY EXPENSES

Listed below are estimated expenses (excluding transportation, laundry, and spending money) based on the regular tuition for undergraduate students followed by a explanation of these charges.

	Resident	***Nonresident***
Tuition	$9,832	$24,816
Housing (Double Room)	$7,642	$7,642
Comprehensive Student Fee	$1,491	$1,491
Inter-Residence Association Fee	$24	$24
Optional Student Accident & Sickness Insurance(Estimated)	$823	$823
Student Government Association Fee	$142	$142
Textbooks and Supplies (Estimated)	$900	$900

TUITION

Vermont Residents: $410 per credit hour through 11.5 hours. From 12-18 credit hours — $4,916 per semester plus $410 per credit hour for each hour in excess of 18 hours.

Nonresidents: $1,034 per credit hour through 11.5 hours. From 12-18 credit hours — $12,408 per semester plus $1,034 per credit hour for each hour in excess of 18 hours.

Note: Courses taken for audit are also included in determining the number of credit hours for which a student is billed.

HOUSING CHARGES

Room and Board: All housing agreements include both room and board and are legally binding for the nine-month academic year. Each occupant is liable for the yearly rent, one half to be paid each semester.

The University meal plan offers several options. Payment for the plan selected is made in two equal installments paid at the beginning of a semester. The University's food service system includes not only dining halls but also the various campus snack bars, restaurants, and grocery stores. Questions regarding food services should be directed to the University Dining Services/Sodexho, Robinson Hall, Redstone Campus.

Students not required to live on campus who wish to cancel a housing agreement must do so in writing. Students canceling before July 1 will be assessed a $150 penalty before July 1 and a $300 penalty from July 1 to September 1. Unless specifically authorized by the Office of Residential Life, no room cancellations will be honored after the beginning of the fall semester.

COMPREHENSIVE STUDENT FEE

This fee is used to cover the operating, capital costs, and improvements of the Library, Student Center, Athletic Complex, Center for Health and Wellbeing, Campus Transportation services, Instructional Technology, and other Student Services.

INTER-RESIDENCE ASSOCIATION (IRA) FEE

A $24 per year ($12 per semester) fee is charged to each resident to be used for activities within the residence hall system.

STUDENT INSURANCE (In Two Installments)

Students not covered by the health insurance policy of a parent, guardian, or spouse must purchase the Student Accident and Sickness Insurance Policy.

For additional information please visit the Web page of the Center for Health & Wellbeing (www.uvm.edu/health/insurance).

STUDENT GOVERNMENT ASSOCIATION FEE

Undergraduate degree students enrolled in five or more credit hours are charged a fee of $142 per year ($71 per semester). This fee is allocated by the Student Government Association toward the support of student organizations and student activities.

FEES FOR PART-TIME STUDENTS

Students enrolled in one to four credit hours in a semester will be charged $10 per credit to offset costs associated with registration.

A comprehensive fee is charged to all part-time students enrolled in five but less than 12 credit hours in a semester, as follows:

Hours Enrolled Per Semester	Fee
5	$234
6	$262
7	$294
8	$328
9 to 11.5	$358

BOOKS AND SUPPLIES

The estimated yearly cost of books and supplies at $900 is a low average. Some particular curricula may require onetime purchases which will change this amount.

Students in the College of Engineering and Mathematics and School of Business Administration should add about $100 for computer software to their estimated yearly costs for books and supplies.

Nuclear Medicine Technology and Radiation Therapy students should add about $85 for lab coats and other related expenses.

Professional Nursing students are responsible for the cost of clinical attire, vaccinations, CPR certification, and other related expenses prior to the clinical experience.

Students enrolled in art courses should expect to incur a lab or materials cost roughly equivalent to the cost of books in other courses. In certain courses, instructional materials are purchased in bulk by the department and costs are prorated among students at a far lower rate than if they were purchased individually.

OPTIONAL FEES

Locker-Towel Fee

All students enrolled in physical education activity courses and others who wish to have an assigned locker must pay a locker-towel fee each year or any portion thereof. This fee provides a locker and a clean towel after each use of the gymnasium facility.

UNIQUE FEES

The School of Business Administration

All new first-year and transfer students entering programs in the college are required to purchase a microcomputer. Details on the cost and the machine specifications are provided to the student at the time of admission. Students eligible for financial aid can have the cost of the microcomputer acquisition and maintenance built into their financial aid package.

Credit by Examination

A fee will be charged for administration of special tests in areas for which academic credit may be received. This fee must be paid in advance.

Fees for Courses in Music Performance Study

Private applied lessons in most instruments and voice are available each semester, for academic credit, to qualified students. Private lessons meet for 14 weeks during the semester. Both one-half hour (one academic credit) or one hour (two academic credits) lessons may be taken, depending on the recommendation of the faculty.

The Private Lesson Fee for applied performance study is $380 per academic credit for non-music majors and $105 per academic credit for music majors taking required lessons. The Private Lesson Fee for applied performance study is $305 for music majors taking non-required lessons. This fee, additional to normal tuition charges, will be charged each student as part of normal billing.

Any student enrolled in excess of 18 credit hours because of Private Applied Lessons will be charged only the additional Private Lesson Fee, and not the supplemental tuition charges for taking more than the permitted 18 credits. Permission from the respective Dean's Office to exceed 18 academic credits in a semester must still be obtained, however.

The Rubenstein School of Environment and Natural Resources Summer Field Courses

Students majoring in Forestry or Wildlife Biology are required to take summer field courses. Forestry majors must take FOR 122 and Wildlife Biology majors must take WFB 131 and WFB 150.

The tuition for The Rubenstein School of Environment and Natural Resources Summer Field Courses will be at the Summer Session credit hour rate. In addition, there may be charges for field expenses.

Department of Nursing

A fee of approximately $28 annually will be charged each student for membership in the National Student Nurse Association and a fee of approximately $20 a year for professional liability insurance will be billed to juniors and seniors. These fees are included with the usual tuition bills.

Additional Fees for Special Courses

Occasionally, a special fee will be charged in addition to the fee for tuition to cover long distance travel expenses, special equipment, arrangements, or skilled consultants. Students will be notified of this fee through the registration process.

Study Abroad

A $400 administrative fee will be assessed for those students participating in Study Abroad programs/activities with the exception of the Buckham Overseas Studies Program.

Diagnostic Evaluation

In certain instances, students may be assessed a fee for diagnostic testing. Additional information can be obtained from the Office of Specialized Student Services.

PAYMENT OF OBLIGATIONS

The online registration system will generate charges based on enrolled credit hours. All tuition, fees, and room and board charges are payable in full upon billing. Students who enroll in advance for course will receive itemized statements of applicable semester charges through their University e-mail, with instructions to settle in full by a specific date (usually three weeks before classes begin). Degree students who enroll in advance for courses will receive itemized statements of applicable semester charges at their permanent address about a month prior to the commencement of classes, with instructions to settle in full by a specific date (generally three weeks before classes begin). Advance payments are accepted; checks should be made payable to The University of Vermont. Any checks or payments received by the University may be applied to outstanding balances.

Students who cannot meet their financial obligations because of unusual circumstances should contact the Office of Student Financial Services as soon as possible before the payment due date. Students who are allowed a Monthly Payment Plan or a postponement of all or a portion of their financial obligations will be charged a $75 Monthly Payment Plan service charge per semester or $100 for a year plan.

Students who have not satisfactorily completed financial arrangements by the announced due date may have their enrollment cancelled. Disenrollment will automatically place a registration hold on a student's account that will prevent reenrolling until the student has contacted Student Accounting to discuss the account. A $50 fee must be paid to allow reregistration.

The University reserves the right to withhold registration material, the diploma, degree, and all information regarding the record, including transcript, of any student who is in arrears in the payment of tuition, fees, or other charges,

including, but not limited to, student loans, dining and housing charges, telephone toll charges, and parking fines.

If a student leaves the University for any reason with an outstanding balance and this balance is not settled in a timely manner, the University may turn the account over for collection. If this is done, any additional collection fees, legal fees, and other costs and charges necessary for the collection of this debt will be added to the outstanding balance.

LATE PAYMENT SERVICE CHARGE

Students who do not settle their accounts by the due date will be charged a late payment service charge. Please refer to the Payment Information and Financial Policies information on the following web page: http://www.uvm.edu/studentfinances then choose a payment process.

BUDGETED PAYMENT

The University offers a Monthly Payment Plan to parents who desire to budget annual costs in monthly installments. Specific information is mailed to parents of incoming and returning students in the spring by the Office of Student Financial Services.

BILL ADJUSTMENT AND REFUND POLICIES

ACCEPTANCE FEE

A newly admitted undergraduate student for fall semester who decides not to attend the University may request a full refund of the acceptance fee by submitting a written request to the Admissions Office postmarked on or before May 1. After May 1, the acceptance fee is non-refundable.

Transfer students and students admitted for spring semester whose plans to enroll change before the payment deadline noted on the enrollment card, may request a full refund of the acceptance fee. Requests should be made in writing to the Admissions Office.

CANCELLATION, WITHDRAWAL, MEDICAL WITHDRAWAL, SUSPENSION, DISMISSAL

A student who cancels, withdraws for personal or medical reasons, is suspended, or is dismissed will receive and adjustment of charges in accordance with the following schedule. Medical withdrawals require approval of the University Student Health Center.

— 100% tuition, fees, room and board credit adjustment prior to the end of the first two weeks of classes.
— 50% tuition, fees, room and board credit adjustment through the third week of the semester.
— 25% uition, fees, room and board credit adjustment through the fourth week of the semester.
— No adjustment after the fourth week of the semester.

Due to federal requirements, financial aid recipients who withdraw during the semester will receive their refund based on current federal guidelines.

Note: The effective date of any cancellation or withdrawal is the date the student initiates the withdrawal process either in writing, in person or over the phone. In no case will an adjustment be made after the first day of classes of the following semester.

CHANGES IN CREDIT HOUR LOAD

A student who adds courses during the semester will be billed additional tuition and fees applicable to the adjusted credit hour load. A student who drops courses during the semester will receive a tuition credit based upon the effective date as described above. A student who withdraws from a course during the semester will receive a tuition credit based upon the effective date as described above. However, the course will remain on the student's record.

DEATH

In the case of a student's death, tuition, room, and fees will be fully refunded for the semester during which the death occurs. Unused meal points will be refunded.

Financial Aid and Scholarships

The University has many programs to help finance a UVM education. These include financial aid awards for students with a demonstrated need for financial assistance and Scholarship awards for students whose academic achievements and other accomplishments and qualities promise to enrich the University in exceptional ways.

For more information, visit the Financial Aid Web site at: www.uvm.edu/financialaid.

FINANCIAL AID

The Financial Aid Office works to forge a working partnership between federal, state, and private educational funding sources, the University, and our students. We're also committed to helping students learn more about sound personal financial management and about the rights and responsibilities associated with financing a university education. Your connection with the Financial Aid Office begins in the earliest stages of your application process and continues through graduation from UVM.

For any questions about financial aid here at UVM please do not hesitate to contact us via the information below:
Phone:802-656-5700
Email: financialaid@uvm.edu
Fax: 802-656-4076

Eligibility

Students who wish to be considered for assistance in meeting their University expenses with student loans, grants, or employment should consider applying for federal, state, and University financial aid. To be eligible to apply for financial aid, a student must be a U.S. citizen or a permanent resident. (Limited financial aid funding is available for international students; inquiries should be made to the Scholarship Coordinator in the Admissions Office.) To be considered for aid, a student must also be enrolled at least half-time (six credits) in a degree program. Audited credits or Credits by Examination cannot be considered as part of the credits in determining financial aid eligibility.

Application Procedures

Incoming first-year and transfer students who wish to apply for aid may do so by completing and mailing the Free Application for Federal Student Aid (FAFSA) after January 1 and before February 10th; and providing any verification documentation requested by the UVM Office of Financial Aid. Returning UVM students should complete their FAFSA between January 1st and March 1st. Applications submitted after these dates will be processed in chronological order, subject to the availability of funds. In addition to following the procedures listed above, all students should apply to their state financial aid grant agency for assistance. Vermont students should apply to the Vermont Student Assistance Corporation (VSAC), P.O. Box 2000, Champlain Mill, Winooski, VT 05404.

The Financial Aid Package

The University of Vermont participates in all federal and state financial aid programs and must adhere to their requirements. Additionally, the University makes available a variety of grant and loan opportunities from its own operating and endowment funds. While federal and state aid is based exclusively on student need, eligibility for University funds is based on student need and on the strength of the applicant's academic record. Applicants will be considered for all aid programs for which they are eligible. Aid is most often awarded in combinations or "packages" of the various types of aid. Almost all awards will include some student loan.
Student loans are available to all students regardless of need in the form of Unsubsidized Federal Stafford Loans. To be considered, however, a student must APPLY for aid. After a determination of eligibility has been made by the Financial Aid Office, students will be notified if they qualify for "need-based" aid or for an Unsubsidized Federal Stafford Loan.
In the awarding of UVM institutional financial aid funds, a student's academic record is taken into consideration. Federal and state financial aid funds are allocated solely on the basis of student and parent financial need.

Satisfactory Academic Progress Standard for Financial Aid Recipients

In order to maintain eligibility for federal Title IV financial aid, matriculated undergraduate and graduate students must progress at a rate that ensures completion of their degree programs within a reasonable time frame. Beginning with the first semester of study in a degree program at The University of Vermont, a federal financial aid recipient is required to accumulate earned hours totaling at least 75 percent of the number of hours attempted. Each student's progress will be measured at the end of each year of attendance to ensure adherence to this standard.

Beginning with the third academic year (after the achievement of 60 credit hours), all students must have attained at least a 2.0 overall cumulative grade-point average in order to continue to qualify for assistance.

Any student not meeting the standard described above will be placed on Financial Aid Probationary Status for a one year period (during which aid eligibility will be maintained). Should the student not meet the required credit standard or cumulative grade point average standard by the end of that probationary year, the student's eligibility for additional financial aid will be withdrawn until the student has met the required standard.

Students whose aid is withdrawn for not maintaining academic progress according to the standard outlined above may appeal their loss of aid by writing to the Office of Financial Aid. The decision to withhold aid eligibility will be reviewed by an appeals committee for circumstances which warrant special consideration. Such circumstances may include but are not limited to medical emergencies or family crises which resulted in the student's not meeting the stated requirements.

SCHOLARSHIPS

Thanks to the generosity of UVM alumni, parents, and friends, a number of scholarships are available to students whose experiences and backgrounds promise to enrich the larger university community. While many of these scholarships are based on a combination of need and merit, several scholarships are offered exclusively on the basis of academic achievements and potential for success at UVM. For more information, visit the Web site: http://www.uvm.edu/financialaid/?Page=uvmscholarships.html. Examples of scholarships available to new students include:

The Vermont Scholars Program Each year, UVM names a select group of outstanding Vermont high school students as Vermont Scholars, an academic honor that carries a four-year scholarship. To qualify, candidates generally rank in the top ten percent of their graduating class and present superior scores on the Scholastic Assessment Test (SAT I). Comparable ACT scores are acceptable.

A committee comprising members of the University community reviews all qualified applicants and bases final selection on such factors as secondary school record, recommendations, admissions essays, extracurricular participation, and academic potential. Scholarship recipients are notified by mid-March.

Vermont Scholars receive between $1,500 and $8,000 annually in scholarship and grant assistance, depending on need. The scholarship is renewable up to four years (eight semesters) provided a 3.00 cumulative grade-point average is maintained.

The Green and Gold Scholars Program recognizes the academically strongest student at each accredited high school in Vermont with 4-year, full tuition scholarships, currently valued at over $33,000. At the end of the academic year, the Principal of each school submits a nominee who has completed the 11th grade at the end of the school year. The primary criteria for determining a nominee is limited to academic performance in high school, including rank in class, grade point average, rigor of course work and standardized testing. Green & Gold nominees are awarded four-year full tuition scholarships upon admission to the University. The scholarships are renewable annually providing that the recipient maintains a 3.00 overall grade point average and makes satisfactory progress toward degree completion while in attendance at the University.

UVM Community Service Award

The UVM Community Service Award is available for Vermont residents who have a demonstrated commitment to community and public service. The University Scholarship Committee selects those students that have a proven track record of community service. Community Service Scholars receive between $1,000 and $8,000 annaully in scholarship and grant assistance, depending on need. Recipients must maintain at least a 2.50 cumulative grade-point average and continue to perform community service while at the University.

Presidential Scholarship Out-of-state students with a superior record of scholastic achievement are eligible for consideration for the UVM Presidential Scholarship. Letters of recommendation, secondary school record, and extracurricular participation are among the criteria used in making scholarship selections. Presidential Scholars receive a merit scholarship for four years (eight semesters) providing they maintain a cumulative 3.00 grade-point average and continue to make satisfactory progress toward the completion of their degree requirements. Scholarship values range from $2,000-$3,500 per year.

Patrick Scholarship The Patrick Scholarship is awarded to academically deserving Vermonters in the amount of $1,000 per year for four years.

How to Apply for UVM Scholarships

There is no separate application process for most UVM-based scholarships. An applicant will be considered for all UVM scholarships simply by submitting the UVM admissions application. The wealth of information provided in the Admissions application is used in matching students with available scholarships. Additionally, students must file the Free Application for Federal Student Aid (FAFSA) in order to be considered for need-based scholarships. Students will be notified if additional information is needed to apply for a specific scholarship.

Other Scholarship Resources

- The Scholarship Office, located at 178 South Prospect Street, dedicates a scholarship resource workspace that can be utilized by any entering or returning UVM student. Resources such as scholarship and grant search books, and records on a small number of scholarship opportunities forwarded to UVM from outside sources are available for interested students.
- VSAC (The Vermont Student Assistance Corporation) offers a guide to scholarships for Vermont students available in UVM's Financial Aid Office or contact VSAC toll-free at 1-800-798-8722.
- The Army ROTC Program offers an opportunity for students to earn a degree of their choice and possibly qualify for an officer's commission. Two-, three- and four-year scholarships are available worth up to $20,000 for tuition and books.
- Veterans are encouraged to consult the UVM Registrar's Office regarding G.I. Bill benefits in education.
- Many organizations within home communities offer a wide range of scholarships to needy and deserving students. Check with schools and communities for these opportunities.

Student Services

A student's commitment to strong academic performance coupled with healthy out-of-class pursuits forms the basis for a successful college experience. The units listed and described in this section are meant to acquaint students with some of the offices, services, and programs that offer support for student endeavors, needs, and interests. More detailed information is available in the UVM student handbook, *The Cat's Tale*, which can be accessed on the internet http://www.uvm.edu/~dosa/handbook/.

COMPUTING AND INFORMATION TECHNOLOGY

Connect@UVM

What you can do at *uvm.edu*

Go to www.uvm.edu and click on "current students." From there you can:

- Register for classes
- Access the Library
- Access classes
- Shop at the bookstore
- Manage your Cat$cratch account
- Check out campus activities, and much more…

me.myself@uvm.edu

Your UVM email address* is a key connection for official university correspondence and with professors. Don't miss out! Activate and manage your UVM network ID and email on the Web from anywhere at: webmail.uvm.edu * Typical format for UVM email address: firstname.lastname@uvm.edu.

Buying a computer

Most students use their own computers—and many see benefits in buying them from UVM's not-for-profit Microcomputer Services Depot. The Depot offers a variety of Apple and Dell systems and accessories at competitive education prices.

Why buy at the UVM Depot?

- We're devoted exclusively to the needs of students, faculty and staff; we specialize in what you need
- We offer competitive education pricing
- Our computers come all set up to work on the campus network, and include virus protection
- We have an on-campus showroom and repair facility The Depot, located at 211 Waterman, is open Monday through Friday, 9:00 a.m. to 4:30 p.m. Stop by, call (802) 656-3067, send email to depot@uvm.edu, or visit www.uvm.edu/cit/mcsv

Connecting to the Internet

You can connect to the Internet using the port in your room and at other sites on campus. Or, go wireless in the Library, Billings Student Center, many residence halls, and at other locations listed at: www.uvm.edu/cit/wireless

Computing labs on campus

You'll have access to hundreds of Windows and Macintosh computers around campus. Here's a sampling of sites:

- Bailey/Howe Library
- The Cyber Cafe
- Living/Learning Center
- Waterman Computer Lab, room 113
- Waterman Cafe

For information and hours visit: www.uvm.edu/cit/computers.

Help!

If you have a computing question or problem and can't find the answer on your own, visit www.uvm.edu/cit/help or call the Help Line at (802) 656-2604.

For detailed network and policy information, access to UVM software downloads, and other services, visit www.uvm.edu/cit.

ACADEMIC SUPPORT PROGRAMS

Academic Support Programs offer a range of services to support students' academic success, including study skills and subject-area tutoring with emphasis on introductory courses and writing assistance in any discipline. Supplemental Instruction (SI) assists students in large lecture courses. In SI sessions, small groups of students meet after class to review course material and learn how to apply study skills to specify subjects.

Any student currently enrolled in classes at UVM is eligible to use Academic Support Program services. The office is centrally located at 244 Commons, Living/Learning Center. For more information, stop by or call the office at (802) 656-4075. The extended office hours are Monday to Thursday 8 a.m. to 9 p.m.; Friday 8 a.m. to 5 p.m.; Sunday 6 p.m. to 9 p.m.

TRIO Program TRIO includes two project dedicated to the educational and cultural advancement of its participants:

Student Support Services provides academic support to 225 UVM undergraduate students through the above Co-op programs and through classes, mentoring, laptop lending and graduate school programs and more.

Upward Bound provides academic and cultural support to 60 Vermont high school students. Participants in the TRIO projects must be first generation college students; have limited income; and/or (for Project STAY) have a documented disability.

Services For Students With Disabilities

ACCESS, A170, Living/Learning Center
656-7753, FAX: 656-0739 Email: access@uvm.edu
On the web: www.uvm.edu/access

Services and accommodations for students with disabilities are coordinated by ACCESS, located in A170 Living/Learning Center. ACCESS works with students in all academic programs, with all types of disabilities: physical, learning, visual, hearing, systemic, and psychiatric, as well as attention deficit disorders, acquired brain injuries, and other disabilities. Services are free of charge, voluntary, and confidential. Students are encouraged to contact ACCESS well in advance of when services and accommodations are needed. Current and comprehensive disability documentation will be required; for further information on eligibility, please see the ACCESS web site: www.uvm.edu/access; see *www.uvm.edu/~dosa/handbook* for policies and procedures regarding students with disabilities.

CAREER SERVICES

Career Services provides UVM students with assistance in exploring and implementing their career goals. There are four major components in this effort: understanding one's own strengths and career needs, discovering related work and educational options, validating those options through related experience, and pursuing specific post-graduate goals. The Career Services Office is located in E Building, Living/Learning; the web address is http://career.uvm.edu.

Career Assessment Students often want assistance in identifying their strengths and career needs, and in discovering the best major for them or the kind of employers and openings that might be good options. *Career Counselors* administer assessment tools, lead workshops and meet individually with students to help them set goals related to career, graduate school or even undergraduate major interests. To see a career counselor, call ahead on the day you wish to stop by with quick questions for a *Same-Day Consultation* (M-F 1:30-4:30 p.m. and Wednesdays 5-7 p.m. during Fall and Spring semesters) or plan ahead for an *hour-long Career Counseling Appointment*.

Discovering Options Surveys of UVM graduates, publications on careers related to certain majors, and books on careers in specific interest areas (such as environment, media, sports, human services, health) are available in the Career Library in Living/Learning. Every year, students can attend workshops and panels, presented by UVM grads, discussing options for students in any number of majors. At Career Services you will also find contact names of over 800 participants in UVM Career Connections, a network of UVM alumni who have volunteered to provide information to students interested in working in their fields or geographic locations.

Getting Experience At UVM, we want all students to test their interests in particular fields by getting experience before they graduate. Because employers are expressing interest in hiring college graduates who have relevant work skills, there is even more reason to get experience before finishing a baccalaureate degree. To support students' needs in this area, many campus leadership and research opportunities are available. Career Services has also developed a number of useful programs and services.

Federal Work Study job openings are managed through Career Service. Students who have received a Work-Study award through the Office of Financial Aid can use their employment to gain valuable skills and test their career interests. Openings range from medical photographer to editorial assistant, from medical photoprapher to editorial assistant, from technology consultant to dance instructor, and from environmental field worker to research assistant. These positions are located on campus as well as off-campus in non-profit agencies.

Career Internship s are local, regional, national, and international openings catalogued at Career Services. Available to students from any major, at any time in their academic careers, the internship listings cover a wide range of fields. Most of these openings are unpaid; students who are interested in earning academic credits must make arrangements within their academic departments.

The ***Cooperative Education*** program is nationally sanctioned and allows students to alternate full- or part-time paid employment with periods of classroom education. Coop provides in-depth experiences (6 -18 months) as close to campus as Burlington and as far away as Boston, Minnesota, and Florida. Participating students usually major in computer science, engineering, math, or business.

Natural Resources Internships are paid or unpaid experiences designed in collaboration with the faculty in the School of Natural Resources and environmentally-related employers in business and non-profits. Academic credit is available for SNR students. Call (802) 656-3003 for more information.

The ***Service Learning Internship Program*** provides opportunities for credit-bearing internships. While students serve real needs in the community, they link their experiences with structured academic learning. Options include openings in health and human services, law and justice, government and legislative, arts, environmental, and educational settings. These experiences vary in length and can be local, national or international. Staff provide coordination and support throughout the students' experiences.

The ***Student Employment Services*** posts summer and part-time job openings of interest to UVM students.

Pursuing Goals Career Services staff are available in workshops and individually (through appointments and same-days) to assist students with implementing goals.

Employment workshops are held each semester to teach students job search skills such as resumé writing, interviewing, developing networks and contacts, and building a comprehensive job search strategy. ***UVM Career Connection*** advisors often act as contact and referral sources for job seekers. To provide students with 24-hour access to job openings and information about employers, Career Services has a Web site at http://career.uvm.edu.

Our ***On-Campus Interviewing*** program, which posts hundreds of jobs annually, brings organizational representatives from small, medium, and large, local, regional, and multinational employers to UVM to conduct job interviews with UVM students. In addition, Career Services hosts job fairs each academic year, including the *Technical Career Fair* in the fall, the Career Expo in the winter, and the *Summer Jobs & Internship Fest* in the spring.

Because employers do not always have time to post a job and wait for applicants, UVM offers students the opportunity to register for our ***Resume Referral Service***. To sign up, students fill out a brief form indicating their interests and skills, provide us with resumes, and give us permission to mail them out. Participants are then entered into our database which can be queried when quick requests for resumes are received. An additional option is to register with and submit a resume to eXperience.com, a web-based tool that connects job seekers with a wide variety of regional, national and international employers. Call 802656-3450 for more information on how to participate in either of these programs.

Searching for a job in government, human services, advocacy organizations, and other nonprofit groups can be daunting. The ***Non-Profit Employment*** advisor provides assistance to undergraduates and alumni on careers, job search skills, and networking strategies in the public interest sector. Information on local, regional, national, and international nonprofit employers and fellowships are available in our Career Library, and hundreds of postgraduation public interest employment opportunities are posted annually.

Preprofessional/Graduate School Advising supports students interested in law, medicine, dentistry, optometry, podiatry, and osteopathy, and other graduate programs. Intended to supplement faculty advising, the career center provides registration materials for the required graduate and preprofessional examinations and application services, as well as reference materials that index funding sources, evaluate schools, and explain application procedures. Career counselors assist students in honing their interests and setting goals relative to graduate education and beyond. The ***Premed and Prelaw Advisor*** and faculty members of the Premed and Prelaw committees assist students in planning their undergraduate curricula and gaining admission to programs.

Multicultural Programs

CENTER FOR CULTURAL PLURALISM

The Diversity & equity Unit at the University of Vermont, headed by the Senior Advisor to the President, is comprised of four departments:

The ALANA Student Center
The Center for Cultural Pluralism
The Office of Lesbian, Gay, Bisexual, Transgender, Questioning and Ally Services
The Women's Center

The Unit provides training, services and programs in support of the University's commitment to the admission, hiring and retention of a diverse community of faculty, staff and students.

The currency of value in education for the 21st Century must include multicultural competencies in order to produce graduates equipped to be leaders and change agents in a pluralistic world. Staff in the Diversity and Equity Unit work collaboratively with all members of the educational community to help the University of Vermont achieve these goals.

The ***ALANA Student Center*** is located on the University of Vermont's Redstone Campus and its facilities include a kitchen, conference room, computer lab, and a community room. The building is available to students 24 hours a day.

The mission of the Center is to provide support for African American, Latino/a, Asian American, Native American (ALANA) students by nurturing their academic, cultural, emotional and social development. The Center's staff further strives to promote community awareness and help create a just multicultural campus climate. The ASC staff works closely with the Office of the Vice President for Student Affairs, Career Services, Residential Life, and Admissions as well as academic departments. The Center is concerned with quality of life issues for ALANA Students because of the profound effect such issues have on the academic success of students of color at predominately white institutions.

Office hours are 8:00-4:30 Monday through Friday. For further information, please call: (802) 656-3819.

The ***Center for Cultural Pluralism*** supports the development of the skills of critical analysis and intercultural awareness in relationship to social justice issues. Its mission is to provide resources and assistance in the delivery of quality multicultural education in order to equip faculty, staff and students with the competencies necessary to function in a diverse world.

The focus for the Center includes the following areas: academic, administrative/staff, student affairs and community outreach. The Center is the major coordinator of activities that support UVM's efforts to provide a campus climate based on equity, respect for all, and the understanding of social justice philosophy. In direct support of this goal the Center for Cultural Pluralism is involved in formal education, professional development, programming, funding support, and support services as related to these four areas. It offers a central meeting place – a "Cultural Hub" – where individuals and organizations working on multicultural awareness and social justice meet and interact with one another. The Center provides classroom space and houses the following organizations: English as a Second Language Program, Office of Conflict Resolution, Cooperative Campus Ministries, Hillel, LGBTQA Services and Asia Program faculty.

Open from 8 a.m. to 4:30 p.m. Monday through Friday, the Center supports and initiates educational and social events. The Art Gallery hosts exhibits featuring work that address cultural diversity or social justice themes. The Resource Library has print and video on multicultural topics available to University and community members. Five meeting spaces can be reserved by calling (802) 656-8818 during office hours. Visitors are always welcome.

The Office of Lesbian, Gay, Bisexual, Transgender, Questioning and Ally Services exists to assist the University of Vermont in meeting the needs of LGBTQ&A staff, students and faculty for full inclusion and representation in the University community. LGBTQ&A Services staff provide consultation and training to all departments of the University as needs are identified as well as in targeted areas of importance to LGBTQ&A students, staff and faculty. The Office articulates LGBTQ&A issues and perspectives in decisions regarding University policies and programming and promotes awareness and understanding among all members of the University community.

The Office and staff also serve as a point of coordination for the LGBTQ&A community on campus by fostering and supporting LGBTQ&A programming and by managing a LGBTQ&A listserve and web page.

A full-time Coordinator, graduate interns and work-study students staff the office, which includes a resource lending library. It is located on the third floor of the Center for Cultural Pluralism at 461 Main Street and may be reached at (802) 656-8637. Scheduled hours are 9:00 to 5:30, M-F, but may vary according to availability of staff.

The ***Women's Center*** is open to all members of the UVM and Burlington communities. The Center focuses on educational programming, resource development and referrals, outreach, and advocacy on issues affecting women. Responding to students, faculty and staff, the Center works to ensure a hospitable campus climate for women and other underrepresented groups. Programming is also done in collaboration with local agencies and community groups. The Center provides leadership development for students through employment, internships, and volunteer opportunities.

In addition, a Victim Advocacy Program, funded by the Department of Justice, provides free and confidential assistance to any member of the University community who believes he/she has been a victim of gender violence, on or off campus. Based at the Women's Center, the program is a collaborative effort with local victims service agencies, the School of Nursing and the College of Medicine. Support, direct services and referrals, for males and females, as well as their friends and families, are offered.

The Women's Center provides a meeting place for classes and for groups working toward gender equity and cultural diversity. The Center has a lending library and a fully-equipped kitchen for use by individuals or groups. The phone number for the office is 656-7892.

Campus Life

OFFICE OF STUDENT LIFE

The work of Student Life begins with new students' Orientation to the University, continues by assisting students in planning co-curricular experiences, and extends to numerous recognition programs for graduating seniors. More information is available on-line at http://www.uvm.edu/~dosa/studact/, or from the Student Life Office in Billings Student Center. Programs supported by the Office of Student Life include:

Orientation and Parent Relations Orientation provides the official welcome to parents and students to the University through summer orientation programs and Homecoming and Family Weekend in the fall. Orientation programs challenge students to explore numerous dimensions of campus life

and to get significantly involved in the University and local community.

Leadership Programs engage students in experiential leadership education. Central programs include leadership classes (EDHI 213 and 214), the Emerging Leaders Program, Women as Leaders Workshops Series, Leadership Recognition, KUDOS! Leadership TREK, and campus-wide leadership retreats.

Greek Life Fraternity and sorority life is an important option for many UVM students. This area of endeavor supports the activities of the Interfraternity Council, the Panhellenic Council, Order of Omega (the Greek academic honor society), the Greek Judicial Board, individual chapters, the Greek Alumni Advisory Council, and the Fraternity Manager's Association. Currently there are 10 fraternities and five sororities.

Community Service and Volunteer Programs The spirit of community service is an integral part of campus life for many UVM students, faculty, and staff. This area includes Community Service TREK (for new students), the broad-ranging efforts of Volunteers in Action (VIA – a consortium of 13 individual community service programs), Hearts and Hands, Alternative Spring Break, Make a Difference Day, Community Serv-a-thon, Community Works and many other links with the local community.

Outdoor Programs Vermont provides a wonderful classroom for students interested in enhancing their outdoor leadership skills, adventure-based education and learning, and in simply getting out and enjoying the mountains, rivers, and lakes. Major aspects of Outdoor Programs at UVM include the Wilderness TREK program (for new students), the Outing Club, the climbing walls located in the gym, weekend trips, and a comprehensive outdoor leadership development program.

Billings Center, managed by Student Life, is a hub of activity each day throughout the school year. Billings houses a number of student organizations and provides a space for meetings, lectures, films, and other campus programs.

The Department of Student Life, the Student Government Association, The Cynic, WRUV-FM, Student Legal Service, VIA, and many other organizations are located in Billings Center. Also in Billings, Cook Commons and the Round Room provide easy access to campus dining service.

STUDENT GOVERNMENT ASSOCIATION (SGA)

The Student Government Association, the primary student governing organization, assumes responsibility for voicing student concerns and interests in the governance activities of the University community. It helps promote the cultural, academic and social aspects of campus. The SGA recognizes and funds approximately 120 student clubs and organizations. More information on SGA is available at http://www.uvm.edu/sga.

ATHLETICS AND RECREATIONAL SPORTS

The University of Vermont sponsors 20 intercollegiate varsity sports, nine for men (basketball, baseball, cross country, ice hockey, lacrosse, skiing, soccer, indoor and outdoor track and field) and 11 for women (basketball, cross country, field hockey, ice hockey, lacrosse, skiing, soccer, softball, swimming, indoor and outdoor track and field).

All teams compete at the NCAA Division I level and every team except ice hockey and skiing compete as a member of the America East Conference. The men's and women's ice hockey teams are members of the Hockey East Association, while the men's and women's ski teams compete in the Eastern Intercollegiate Ski Association (EISA).

Vermont student-athletes compete on a regional and national level. The men's basketball team has won three of the last four America East Championships and advanced to the NCAA Tournament three of the last four years. In 2005, the Catamounts upset #4-seeded Syracuse in overtime for the program's first NCAA victory in its history. The Vermont ski team has won six national championships in its history and finished as the national runner-up in 2005.

The University of Vermont student-athletes excel on a very high level in the classroom. In 2005, UVM won the America East Academic Cup as student-athletes posted a 3.14 GPA, the highest in the 10-year history of the award.

Student-athletes must meet academic and eligibility guidelines set forth by the NCAA, the university and the respective conferences. Any students interested in competing in a varsity sport should contact the head coach of that sport, a directory along with more information on each sport can be found on the athletic web site at www.uvmathletics.com.

Club Sports A variety of club sports, from Rugby to Equestrian and Cycling teams, offer UVM students recreational activity a well as competition with other colleges and universities.

Recreational Sports The Recreational Sports Program offers over 20 intramural sports and special events throughout the academic year. Recreational facilities are available every day to provide students the opportunity to participate in activities that interest them. For specific program information, contact the Recreational Sports Office, (802) 656-4483, or visit www.uvm.edu/~recspts/ recsports.

Health Services

CENTER FOR HEALTH AND WELLBEING

The Center for Health and Wellbeing offers counseling, medical and women's clinics, nutritional counseling, physical therapy and athletic medicine, a health promotion program, a drug and alcohol education program, laboratory services, and 24-hour emergency telephone advice

(802) 656-3350. Visit our website for more complete information — http://www.uvm.edu/~dosa/chw.

Counseling Over a thousand students use the services of the Counseling Center each year for improving academic success, for mental health counseling, and personal growth work. All records in the Counseling Center are confidential, the names of clients are not available without the student's permission. The staff consists of women and men of varying backgrounds, ethnicity, ages, and physical abilities. Students taking six credits or more are eligible for services.

The Counseling Center is accredited by the International Association of Counseling Services and adheres to the code of ethics of the American Psychological Association. Counseling is located in an historic brick house on the corner of Main Street and South Williams, (802) 6563340.

Student Health/Medical and Women's Health Clinics The Clinics are available to all students for primary and preventive health care. Most of these services are covered by the comprehensive student fee. Students entering the University are required to furnish the Center with a complete immunization record, to include two valid measles (Rubeola) vaccina-

tions, and a medical history. A physical exam is not required.

Health Insurance The University makes available to students an optional health insurance plan that provides hospitalization and some outpatient benefits. Full-time students who do not provide proof of adequate health insurance at the time of registration will be required to purchase the University-sponsored plan.

The Burlington area has a large and sophisticated medical community of which the Center for Health and Wellbeing is a part. Students requiring consultations are referred to specialists in the area. When necessary, hospitalization is usually arranged at Fletcher Allen Health Care, a teaching hospital located on the edge of the main campus.

Housing

RESIDENTIAL LIFE

The mission of the Department of Residential Life is to create an atmosphere within the University of Vermont residential system that facilitates the growth and development of all students. This includes providing a safe and secure environment that fosters healthy, inclusive community building among all residents while supporting and emphasizing academic success. We are committed to and intentional about providing students a range of experiences within their living environment. Desired outcomes of these experiences include:

- The development of a sense of belonging.
- The acquisition of knowledge and skills.
- The development of critical thinking skills.
- The ability to make ethical choices.
- The assumption of self responsibility.

The residence halls house approximately 4,500 students on four residential campuses: Athletic, Central, North, and Redstone. Halls are predominately traditional hallway and suite style housing, consisting mostly of double and single rooms. Each campus offers special housing options, from academically-based residential learning communities such as Global Village and Environmental Greenhouse to interest-based floors such as Outdoor Experience and Quiet Lifestyle.

Each residence hall complex has a service desk where students can pick up their mail, check out recreational equipment, and get information. Professional staff and/or student staff are on call 7 days a week for general assistance as well as to respond to emergencies.

All complexes also offer study space, lounges, laundry facilities, and kitchenettes.

***Student Rooms*:** Each student room is equipped for comfortable residence hall living. Double rooms have two beds, two desks and chairs, bureau space for each student, two closets, and blinds or shades on the windows. Bookshelves are provided in some rooms. Students provide their personal amenities. All student rooms are wired for access to the Internet and UVM's campus cable television system. There is no connection fee for either service.

Undergraduate Housing: All first-time, first-year students are required to live on-campus for four matriculated semesters. Information on exceptions to the on-campus residency requirement is available at reslife.uvm.edu. Housing for returning students is determined by a lottery held each spring.

Students living in the residence halls are required to have a room and meal plan contract. In August, new students will receive notification of their housing assignments. Rooms may not be occupied until the date specified. Students are expected to leave the residence halls no later than 24 hours after their last examination or by 8:00 p.m. on the last day of final examinations.

Apartments and Family Housing: Housing for graduate and non-traditional students is available at Fort Ethan Allen, located a few miles from campus in Winooski, Vermont. The 115 one, two, and three bedroom apartments are close to UVM, shopping, hospitals, and educational institutions. Please visit the Residential Life website at reslife.uvm.edu for detailed information on Apartment and Family Housing.

The Department of Residential Life is located in Robinson Hall on Redstone Campus. Please peruse our website at reslife.uvm.edu for complete information on housing.

INTER-RESIDENCE ASSOCIATION (IRA)

The Inter-Residence Association represents students living in UVM residence halls. The council, with its executive board and representation from each residence complex and ongoing committees, offers programs and services and provides leadership for residence hall students. The Association represents residential student interests to other constituencies within the University community and the greater Burlington area.

Veterans Educational Benefits

The University provides support and information to any veteran or dependent eligible for benefits under Federal Law, Chapters 30, 31, 32, 34, 35, or 106. Students eligible for these benefits should contact the Registrar's Office at least one month prior to registration each semester. Students wishing to register for benefits should be prepared to present their certificates of eligibility.

Students involved in the Veterans Program should contact the University in the event of any change in credit load, dependency status, address, or major. The phone number is (802) 656-2045.

Academic and General Information

ACADEMIC ADVISING

Academic Advising is a process in which students seek and receive guidance with academic program planning, usually from a faculty advisor. Meaningful educational planning is compatible with a student's life goals, therefore academic advising encompasses discussion of life goals and assistance with the developmental process of life goals clarification. The ultimate responsibility for making decisions about educational plans and life goals rests with the individual student. Assistance with the clarification of life goals is not limited to the academic advising relationship, and may include staff in areas such as career development, residential life, and counseling. For academic advisors, assisting students in the clarification of life goals means helping students explore and define their educational and career goals in an atmosphere of mutual respect and learning. Advising, while non-prescriptive, encourages students to think critically, seek out resources, and develop action steps. The desired result is that students will feel a sense of connection with the advisor and a sense of guidance, while realizing personal responsibility for exploring options and making decisions.

Academic Advisors remain alert to any barriers to student academic performance and guide students to address these appropriately. The advisor needs to be able to refer student to appropriate academic and support services to enhance both their student experience and their academic success. Faculty advisors are expected to initiate contact with each advisee during a student's first two semesters on campus and when a new advisee is assigned to the advisor (includes newly declared majors and transfer students). After the first two semesters, maintaining regular contact with the advisor is the responsibility of the advisee. The advisor will be prepared to meet with and listen to his/her advisees on a regular basis. Advisor and advisee share responsibility equally for the success of the advising relationship.

Advising Resources

In addition to an assigned faculty advisor, a variety of other advising resources are available to undergraduates:

The Learning Cooperative represents a collaborative effort on the part of academic and student affairs offices to improve the ability of students to benefit fully from their academic experiences. The Learning Coop supplements the academic environment by providing developmental instruction in writing, reading, and study skills, works with students to develop good learning strategies for challenging courses, and maintains a campus-wide tutoring program.

Prehealth Advising assists undergraduate students with the admissions requirements for dental and medical school. A library of resource materials is maintained which includes literature on alternative health careers, school catalogues, and premedical education journals.

Preveterinary Advising is available to discuss plans for graduate school and employment in animal science career areas. A selection of catalogues, pamphlets, and other related literature is maintained.

International Student Advising is provided through the Office of International Education to assist international students with personal and academic problems, as well as matters relating to immigration and social and cultural adjustment. A special orientation program, prior to the beginning of each semester, provides new international students with an introduction to the University and the Burlington community. An active campus International Club provides an opportunity for international students to contribute to campus life and to make friends outside the classroom. Students planning to study abroad should also consult the Office of International Education which is located at B162, Living/Learning Center.

Multicultural Student Advising at the ALANA Student Center provides broad based support aimed at ensuring the success of Multicultural students at UVM. Services include: academic advising; linking students to resources and opportunities on campus; tutoring; peer mentoring; social and cultural networking. Students may elect to take part in The Summer Enrichment Scholarship Program. A pre-first year opportunity that offers an academic experience (6 credits) and provides an introduction to campus and college life before the official start of the school year.

Prelaw Advising is provided through both Career Services and faculy and staff pre-law advisors in the College of Arts & Sciences. Career Services also sponsors workshops, panel discussions and visiting law school representatives. More information regarding pre-law advising can be found at: http://www.uvm.edu/~career/

Career Services assists students who are exploring academic majors, internships, work-study positions, full and part-time work opportunities and future career options. Advising is provided as early as first semester and is offered throughout a student's academic career at UVM.

TYPES OF ENROLLMENT

Degree Students

Students who have presented appropriate credentials for admission and have been accepted as students in a degree program. The following four actions apply only to degree students.

Intercollege Transfers Degree students may transfer to another college/school within the University. To do so, a student must complete a Change of Major/College form and obtain the approval of the deans of the two units involved. Students wishing to transfer must have a cumulative GPA of 2.0. A cumulative GPA of 2.5 is required for transfer admission into teacher licensure programs in the College of Education and Social Services. Transfers will be approved only if space is available and may be conditional upon students satisfactorily completing requirements set out by the new college/school.

In the case of veterans receiving educational benefits through the Veterans Administration, the change must be brought to the attention of the Registrar's Office, 360 Waterman Building, where a Change of Program or Place of Training Form #22-1955 must be completed and submitted for approval to the Veterans Administration.

Readmission to the University Degree students who have left the University for one semester or more must write

to their dean to request readmission. Students must apply for readmission by October 31 or March 31 preceding the appropriate semester of return.

Withdrawal from the University Degree students who wish to withdraw from the University must first notify their academic dean in person or writing.

Leave of Absence A leave of absence means that a student in good standing, who is eligible for continued enrollment, ceases to be enrolled and is guaranteed readmission.

1. Students submit a written application for a leave of absence to their college/school prior to the beginning of the semester that the leave will take effect. To be confirmed, leave forms must be signed by both the student and their dean.
2. Leaves are granted for a finite period of time, and normally may not exceed four semesters. A leave normally may not be granted to students on academic trial or disciplinary probation.
3. While on leave, the students status is temporarily inactivated. A leave of absence guarantees an individuals readmission only if the student confirms intent to return by the closing date for a normal readmission application (October 31 and March 31 preceding the appropriate semester). A leave does not guarantee housing upon the students return
4. Unused financial aid will not be carried over. Upon readmission, students must reapply for financial aid according to Office of Financial Aid policies and procedures in effect at that time.

Class Standing

The designation of a student's class shall be determined by the number of academic credits completed. The designations are as follows:

First-year	0-26.9 Credit Hours
Sophomore	27.0-56.9 "
Junior	57.0-86.9 "
Senior	87.0 and over "

Nondegree Students

This category applies to students who have presented minimum credentials and have been permitted to undertake limited course work up to six credit hours, or two courses, per semester for a purpose other than the earning of a degree. Approval from the Dean of Continuing Education is necessary for a student to exceed the six-credit maximum. Credits earned by nondegree students who later apply and gain admission to a degree program will be evaluated and, if appropriate, will be accepted toward completion of their degree.

Nondegree students may enroll for a maximum of six credits or two courses per semester in the day program.

Selection of courses for those having long-range plans of earning a degree in the daytime program should be made on the basis of information given in this catalogue. Students interested in making a formal application for admission to the University should contact the Admissions Office.

Students presently enrolled and in good standing at another institution may take courses at UVM to transfer to their institutions. These visiting students are considered nondegree students and should contact Continuing Education for information and registration material.

Before completing 30 credits of course work through the evening program or summer session, degree-bound students should consult with an advisor at Continuing Education, submit an application for formal admission to UVM, and then should consult with the appropriate dean's office to structure further courses into a degree program.

All nondegree students who would like assistance in planning educational programs and selecting courses should contact Continuing Education, (802) 656-2085.

REGISTRATION

Degree students must register for the next semester at the designated time, unless excused in advance by their dean. Registration instructions are on the web at http://registrar.uvm.edu. Written approval of the student's dean is required to register for more than 18 credit hours.

Students with disabilities, who are in receipt of appropriate medical certification from the Director of the Student Health Center, will be approved to enroll for a course load of less than 12 credit hours (FTE). Such students will be afforded full-time status in accordance with Section 504 of the Rehabilitation Act of 1973.

Any credits earned at the University of Vermont are transferable to another institution at the discretion of the receiving school.

Course Add/Drop

Courses may be added or dropped only during the first ten instruction days of the semester. After the first five instruction days the instructor may not allow the course to be added if material may not be made up (e.g. laboratories) and if the absence of this work would seriously affect the quality of the students educational experience.

Drops will only be allowed after the tenth day of instruction if a student was enrolled by administrative error and did not attend the class. The disposition of such cases is handled by the Registrar's Office.

Course Withdrawal

From the eleventh day of instruction to the end of the ninth week of classes, students may withdraw from courses. To do so, students must complete a Course Withdrawal Form, consult with their advisor, and obtain the instructor's signature. The student must deliver the form to the Registrar's Office no later than 4 p.m. on Friday of the ninth week of classes. Students give a copy to their dean for information purposes. A grade of W will be assigned by the instructor(s) and recorded on the student's permanent record.

Between the end of the ninth week and the last day of classes, students may withdraw from one or more courses only by demonstrating to their college/school studies committee, through a written petition, that they are unable to continue in the courses(s) due to circumstances beyond their control. Such petition must contain conclusive evidence, properly documented, of the illness or other situation preventing completion of the course(s). Acceptable reasons do not include dissatisfaction with performance or expected grade, with the course or instructor, or desire to change major or program. If the petition is approved, a grade of W will be assigned by the instructor(s) and recorded on the student's permanent record. If the petition is denied, the instructor(s) will assign a final grade (A-F) in accordance with the same criteria applied to all other students in the course(s).

Withdrawn courses are included in the number of credits used for billing purposes. No withdrawals will be permitted after the last day of classes. In all instances, withdrawal grades remain on the permanent academic record, but will not affect the grade-point average.

Retroactive Academic Adjustment

The University will consider requests for late withdrawal and retroactive academic adjustments when those requests are accompanied by appropriate information. To receive consideration, a student or his/her authorized representative must submit to his/her dean's office a completed Consultation Form for Medical Withdrawal and Incompletes. Forms are available in deans' offices.

Students may appeal the academic adjustment decision of their school or college to the Provost's Office. If the appeal is based upon a certified disability and recommended as an appropriate accommodation, students may appeal the academic adjustment decision of their school or college as outlined in Policies and Procedures for Students with Disabilities under the section entitled "Protocol for Dispute Resolution." All appeals must be submitted in writing.

Decisions regarding adjustments to academic records are distinct and separate from refunds. Any refund, including tuition, financial aid awards, fees, room, and board, will follow federal and institutional guidelines. The effective date for any refund will be the date that the completed form was received by the academic dean's office. Questions regarding refunds should be directed to the Student Financial Services.

Independent Study Courses

Independent study is a course taken for credit, which is tailored to fit the interests of a specific student, and which occurs outside the traditional "classroom/laboratory setting."

Independent study is carried out under the direct supervision of a faculty member having expertise in a particular area of investigation. Consequently the project will be done in the department primarily responsible for the field of study. Prior to enrollment in independent study, students must obtain the approval of their advisor, faculty sponsor, and the faculty sponsor's department chairperson.

Independent study may be taken for variable credit. The amount of credit to be granted should be mutually agreed upon by the student and the faculty sponsor prior to registration. When a project is to cover more than one term, the designation XC (extended course), rather than incomplete, should be used on the final grade sheet for the first term of work.

Academic units offering independent study will be responsible for administering such work. Specific guidelines, which define the responsibilities of both faculty and student for administering the independent study, are noted below. Alternative guidelines that incorporate these basic points are acceptable.

Guidelines:

a. The success of an independent study project is often related to the amount of advance planning expended on the project. Consequently, planning for the project should, whenever possible, be initiated in the semester before the course is taken.

b. By the end of the add/drop period, students will be required to submit to their faculty sponsor a specific plan which must include, but not be limited to, the following:

i. The project title.

ii. A statement of justification, indicating why independent study is being selected and the reason for undertaking the project, its importance, and how it relates to other work done by the student.

iii. A clear and complete statement of project objectives.

iv. A concise statement of the plans and methods to be used in order to accomplish each objective.

c. During the first full week of classes the student and the faculty sponsor will meet and prepare a document which includes the following:

i. A schedule of dates when the student and faculty member will meet and discuss progress, including a time plan indicating when various parts of the work are projected for completion.

ii. A list of those ways in which documentation of work can be shown.

iii. A plan for evaluation, which will include the specific work to be submitted for evaluation on the project, and a statement of criteria to be used for evaluation, will also be included.

d. It is the responsibility of the faculty supervisor to ensure that all the provisions outlined above have been satisfactorily accomplished. Copies of all documents and schedules mentioned must be filed with the department chairperson by the end of the add/drop period. Faculty sponsors should retain the completed projects, along with faculty evaluations, for review, if necessary, by appropriate school/college committees.

Undergraduate Enrollment for Graduate Credit

Senior undergraduates may enroll for up to six graduate credit hours at UVM under the following circumstances: courses must be available for graduate credit; total enrollment including the graduate course must not exceed twelve credit hours in the semester in which the course is taken and the course must not be computed as part of the bachelor's degree. Permission to seek graduate credit must be obtained from the Graduate Dean in writing by the dean of the undergraduate college/school. Graduate credit can be used only at UVM if the course is judged appropriate by the student's advisor for the particular graduate program.

Accelerated Master's Degree Programs

A number of departments and programs provide opportunities for selected undergraduates to participate in Accelerated Master's Programs (AMPs). This option is available for admission to graduate programs in Animal and Food Sciences, Biology, Biomedical Technology, Biostatistics, Computer Science, Education (Curriculum and Instruction and Professional Education), History, Materials Science, Mathematics, Mechanical Engineering, Microbiology and Molecular Genetics, Nursing, Public Administration, and Statistics. The AMP allows early admission to graduate studies with up to six concurrent credits double-counted toward the bachelor's and master's degrees.

EXAMS AND GRADING

Examinations

Hour Tests:

1. One or more hour tests are usually given during a semester in each course. These are scheduled by the faculty member within the class periods assigned for the class.
2. In a course which has several sections meeting at different hours, a common test for all sections may be given only by arrangement with the Registrar. A schedule of such tests is made up at the beginning of the semester.
3. Attendance at hour tests scheduled outside the normal meeting time of the class shall not have precedence over attendance at other scheduled activities or other

important commitments of the students concerned. Faculty members must be prepared to give a make-up test for those unable to be present at the time set.

4. University academic responsibilities have priority over other campus events. Attendance at (1) regularly scheduled classes have priority over specially scheduled common hour examinations, (2) common hour examinations have priority over attendance at other activities.

Final Exams:

1. The examination period at the end of each semester is set by the official University calendar.
2 Final examinations shall be given only during the regular examination period except by permission of the dean of the college/school on request of the chairperson of the department. No examination (regular or final) shall be given during the last week (the last five instructional days) of the semester except lab exams given in courses with specific lab sections.
3. The time and place of each final examination are determined by the Registrar and a schedule is circulated and posted. Any change in the scheduled time or place may be requested by the chairperson of the department concerned when conditions seem to warrant such special arrangement. Decision on such requests rests with the Registrar.
4. In every course in which a final examination is given, every student shall take the examination unless excused by the instructor.
5. Students having a conflict in their final examination schedule must notify the faculty concerned of such conflict not later than the close of business one week prior to the last day of classes for the semester in which the conflict arises.
6. Students who are absent from a final examination for any reason must report that fact and the reason, in person or in writing, to their instructor within 24 hours. If the absence is due to any situation beyond the reasonable control of the student (e.g. illness or family tragedy), the instructor must provide the student with the opportunity to complete the course requirements. At the instructor's discretion, this may be an examination or some other suitable project. The instructor may require evidence in support of the student's reason for absence.
7. If the absence is not reported as provided above, or is not excused by the instructor, the examination is regarded as failed.
8. No student shall be required to take three or more final examinations in one 24-hour period.
9. Unless a mutually agreeable alternative time can be reached by the student and the instructor, the scheduled make-up will occur the next day after the regularly scheduled examination. These considerations are subject to the following constraints: all exams will be given in the final exam period and all conflicts must be resolved before the start of the final exam period.
10. Students will select which of the three examinations they wish to take at an alternative time. In cases where the instructors in all three sections feel it is impossible to give the examination at an alternative time, and all conflicts are in the same academic unit, the appropriate dean's office, in consultation with the faculty involved, will establish which of the three examinations will be taken as a make-up. If the unresolved conflict involves more than one college, the deans of the units in question will resolve the matter. If the deans involved cannot reach agreement, then a person from the Provost's Office will establish which of the three examinations will be taken as a make-up.
11. All final examination materials should be retained for at least one month after the final examination session in case any questions arise concerning grades and to afford students the opportunity to review their graded final examination papers if they wish to do so.

Grades

Grades are reported and recorded as letter grades. Student grade-point averages (GPA) are calculated from quality point equivalents noted here:

		Points per Credit Hour
A+	Excellent	4.00
A	Excellent	4.00
A-	Excellent	3.67
B+	Good	3.33
B	Good	3.00
B-	Good	2.67
C+	Fair	2.33
C	Fair.	2.00
C-	Fair	1.67
D+	Poor	1.33
D	Poor	1.00
D-	Poor	0.67
F	Failure	0.00
XF*		

* - Failure resulting from academic dishonesty. This grade is equivalent to the grade of F in the determination of grade-point averages and academic standing. (Eff. Fall, 2005).

In certain instances, grades are assigned that will appear on the transcript, but will not be used in grade-point calculation. These grades are:

XC	Extended Course. (see below)
AU	Audit. (see below)
INC	Incomplete. (see below)
P/NP	Passed/Not Passed. (see below)
S/U	Satisfactory/Unsatisfactory. (see below)
M	Missing. Grade not turned in by the instructor.
W	Withdrawn.

The XC grade is assigned when the nature of the coursework makes it unreasonable or impossible for the student to complete the required work within the regular semester.

AU: Students wishing to regularly attend a course, but not receive credit, may register as an auditor, with the approval of the dean and the instructor. Auditors have no claim on the time or service of the instructor. Students must meet minimum levels of performance set by the instructor at the time of registration in order to receive an audit grade. Tuition is charged at the applicable rate. Under no circumstances will changes be made after the add/drop period to allow credit for courses audited.

INC grades may be assigned when coursework is not completed for reasons beyond the student's control. Incompletes require the approval of the student's college/school dean. The incomplete course requirement will be satisfied at the earliest possible date, but not longer than the beginning of the corresponding semester of the next academic year. In cases of laboratory assignments, the student must complete all work the first time that the laboratory experience is offered again. Instructors will fill out an incomplete card and forward it to the student's dean and include the reason for the incomplete as well as the completion date agreed to by the student and instructor. It is the student's responsibility to learn from the dean's office whether the request has been approved, the date of completion, and, from the instructor, the nature of all

outstanding requirements.

Incompletes may be approved for the following reasons: Medical, personal tragedy or academic. In all instances, students must contact the appropriate deans office to obtain necessary applications information.

P/NP: Degree program students, not on academic trial, are permitted to take up to six courses (or as many courses as they have semesters remaining for transfer students) on a pass/no pass basis, beginning in their sophomore year (second semester of the first year for two-year students). Courses in the student's major department, either for the major or for the degree, and electives within the distribution requirements of a department may not be taken on a pass/no pass basis. This option may be used without condition for free electives. It also may be used for physical education (activity) courses, whether taken to fulfill a requirement or as electives, and shall not be counted as a part of the six standard courses described above.

Students must complete all work normally required in these courses to receive full credit toward graduation for passing them. The instructor will not be informed of the students status and the Registrar will record grades of D or higher as PASS and grades of F as NO PASS. The grade submitted by the instructor will not become available to the student nor to any third party.

To apply, a PASS/NO PASS Request Form, obtained from the Registrar's Office, must be approved by the student's academic advisor and submitted to the Registrar's Office during the first two weeks of the semester. Requests to be removed from that status must be filed during the same period. Any question about a course or courses being appropriately elected as pass/no pass for a student will be resolved by the student's college/school dean.

Note: Nondegree students may not take courses on pass/no pass basis.

S/U is used in courses where the A-F grade is inappropriate, such as in seminars, internships, practica, etc. The student will receive the appropriate credit hours toward graduation for the S grade, but not for the U grade. Courses using this grading system are so indicated in the catalogue description. The S/U is available only on a whole course basis and is available for courses that count towards degree requirements.

Grade Appeals

Students who feel that they have received an unfair grade should first contact the Registrar's Office to verify that the grade submitted by the instructor is the same as that printed on the grade report. If the grade has been reported correctly, a student should next contact the instructor, department chair, and dean of the college/school in which the course is offered (in that order) to discuss the matter. A decision to change a grade can be made only by the instructor.

Grade changes must be made by the instructor and approved by the student's dean by the end of the first month of the following semester unless an extension is granted by the student's dean.

Dean's List

Dean's List status is awarded to full-time undergraduate students with a cumulative grade-point average of not less than 3.0 who stood in the top 20 percent of each class of their college/school during the preceding semester. The deans' lists are published at the beginning of each semester. Full-time enrollment in this case shall be a minimum of 12 credit hours in courses in which grades of A, B, C, D, or F can be given.

In addition, each semester a Continuing Education Honors List recognizes the top 20 percent of nondegree students who have had a long association with UVM and achieved a high cumulative grade-point average.

Repeated Courses

Students who repeat a course only receive credit once for the course. The grades for all occurrences of the course remain on the permanent academic record and all are included in computing the cumulative grade-point average.

Academic Reprieve Policy

The Academic Reprieve Policy is designed to make it possible for former UVM students, whose academic performance when first enrolled was below standard, to resume their studies without the encumbrance of the grades previously earned.

The Academic Reprieve Policy is available to returning students who have not been enrolled at UVM or any other accredited institution of higher education for a period of at least three calendar years.

Former students returning to the University may request the application of the Academic Reprieve Policy only once in their career at UVM. The established procedures and criteria for admission or readmission apply to students applying for an Academic Reprieve.

The dean of the college/school in which the student is enrolled at the time of initial eligibility for the application of the Academic Reprieve Policy shall determine eligibility for, and application of, the policy. Eligible former students must file a petition with the appropriate dean requesting reprieve of all prior course work at the University, either at time of admission or readmission or before the close of the first semester of re-enrollment. The Reprieve Policy includes all previous UVM work and does not allow the students to pick and choose individual courses for reprieve. All courses with grades below passing are ignored, credit hours for courses passed are carried forward, but the grades are not figured in the new grade-point average, which begins again at zero.

Any person electing the reprieve option is required to complete a minimum of 30 additional regularly graded credits at UVM before a degree may be awarded; these credits are not open to the pass/fail option. Those electing the reprieve option may qualify for honors at graduation only on the same basis as any transfer student, i.e. completion of 60 or more regularly graded credits at UVM (30 or more regularly graded credits for the associate degree programs).

Persons electing the reprieve option will be required to meet degree requirements of the catalogue in effect on the date of the student's application for readmission.

The Reprieve Policy applies solely to regular undergraduate degree programs. Graduate programs are specifically excluded.

Low Scholarship

Following are the general University regulations relating to low scholarship. The Studies Committee of each college/school may determine more stringent requirements. Students with questions regarding their academic standing should consult their college/school dean.

"On Trial": This is an intermediate status between good standing and dismissal in which students remain enrolled according to stated academic conditions of their college/school.

Students are placed "on trial" by their dean or designated committee of their college/school. Special academic conditions may be set in each case. Normally the period of "trial" status is one semester.

This policy applies in the following instances:

(1) Students, having been dismissed for low scholarship, are placed "on trial" upon readmission.

(2) Students may placed "on trial" if in any semester they have failed one-half or more of their semester hours, but have been permitted to continue in college/school.

(3) Students whose records have been consistently below the graduating average or generally unsatisfactory in any semester may be placed "on trial" or continued "on trial" even though they do not come within the provisions that apply to "Separation."

Separation: Students are dismissed from UVM if they receive grades below passing in one-half or more of their semester hours in any semester, unless they are allowed to continue by action of the designated committee.

Students who fail to meet the condition of their trial or whose record has been unsatisfactory and consistently below the graduation average may be dismissed for low scholarship even though they do not come within the "On Trial" provisions.

Students dismissed for low scholarship must address their application for readmission to their college/school and receive written approval from their dean before enrolling in any University course.

Student dismissed for disciplinary reasons must receive written approval from the Vice President for Student Affairs before enrolling in any University course.

Transcripts

An official transcript is the reproduction of a complete, unabridged permanent academic record validated with the University seal, facsimile signature of the Registrar, and date of issue. A rank-in-class entry is made upon completion of undergraduate degree requirements.

Students and alums may obtain an official transcript of their permanent academic record by writing the Office of the Registrar, 360 Waterman Building. Please allow a minimum of one week for normal processing and three weeks following the end of a semester. Transcripts are not released when there is indebtedness to the University.

WAYS TO EARN CREDIT

Transfer of Credit

Students seeking to transfer academic credit may do so only for courses that are taken at accredited institutions and are comparable in content, nature, and intensity to courses taught at The University of Vermont. Credit is not given for transfer courses with grades lower than C. To insure transferability of courses to be taken elsewhere, degree students must secure prior approval for each course in writing from Transfer Affairs. Questions regarding credit transfer should be directed to the Office of Transfer Affairs, 339 Waterman.

Credit by Examination

A degree student may, under the following conditions, receive credit for a course by taking a special examination and paying the special examination fee charge of $50 per credit hour. The examination fee must be paid prior to taking the examination.

A request for such an examination must be made in writing at least one month before the date of the examination, and it must be approved by the student's advisor, the chairperson of the department in which the course is given, and the dean, in that order. The student must neither have audited, previously received a grade or mark, nor have attempted a prior special examination in this course at UVM or at any other institution of higher education. Only specific University courses may be challenged using special examination. Readings and Research, Honors Research, etc., are specifically excluded. Special Topics may be challenged only if that course is offered during the semester in which the special examination is being requested. The student may not take a special examination in a course whose content is presupposed by other courses the student is currently enrolled in or has already taken. In cases of uncertainty, the department chairperson shall decide whether it is appropriate for the student to take a special examination for credit in a particular course. Upon passing the special examination, as determined by the examiner and the chairperson of the department in which the course is given, the student receives credit, but not a grade, for the course. Credit by examination forms are available in the Student Service Center, Third Floor of the Waterman Building.

College-Level Examination Program (CLEP)

The University considers credit for most of the 30 specific subject CLEP exams providing the student has not previously attempted a similar course of study at a college level. Scores acceptable for credit are comparable to attaining a level of accomplishment equal to a B in a graded course situation. Individual exams may earn a student three, six, or eight semester hours of credit depending on the nature and scope of the material covered. Credit is not granted for the general exams.

Credit granted for CLEP Examinations may be applied toward distribution requirements and to the total semester hours specified for a particular degree program when approved by the dean of the college/school in which the student is subsequently a candidate for a degree. Information about CLEP is available at the Office of Transfer Affairs, 339 Waterman Building.

Credit for Calculus

Credit will be given for Math. 21, or Math. 22 and Math. 121, according to the following guidelines.

May receive credit for Math. 21 provided the student:
1. Has not taken the advanced placement test in math ematics; and
2. Has not attempted Math. 21 for credit at UVM; and
3. The average of the grades received in Math. 22 and Math. 121 is B or better; and
4. Received a B or better in Math. 121.

May receive credit for Math. 22 provided the student:
1. Has not taken the advanced placement test in mathemat ics; and
2. Has not attempted Math. 22 for credit at UVM; and
3. Received a B or better in Math. 121.

Academic Learning Integrated with Volunteer Experience (ALIVE)

Through this program, the University of Vermont offers college credit to members of AmeriCorps*VISTA (Volunteers in Service to America). VISTA members participating in ALIVE can earn up to nine undergraduate or graduate credits in a variety of disciplines for structured reflection of their service experience. VISTA scholars will attend workshops, create portfolios and work with faculty advisors during residency weekends on campus that will not detract from their time serving in communities. UVM will annually award six scholarships to Vermont VISTA scholars who participate in ALIVE.

Credit for Military Service

University of Vermont degree students may have their military service record reviewed for possible transfer credit. Veterans should present form DD 214 to the Office of Transfer Affairs; active duty personnel should have form DD 295 sent directly from the educational officer on the base. Army personnel seeking credit other than Physical Education should have an AARTS transcript sent directly from: AARTS transcript, Manager, AARTS Operations Center, 415 McPherson Ave., Ft. Leavenworth, KS 66027-1373. Transcripts of examinations sponsored by the Defense Activity for Non-Traditional Educational Support (DANTES) are available at a nominal charge from: DANTES Contractor Representative, Educational Testing Service, P.O. Box 2819, Princeton, NJ 08540. All documents except form DD 214 should be sent directly to the Office of Transfer Affairs, University of Vermont, 360 Waterman Building, Burlington, VT 05405.

Students should contact the Office of Transfer Affairs for more information.

DEGREE REQUIREMENTS

Degrees are conferred on the recommendation of the colleges/schools. Specific degree requirements may be found in the catalogue sections devoted to the respective colleges/schools.

To be eligible for graduation, a student must have attained a cumulative grade-point average sufficient to meet the minimum requirements for the college/school in which the student is officially enrolled. Beginning with the class of 1984, the minimum grade-point average for graduation is 2.00. Grades in courses accepted for transfer credit are excluded in computing this average.

Every degree candidate must have taken 30 of the last 45 credit hours in residence at the University before being awarded their degree. An exception to this rule exists for those students who have completed three years of premedical study in the University and are awarded their degrees after successful completion of one year of study in any approved college of medicine. Other exceptions to this rule may be made only upon decision of the dean or the appropriate faculty committee of the student's college/school. To qualify for a second bachelor's degree, the candidate must have fulfilled all the requirements for the degree and must have taken a full year of course work, usually 30 hours, in addition to that taken to qualify for the first degree.

Two physical education credits, normally completed during the first or sophomore year, are required of all undergraduate students in four-year programs. These credits will be included in the total number of hours required for graduation. Students may opt to take physical education on a pass/no pass basis. Medical examinations are required of all new students. Those with serious conditions may be given restricted work or may be excused by the Director of the Student Health Center.

Students pursuing two-year degree programs shall be required to complete one credit of physical education course work.

Students 25 years of age or older at time of admission or readmission are exempt from physical education requirements.

University Honors

The bachelor's and associate's degrees may be conferred with honors, by vote of the Faculty Senate, in recognition of general high standing in scholarship. Three grades are distinguished and indicated by inscribing on the diploma the words cum laude, magna cum laude, or summa cum laude.

Honors are determined in the following manner: Within the graduating class of each college/school, students in the top one percent will receive summa cum laude; the following three percent will receive magna cum laude; the next six percent will receive cum laude. The total number of honors awarded will not exceed ten percent of the graduating class of each college/school.

Honors will be calculated on all grades received at UVM. To be considered, a student must have taken at least 60 hours (30 hours for two-year programs) at UVM in which a letter grade of A, B, C, D, or F has been awarded.

University Scholars

Beginning with the class of 2008, Honors College students who complete all curricular requirements of the Honors College will graduate as University Scholars.

STUDENT RESPONSIBILITY

Classroom Code of Conduct

Faculty and students will at all times conduct themselves in a manner that serves to maintain, promote, and enhance the high quality academic environment befitting the University of Vermont. To this end, it is expected that all members of the learning community will adhere to the following guidelines:

1. Faculty and students will attend all regularly scheduled classes, except for those occasions warranting an excused absence under the University Attendance Policy (e.g., religious, athletic, and medical).
2. Students and faculty will arrive prepared for class and on time, and they will remain in class until the class is dismissed.
3. Faculty and students will treat all members of the learning community with respect. Toward this end, they will promote academic discourse and the free exchange of ideas by listening with civil attention to comments made by all individuals.
4. Students and faculty will maintain an appropriate academic climate by refraining from all actions that disrupt the learning environment (e.g., making noise, ostentatiously not paying attention, and leaving and reentering the classroom inappropriately).

Attendance Policy

Students are expected to attend all regularly scheduled classes. The instructor has the final authority to excuse absences. It is the responsibility of the instructor to inform students of his or her policy for handling absences and tardiness, and the penalties that may be imposed. Notification should be done both verbally and in writing at the beginning of each semester.

It is the responsibility of the student to inform the instructor regarding the reason for absence or tardiness from class, and to discuss these with the instructor in advance whenever possible. The instructor has the right to require documentation* in support of the student's request for an excuse from class. If an out-of-class exam is scheduled which conflicts with a regularly scheduled class, the regularly scheduled class has priority

The instructor has the right to disenroll any student from a course if that student (1) does not meet the prerequisities of the course, or (2) fails to attend a scheduled course by the third instructional day of a semester or the second scheduled class session of a course, whichever comes later, unless the student

has notified the instructor and has been excused. To disenroll students the instructor must notify the Registrar, who will remove the student's name from the class list and the course from the student's schedule. The student is responsible to determine whether or not she or he is enrolled in a class.

*When a student is unable to attend class for a health reason, the student may give permission for the instructor to discuss the situation with a representative from the Center for Health and Wellbeing. As with all absences, the faculty member has final authority to excuse students from classes.

Athletic-Academic Conflicts Students participating in inter-collegiate athletics should plan their schedules with special care, recognizing the primary importance of all of their University academic responsibilities. Each semester, members of UVM varsity and junior varsity teams are responsible for documenting in writing any conflicts between their planned athletic schedule and the class schedule to their instructors by the end of the second full week of classes. Students and instructors should then discuss potential conflicts between course requirements and intercollegiate competitions. When an unavoidable conflict exists, the student and instructor should seek a resolution which permits the student to address the course requirement and participate in the athletic competition. The instructor has final authority on this matter.

Religious Holidays Students have the right to practice the religion of their choice. Each semester students should submit in writing to their instructors by the end of the second full week of classes their documented religious holiday schedule for the semester. Faculty must permit students who miss work for the purpose of religious observance to make up this work.

Freedom of Expression and Dissent

The University of Vermont is a place to learn and to teach. It is not a cloister--it does not live in a vacuum. It is both in the world and of the world. Its mission is to educate people for leadership in society.--Board of Trustees, May 1969.

As the above quotation suggests, the University functions within the rules governing a larger society. It was created by that society for a special purpose: the facilitation of learning and teaching. It follows that the University's regulations must conform with the law as well as take account of the particular role of educational institutions. Fundamental to our entire philosophy is our firm belief that rights guaranteed by the First and Fourteenth Amendments to the Constitution of the United States must be protected on the campus as elsewhere and that local, state, and federal laws must prevail on the campus. Becoming a member of the University community in no way abrogates or compromises the rights which the Constitution of the United States guarantees to all persons. This principle applies to the adjudication of violations of campus policies as well as other areas.

Within the University setting as within society at large, the exercise of one's rights must be tempered by recognition of the rights of others. For example, the exercise of free speech may unreasonably infringe upon the right to learn. It should not be surprising that conflict may arise between parties engaged in activities which are individually lawful, for a fundamental function of social organization is the reconciliation of competing interests.

Within the University setting more than any other, the appropriate means for conflict resolution is rational discourse. The process fundamental to the existence of the University cannot be abandoned under stress, especially since they represent the most effective means for progress. Further, the criteria employed to seek lawful accommodation of various interests must grant special attention to the central mission of the University: learning and teaching.

The laws of society and the mission of the University establish the framework within which disagreement, dissent, demonstration, and advocacy may, and indeed must, occur. For humankind to progress, the educational process must be dynamic even if fraught with controversy, for change cannot take place until the first question is raised. The discovery of new propositions or new solutions also may be followed by passionate advocacy. Such advocacy must never replace the continued pursuit of the University's essential purpose of learning and teaching.

It is within this context that the University rejects the use of, or the threat of, force as a means of resolving differences. Violence is both unnecessary and inappropriate for those who have access to reasoned discourse and is unacceptable within an institution dedicated to reason.

The University officer responsible for implementing the Policy Statement on Freedom of Expression and Dissent, when students are involved, is the Chief Student Affairs Officer. In the event faculty or staff are engaged in disruption, the Chief Student Affairs Officer or that officer's duly authorized representative shall consult with the Provost or appropriate Vice Presidents before taking action. In all cases, the designated officer shall attempt to resolve the situation through efforts of persuasion. The University must, after efforts at persuasion have failed, resort to the use of any legal remedy deemed necessary. Those engaged in unlawful disruption, consequently, may expect appropriate responses from either University or other law enforcement authorities, or both.

Academic Discipline

The University expects each student to maintain high standards of personal conduct and social responsibility at all times both on and off campus. As responsible citizens, all students are required to observe and to share in the support of University regulations. Any student who fails to uphold these standards is subject to disciplinary action.

The disciplinary authority of the University is vested in the President. In such cases as the President considers proper, this authority may be delegated to the several deans and to appropriate judicial bodies. The continuance of each student, the receipt of academic credits, graduation, and the conferring of any degree or the granting of any certificate are strictly subject to the disciplinary powers of the University. The University is free to cancel a student's registration at any time on any grounds if it considers such action to be for the welfare of the institution.

Policy on the above matters is explained in detail in *The Cat's Tale*, available online at www.uvm.edu/~dosa/handbook. Each student is held responsible for knowledge and observance of these rules and regulations, including those concerned with academic honesty.

Academic Integrity

The principal objective of the policy on academic honesty is to promote an intellectual climate and support the academic integrity of the University of Vermont. Academic dishonesty or an offense against academic honesty includes acts that may subvert or compromise the integrity of the educational process. Such acts are serious offenses that insult the integrity of the entire academic community.

Offenses against academic honesty are any acts that would have the effect of unfairly promoting or enhancing one's academic standing within the entire community of learners which includes, but is not limited to, the faculty and students of the University of Vermont. Academic dishonesty includes knowingly permitting or assisting any person in the committing an act of academic dishonesty.

A full statement of the policy can be found in *The Cat's Tale*, online at www.uvm.edu/~dosa/handbook. Each student is responsible for knowing and observing this policy.

UNIVERSITY RESPONSIBILITY

Many courses involve instruction in and the use of various types of power equipment, laboratory apparatus, and specialized facilities. The University takes every precaution to provide competent instruction and supervision of such courses. It is expected that students will cooperate by following instructions and exercising precaution. In case an accident resulting in personal injury does occur, the University can assume no responsibility.

Notification of Rights Under FERPA for Post-Secondary Institutions

The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records. These rights include:

1. The right to inspect and review the student's education records within 45 days of the day the University receives a request for access. Students should submit to the registrar, dean, head of the academic department, or other appropriate official, written requests that identify the record(s) they wish to inspect. The University official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the University official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.
2. The right to request the amendment of the student's education records that the student believes are inaccurate or misleading. Students may ask the University to amend a record that they believe is inaccurate or misleading. They should write the University official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the University decides not to amend the record as requested by the student, the University will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.
3. The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent. One exception which permits disclosure without consent is disclosure to school officials with legitimate educational interests. A school official is a person employed by the University in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the University has contracted (such as an attorney, auditor, or collection agent); a person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.
4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by the University of Vermont to comply with the requirements of FERPA. The name and address of the office that administers FERPA:

   Family Policy Compliance Office
   U.S. Department of Education
   400 Maryland Ave., SW
   Washington, DC 20202-4605

Name and Address Exclusion

The Family Educational Rights and Privacy Act of 1974 grants to all students the right not to have personal information contained in the records of the University released to any individual, agency, or organization. UVM feels that the following constitutes such information.

Name
Address (including e-mail address)
Telephone number
Dates of attendance
Class
Previous institution(s) attended
Major field of study
Enrollment status
Awards
Honors (including Dean's list)
Degree(s) conferred (including dates)
Past and present participation in officially-recognized sports and activities
Physical factors (height, weight of athletes)
Date and place of birth
Photograph

Students who do not wish to have the above information released should fill out an information exclusion card at the Student Service Center.

Academic Options

In addition to the areas of study detailed in the following sections of the catalogue, a number of curricular options are available which provide unique opportunities for UVM students. Students interested in a curriculum focusing on the environment and environmental problems will be interested in the options described in the following section "Studying the Environment."

UVM Study Abroad

The Office of International Education (OIE), located in B162 of the Living/Learning Center, is an advising and resource center for students interested in a year, semester, or summer study abroad experience. Study Abroad Advisors maintain extensive information about study abroad programs, institutions, and volunteer opportunities. They, in conjunction with the academic advisor and the Office of Transfer Affairs, help students identify programs appropriate to their needs and arrange credit approval from UVM. All students intending to study abroad and receive transfer credit from UVM are required to visit the OIE and to complete the Study Abroad Approval Form prior to departure. Contact the OIE for deadlines. Official approval is required for students to be guaranteed that their programs of study are eligible for transfer credit and that any financial aid will apply. There is a $400 study abroad fee for semester and year-long programs and a $200 fee for summer programs.

To be approved to study abroad, students must:

1. Have completed two semesters at UVM or sophomore standing.
2. Have completed 2 semesters at UVM or sophomore standing.
3. Have a minimum cumulative GPA of 2.5, or between 2.0 and 2.5 with a minimum semester average of 2.5 for each of the last two semesters prior to studying abroad.
4. Meet the admissions criteria of a University approved study abroad program. University approved programs include those programs on the UVM Approved List.

Students with a GPA above 2.0 who do not qualify under point two above may petition their academic dean for permission to study abroad. Students seeking such permission should request an Academic Eligibility Form from their Study Abroad Advisor in the Office of International Education to be signed by their academic dean.

Students who have been dismissed or are on academic trial are generally not eligible to participate in study abroad programs. Under no circumstances will a student on disciplinary suspension the semester before studying abroad, and/or the semester they are scheduled to study abroad, receive official UVM approval for overseas study.

For more information about eligibility requirements for study abroad, visit the Office of International Education Web site at: www.uvm.edu/~oies.

UVM EXCHANGE PROGRAMS

UVM participates in a number of exchange programs with institutions around the world. In an exchange program, all UVM students exchange places with a student from a foreign institution. Exchange programs are a good financial value. These programs provide direct immersion into the academics and culture of the country. Although most exchange programs require a good command of the host language, many offer programs entirely in English. Students qualifying for tuition remission may also use that assistance to refund a portion of their exchange programs costs. The host institution issues a transcript at the end of the program to enable students to receive transfer credit.

UVM/University of Western Australia Exchange Program

This program in Perth, Australia, was developed by UVM's Rubenstein School of Environment and Natural Resources (RSENR), and RSENR students will receive priority placement to pursue their studies in natural resources. Courses are also offered in business, arts and sciences, agriculture, Asian studies, and Aboriginal studies. For more information, contact the OIE.

UVM/University of Belgrano Exchange Program

This program in Buenos Aires, Argentina can accommodate various levels of non-native Spanish speakers and students can choose courses in Spanish language and literature, culture, history, economics, and politics. For more information, contact the OIE.

UVM/University of Lapland Exchange Program

This exchange program in Finland is designed especially for Social Work majors and offers UVM students the opportunity to study social work in English. For more information, contact the OIE.

UVM/Sussex Exchange Program

This exchange is located at the University of Sussex in Brighton, England. Sussex is well recognized for both its humanities and social science offerings as well as its science and engineering programs. Twenty percent of the Sussex student body is international. For more information, contact the OIE.

UVM/Augsburg Exchange Program

This exchange is with the Universität Augsburg, Bavaria, Germany. The UVM student needs to have a solid command of the German language and be pursuing German or European Studies. For more information, contact the OIE.

UVM/Kansai Gaidai Exchange Program

Students interested in Japanese language and culture may spend a semester or year studying at this university near Osaka, Japan. For more information, contact the OIE.

UVM/Vienna Exchange Program

Students interested in international business may spend a semester or year studying at the Wirtschaftsuniversität Wien, Vienna, Austria. All courses are taught in English. For more information, contact the OIE.

UVM/Edith Cowen Exchange Program

This exchange program located in Perth, Australia was

developed by UVM's School of Nursing. This provides opportunity for nursing students to take classes in their major overseas. For more information, contact School of Nursing, or the OIE.

UVM/Stockholm Exchange Program

This exchange program with the Stockholm Institute of Education, Stockholm, Sweden, provides opportunities for preK-3 education students to study for the spring semester. For more information, contact College of Education and Social Services, or the OIE.

UVM/Irkutsk State University Exchange

This exchange program in Russia will allow students of the Russian language to test the skills they have learned in the classroom in a real world setting. It will help students hone their mastery of Russian and will provide them with many opportunities to learn the subtle nuances of the language. For more information contact Dr. Kevin McKenna, Department of German & Russian, or the OIE.

UVM/Yaroslavl Sate University Exchange

This exchange program in Russia offers students the opportunity to study business in Russian in an international environment. The program will provide a unique setting for students to re-examine their western notions of business. For more information, contact Dr. Michael Gurdon, School of Business Administration, or the OIE.

International Student Exchange Program (ISEP)

This program enables UVM students to study in more than 100 sites in 46 different countries in Europe, Asia, Australia, Canada, Africa, and Latin America. Many sites offer instruction in English, as well as in the language of the host country. For more information, contact the OIE.

UVM FACULTY-LED PROGRAMS ABROAD

UVM offers several short-term travel study programs. Most of these UVM faculty-led programs are three-credit courses offered during the summer or January break. Previous program locations have included Mexico, England, Anguilla, Finland, Ireland, Belize, Honduras, Costa Rica, and Cuba. These programs are open to degree students and individuals who have already obtained college degrees. For a complete listing and fee information, visit the Continuing Education Web site or the Office of International Education Web site.

UVM's Oaxaca Semester Abroad Program: Culture, Community and Place – Spring Semester

UVM's Oaxaca Semester Abroad Program enables students to earn a full semester of UVM credit, while living and learning in Mexico. Students live with families where they have a chance to practice their Spanish conversational skills and to observe first-hand the Mexican culture. While different courses may be offered in a particular semester, all courses enable students to develop a better understanding of the economic, political, cultural, historical and artistic forces influencing life today in Mexico. Course instruction is in English, except for intensive Spanish language courses at the student's individual level. Courses are problem-based to take advantage of the rich learning laboratory Oaxaca provides. Prerequisites include: two semesters of college Spanish (or equivalent), instructor permission, and a short application.

SPONSORED PROGRAMS

The Buckham Overseas Studies Program in England is a scholarship program at the University of Kent, Canterbury, administered by the College of Arts and Sciences and funded through a generous endowment from the Buckham family. The program runs for the full academic year and is designed to provide an opportunity for up to 20 exceptional English majors to spend their junior year at a modern university in an ancient British city. Living and studying in a fully integrated way with English students, the UVM students earn up to 32 credits. Cost of participation, including tuition, transportation, room and partial board, does not normally exceed the costs incurred during a year on the UVM campus.

To apply to the program, a student must be an English major with a cumulative and an English GPA of 3.0 and have earned at least 60 credit hours (including English 85 and 86) by the time the scholarship begins. For further information, contact Professor Helen Scott, Department of English, 417 Old Mill; (802) 656-4172.

UVM-AFFILIATED STUDY ABROAD PROGRAMS

Spring Semester Program in Grenoble, France, in International Business

This program provides an opportunity for students interested in international business, economics, and trade to participate in an English-speaking program while gaining exposure to France's history, language, and culture. For more information, contact Professor Peter Battelle, School of Business Administration, 209 Kalkin Hall, UVM, or the OIE.

Junior-Year-in-Salzburg Program

This academic-year program at the University of Salzburg, Austria, is open to qualified UVM undergraduates in all major fields. Basic requirements are: completion of sophomore year; a minimum of two years of college-level German with a B average; and good academic standing (a cumulative average of 2.5). For information, contact Professor Helga Schreckenberger, Department of German and Russian, UVM.

The Swedish Program

Sponsored by the University of Stockholm and a consortium of participating American colleges and universities (of which UVM is a member), this non-profit program focuses upon organizations and public policy in every social science discipline. Its curriculum is thematically specific, interdisciplinary, and relevant to the host country (Sweden). For more information, contact Professor Anthony Magistrale, English Department, 400 Old Mill, or the OIE.

OTHER POPULAR STUDY ABROAD PROGRAMS

The following programs are just a few of those on the UVM Approved List. These programs have been espe-

cially popular among faculty, staff, and students. For a complete Approved List, contact the Office of International Education, or refer to the Office of International Education Web site .

American Institute for Foreign Study (AIFS)

A publicly owned company, AIFS Inc. is a nationwide organization that provides comprehensive overseas study and travel programs in Argentina, Australia, Austria, the Czech Republic, England, France, Holland, Ireland, Italy, Japan, the Netherlands, Russia, South Africa, and Spain.

Boston University

Boston University offers academic-year, semester, and summer study abroad opportunities in 13 countries on six continents. Several of the program sites provide students with an integrated internship component for a portion of their academic experience and credit. Other program sites feature direct enrollment options in local universities for advanced language students.

Institute for the International Education of Students

This nonprofit organization sponsors programs in Argentina, Australia, Austria, China, England, France, Germany, Ireland, Italy, Japan, and Spain. Semester, year, and summer options are available.

School for International Training (SIT)

SIT is an accredited college of World Learning Inc., which was founded in 1932 as The U.S. Experiment in International Living. More than 50 experientially-focused programs are offered in over 40 countries, including the continents of Africa, Asia, and South America. All programs include a Life and Culture Seminar, a Methods and Techniques of Field Study Seminar, an Independent Study Project, a home-stay opportunity, and, if appropriate, an intensive language study.

The Living/Learning Center

The Living/Learning Center is an academic resource whose mission is to create an environment for students to integrate their academic studies and their residential experiences. To expand the intellectual horizons of students, the Center encourages faculty, staff, and student programs that foster innovative and interdisciplinary academic experiences that bring the intellectual life of the University in close alliance with the students' lives outside the classroom. Every program sponsors educational activities to which the entire UVM community is invited, making the Living/Learning Center a focus of campus cultural and intellectual activity. An evening's activities might include a sign language workshop, conversational German, artistic performances, gallery exhibits, faculty lectures, or a presentation by one of the Center's programs. In addition to being an academic and student support unit, the Living/Learning Center is also a residence, housing 588 students, as well as faculty and administrative offices, including Career Services and the Learning Cooperative.

The foci of the Living/Learning Center are the 30 to 35 academic programs, each of which is a year-long plan of course work, independent study, seminars, field trips, and other special activities which support a specific program theme. Recent programs include: Africa House, Geology and Ecology of the Lake Champlain Basin, La Maison Francaise, Documentary Filmmaking, The Art of Photography, and Women in Science. Programs are designed and directed by students or faculty members and reflect educational interests of the program leaders and participants. The Center provides a unique environment for each of the University schools and colleges to offer particular curricular elements in an atmosphere which fosters broad opportunities for intellectual discourse.

The first-year, sophomore, junior, and senior students who reside in the Center live with fellow program members in five-, six-, or seven-person suites adjoining a living room and private bathroom facilities. This fosters close friendships and communication among the program members. Suites are located in each of the five interconnected buildings, as are classrooms, laundry rooms, common living rooms and kitchens, as well as apartments for resident faculty and their families. The Center has a reading room/reference library, microcomputer laboratory, music practice rooms, the University Marché dining facility, a café, preschool, an audiovisual room, Post Office, a central lounge featuring a weekly coffeehouse, and an art gallery. Through the efforts and expertise of accomplished staff artists, the Center has pottery and photography studios that provide direct program support for the Living/Learning Center community, as well as providing all members of the University community with the opportunity for informal instruction and access to the facilities and equipment.

The Living/Learning Center contributes to the University's mission in its emphasis on the integration of the personal, professional, and intellectual growth of the student. The Center further encourages programs with interdisciplinary, international, and multicultural themes that promote creative excellence. The Living/Learning Center offers the opportunity to be part of a community of people; students, faculty, and administrative staff, who share the goal, work and excitement of improving the breadth and quality of their University experience. To learn more about the Center, visit our web site at http://www.uvm.edu/llcenter or e-mail us at living.learning@uvm.edu.

Preprofessional Options

Premed, predental and other prehealth options are offered to students of all majors. Advising is coordinated through Career Services' Prehealth Advisor who works with the faculty Premed Committee. Students are strongly encouraged to consult the Prehealth Advisor early and throughout their college career. For more information visit the Career Services Web site at: www.uvm.edu/~career.

Prelaw preparation is available to students of any major and is coordinated through Career Services' Prelaw Advisor and several faculty members. For more information visit the Career Services Web site at: www.uvm.edu/~career.

Prevet preparation and advising is offered in Animal Sciences, a major in the College of Agriculture and Life Sciences.

Accelerated Degree Programs

UVM offers accelerated degree and combined bachelor's and master's programs in several areas. These include, but are not limited to, the following:

• **Accelerated Master's Programs** A number of departments and programs provide opportunities for selected undergraduates to participate in Accelerated Master's Programs (AMPs). This option is available for admission to

graduate programs in Animal and Food Sciences, Biology, Biomedical Technology, Biostatistics, Computer Science, Education (Curriculum and Instruction and Professional Education), History, Materials Science, Mathematics, Mechanical Engineering, Microbiology and Molecular Genetics, Nursing, Public Administration, and Statistics. The AMP allows early admission to graduate studies with up to six concurrent credits double-counted toward the bachelor's and master's degrees.

• **3+3 Veterinary Medicine Program** Students receive a combined BS/DVM from UVM's College of Agriculture and Life Sciences and Tufts University. Students apply during their application for undergraduate admission to UVM.

• **Accelerated Licensure/Master's in Secondary Education** Education students apply during their junior year at UVM.

• **3+3 BS/MPT Physical Therapy Program** Students may apply at the time they submit their undergraduate application to UVM, or students in the following categories may apply during their junior year: any arts and sciences major; nutritional science majors; biological science majors.

• **4+1 MBA Program** Available to business majors and business minors. Students apply in their junior year.

Consult the Graduate College catalogue or appropriate dean's office for information about these or other accelerated degree programs.

Undergraduate Research

Undergraduate students assist faculty in research in a broad range of fields. Several programs provide research grants for undergraduate students. Notable examples include the HELiX (Hughes Endeavor for Life Science Excellence) and URECA (Undergraduate Research Endeavor Competitive Awards) programs. Students are encouraged to consult their dean's office or faculty advisor(s) regarding these and other research opportunities.

Military Studies

Army Reserve Officer's Training Corps (ROTC) Program

The Army ROTC program offers men and women the opportunity to develop leadership and management skills that lead to an officer commission as a second lieutenant in the United States Army, Army Reserve, or Army National Guard. Instruction focuses on leadership, problem-solving, decision-making, ethics, and military doctrine.

Department Course Offerings The four-year Military Studies program at UVM consists of a two-year Basic Course (first-year and sophomore year) and a two-year Advanced Course (junior and senior year). Attending the 30-day Leader's Training Course (LTC) after the sophomore year replaces the Basic Course.

Interdepartmental Course Offerings The Military Studies Department also offers one-credit courses in related fields on behalf of the UVM Department of Physical Education including: PEAC Course 014 – Orienteering, Course 017 – Military Fitness, and Course 019 – Backpacking. Students do not need to participate in ROTC to take these courses. These PEAC courses incur no military obligation.

Army ROTC Scholarships and Financial Aid

Scholarships: Two-, three-, and four-year Army ROTC Scholarships paying full tuition, full fees, and $900 a year for books are available to qualified applicants. Application for the four-year Army ROTC scholarship is made during the high school senior year by applying electronically at www.armyrotc.com. All other Army ROTC scholarship applications are made through the Department.

Financial Aid: Contracted sophomore, junior, and senior ROTC students can earn up to $6,300 a year through the simultaneous membership program (SMP), which involves participation in the Army National Guard or Army Reserves.

Subsistence Allowance All contracted cadets receive a monthly ROTC stipend. The stipend is first-year: $300/month, sophomore: $350/month, junior: $450/month, senior: $500/month.

The Department of Military Studies is located at 128 University Heights, (802) 656-2966. E-mail: goldbar@uvm.edu. Homepage: www.uvm.edu/~goldbar/.

Continuing Education

Continuing Education (CE) serves the University of Vermont's commitment to lifelong learning and statewide outreach. Through the development and delivery of courses and programs on the UVM campus, online, and at designated off-campus locations (regionally, nationally, and internationally), Continuing Education connects the resources of the University with the needs of diverse non-degree students year-round and undergraduate and graduate students during the summer and winter sessions. CE's innovative courses, programs, certificates, and professional education opportunities attract more than 8,000 individuals from Vermont and beyond.

The Continuing Education office is located at 322 South Prospect Street, (802) 656-2085 / (800) 639-3210. CE's web address is learn.uvm.edu and our email address is learn@uvm.edu.

STUDENT SERVICES

Student services are available to individuals enrolled in Continuing Education credit courses and professional educational workshops and seminars. Student services coordinators guide non-degree students through the back to school process, help current and potential students gain the necessary credentials to attain admission to a degree and/or professional school program. CE representatives are available to help anyone register for any CE learning opportunity. As the Dean's Office for non-degree students, Continuing Education provides access to the University's academic resources and support services and helps direct students to the most appropriate office within the larger University. Non-degree students are encouraged to become familiar with our office and learn how to maximize their educational experience. Please call (802) 656-2085 or (800) 639-3210 to access our student services staff.

College Credit

Academic Year

During the academic year, more than 400 hundred credit courses are offered at times most convenient for non-degree students. Early morning, late afternoon, evening, weekend and online courses provide greater access for the almost 3,000 non-degree students who enroll annually at the University of Vermont. CE attracts high school students, pre-

college and college students, pre-graduate/pre-professional students, and working professionals who are all interested in gaining credits on an official UVM transcript. Individuals aged 65 + and are Vermont residents may attend tuition free. Such credits may be applied to UVM undergraduate and graduate programs and are often used in preparation for advanced and professional studies. Additionally, many students enroll in credit courses for personal enrichment as well as for professional certification and career advancement.

The following college credit certificates, course sequences, and programs are available through Continuing Education:

*__Accounting Sequence__ – Individuals interested in preparing for the CPA exam are encouraged to inquire about the availability of required accounting courses. Students who have a bachelor's degree but lack specific accounting courses may enroll through Continuing Education.

***Bridge Plan in Engineering** – Through this program, engineers who possess an associates degree in engineering are able to enroll in a set of required courses and transition directly into a bachelor's degree program offered by the College of Engineering & Mathematical Sciences. Students may enroll through Continuing Education and continue on in their degree program as part-time or full-time students.

***Computer Software Certificate** – This certificate program attracts individuals who are interested in gaining the knowledge necessary to change their career, advance their professional credentials, or prepare for entrance in the graduate computer science program.

***Complementary Healthcare Sequence** - Individuals who are interested in gaining more knowledge about the art and science of complementary healthcare are encouraged to enroll in this dynamic sequence of courses. Students may choose to enroll for college credit or participate for non-credit/professional credit.

***Ecological Economics Certificate –** The Gund Institute for Ecological Economics offers non-degree students an opportunity to enroll in a solution-oriented learning experience. Professionals and others may enroll in this certificate through Continuing Education.

***Educational Technology Online Sequence** – This 18 credit hour online sequence of credit courses leads to a broad understanding of the role of technology in learning and instruction. For educators who are already certified, the six basic courses will provide competencies leading to endorsement.

***Faculty Lead Programs Abroad** – In collaboration with the Office for International Education, Continuing Education provides diverse educational opportunities at worldwide locations including the semester long program for undergraduate students in Oaxaca, Mexico. Courses are available year-round, during Winter and Summer Sessions, and attract students interested in college credit or are enrolled for non-credit/professional credit.

***Gerontology Certificate –** This undergraduate certificate program focuses on topic areas relevant to the aging population. The program is also equivalent to the cross-college minor in Gerontology and is offered statewide via the Vermont Interactive Television Network and online.

*__Guaranteed Admission Program__ – This individually designed program allows non-degree students to build the necessary academic credentials for admission to a UVM undergraduate degree program. Each student's program is approved by the participating academic dean's office and the Office of Undergraduate Admission. Students are required to maintain a cumulative grade point average of 3.0 in a minimum of 18 credit hours in order to quality for guaranteed admission.

***Post-Baccalaureate Certificate in Medical Laboratory Science** – Individuals who have completed a bachelor's degree in a science area and wish to become certified Clinical Laboratory Scientists or certified Medical Technologists should contact Continuing Education.

*__Post-Baccalaureate Premedical (Pre-health) Program__ – Each year, approximately 25-30 students who have already completed their bachelor's degree, enroll in UVM's post-baccalaureate program to prepare for medical, veterinary, and dental schools, as well as a wide variety of graduate level health professional programs. Admission to this program is highly selective and attracts student regionally, nationally, and internationally. More than 90% of UVM post-baccalaureate students gain admission to their top choice health professional program.

*__Pre-MBA Sequence__ – Students interested in enrolling in the required courses for application to a Masters in Business Administration (on-campus and on-line) should contact CE. This sequence allows students with bachelor's degree to gain the knowledge and credentials necessary to pursue an MBA.

***School Library Media Sequence** – This series of courses is designed to help educators gain licensure as school library medial specialists. The program is recognized by the State Department of Education and leads to licensure.

***Speech-Language Pathology Assistant Sequence** – The School-Based Speech-Language Pathology Assistant program is designed to help individuals develop an understanding of communication disorders and intervention strategies for speech-language services for students in school settings.

***Vermont Educators** – Teachers, administrators, and paraprofessionals take advantage of UVM's expertise in education and social services through enrollment in on-campus, on-line and via the Vermont Interactive Television network, the Springfield Howard Dean Education Center, and public schools through the state.

Summer Session

During the summer, more than 400 courses are offered on campus, online, around the state and throughout the world in various travel programs. Course registration is open to UVM students and alumni, professionals, students and graduates from other colleges, high school students, lifelong learners, and other continuing education students. All courses are taught by UVM faculty, visiting professors, or practitioners, and offer the same academic rigor as courses offered during the academic year. In three accelerated sessions in Summer University – May Session, Summer Session I and Summer Session II – students can catch up, get ahead and take courses that are in high demand during the academic year. Summer

University also offers courses for professionals in education, healthcare, library studies, engineering, public administration and environmental studies.

Summer University includes a variety of special programs and intensives that may be for credit or not for credit. The non-credit options are varied, and are suitable for business professionals pursuing leadership development, middle and high school students interested in debate and alumni families wanting to return to campus for a summer adventure in Vermont.

Non-Credit or Professional Credit

Vermont Business Center

In partnership with the School of Business Administration, the Vermont Business Center (VBC) was created to address the needs of growing companies in our region. The VBC offers businesses a professional leadership and management certificate program and custom training solutions, membership to the Vermont Family Business Initiative for family and privately-owned businesses, an Athletic Leadership Initiative for Division I school athletic directors and assistant directors, and an annual Leadership Lecture series that is free and open to the public.

Student Exchange: New England State Universities

The six New England land-grant universities (Universities of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut) participate in an exchange program to enable students at the subdegree level to take advantage of a course or combination of courses not available at the home institution. In order to participate in the program, state university students must:

1. Identify a course or combination of courses related to their area of academic interest and not available on the home campus.
2. Receive permission from the appropriate university exchange authorities at both the sending and receiving institutions.
3. Meet minimum eligibility requirements which include the following: In general, students must be in good standing and have at least a 2.50 grade-point average; must be degree candidates; and must be at least first semester sophomores (application may be made as early as the second semester of the first year). There is no upper limit in terms of class standing on participation.

Exchanges may not exceed a total period of two academic semesters, but these need not be taken consecutively. Summer sessions are not considered part of the exchange program. Course work approved by the student's host institution and completed satisfactorily is fully transferable to the home institution. Transferability of grades and inclusion in grade-point averages are subject to home institutional policy.

The student will pay normal tuition and required fees to the home institution and room and board (where applicable) to the host institution. Students on financial aid must contact their home institution's financial aid office to determine eligibility for continued scholarship assistance.

Participation in the exchange program will not affect a student's residence status either at the home or host institution, nor does participation improve or prejudice possibilities for transfer.

For information, contact the Office of the Provost, 349 Waterman Building, University of Vermont.

Studying the Environment

One of the distinctive features of UVM is its focus on studying the environment and environmental problems. Students interested in these issues have a rich array of choices. Many of these are within specific disciplines, but others offer the opportunity for multidisciplinary study. UVM has several multidisciplinary degree programs.

Environmental Studies is a curriculum available to students from four different colleges and schools (Agriculture and Life Sciences, Arts and Sciences, Education and Social Services, and Environment and Natural Resources) and is coordinated within the Environmental Program.

An **Environmental Sciences** major is jointly offered by the College of Agriculture and Life Sciences, the College of Arts and Sciences, and The Rubenstein School of Environment and Natural Resources, with emphases in agriculture and the environment, conservation biology and biodiversity, ecological design, environmental analysis and assessment, environmental biology, environmental chemistry, environmental geology, environmental resources, and water resources.

The College of Engineering and Mathematical Sciences offers students the opportunity to pursue a degree in **Environmental Engineering**.

Environmental Program

Environmental Studies is a University-wide undergraduate environmental curricular option directed by the Environmental Program in cooperation with four colleges and professional schools. This option is one of UVM's most distinctive and popular academic programs — unique nationally in its breadth and interdisciplinary nature.

Students entering UVM may apply for admission to Environmental Studies through four of the undergraduate divisions. Choice of the appropriate college or school will depend on the individual's interests, career and educational objectives.

The Environmental Program involves students and faculty from throughout the University, as well as community professionals, recognizing that study of the environment must draw upon all academic disciplines and professional fields. The activities of the Program include undergraduate education, research, and community service programs dedicated to the study and improvement of the cultural and natural environments essential to the quality of life on earth.

The Program serves a wide range of environmental interests, with its primary mission being undergraduate education, and its primary focus the individual student. Working closely with the faculty, each student plans an individualized program that combines a broad, comprehensive understanding of the environment with depth in a specific concentration of study. Major concentrations can be in the natural sciences, the humanities, the social sciences, or broadly interdisciplinary around a specific focus.

Many graduates continue their education in graduate or professional schools; others work in public and private sectors in highly diverse fields throughout Vermont, the nation, and in countries around the globe.

Program offices and a Student Services Center are located in The Bittersweet, where students are encouraged to visit with the staff and faculty regarding their academic plans, to gain assistance with research or action projects, and to seek information about academic programs, internships, international study opportunities, graduate studies, and future careers.

DEGREE PROGRAMS

The Bachelor of Science degree in Environmental Studies is awarded through the College of Agriculture and Life Sciences and The Rubenstein School of Environment and Natural Resources.

The Bachelor of Arts degree in Environmental Studies is awarded through the College of Arts and Sciences.

DEGREE REQUIREMENTS

Students must complete the distribution and credit-hour requirements of their college or school and one of the following programs. Incoming students will be assigned an advisor in the Environmental Program who will assist in selecting a major or minor program.

CURRICULUM

The curriculum in Environmental Studies offers students several alternatives leading to an individualized program of studies. The Major in Environmental Studies provides a unique academic program for the student seeking an interdisciplinary major leading to the B.S. or B.A. degree, with opportunity for Honors Studies. The Minor in Environmental Studies fulfills the minor requirement for students in the College of Arts and Sciences and is available as an elective minor in other schools and colleges. For selected students, a double major offers the opportunity for combining interdisciplinary studies with a traditional major.

MAJOR IN ENVIRONMENTAL STUDIES This interdisciplinary major offers students the opportunity to combine studies in several disciplines and professional fields. In addition to a core of interdisciplinary courses, each student's program includes an individually-designed plan of study directed toward a specific focus area. The major is suited equally to the student seeking a broad liberal education with an environmental emphasis and to the student focusing on a particular science, humanities, social studies, or technical discipline.

In addition to course requirements, this major includes a required senior research thesis or project that may qualify for program, college, or school honors recognition. Requirements for Secondary Education majors differ. Consult the appropriate sections of this catalogue for the exact requirements of each college or school.

Environmental Studies Major Core

Required Courses:	Credit Hours
Intro. to Environmental Studies (ENVS 1)	4
International Environmental Studies (ENVS 2)	4
Intermediate Environmental Studies (ENVS 151)	3
Research Methods (ENVS 201)	3
Senior Project and Thesis (ENVS 202/203)	6 - 9

(Planned and designed in ENVS 201; credit arranged in consultation with senior thesis advisors)

Individually-Designed Program

Individually-designed program of studies	18 - 30

(Intermediate and advanced courses, including courses in environmentally-related natural sciences, humanities, social sciences, and international studies)

Students are strongly encouraged to undertake internships, independent projects, study abroad, and cross-cultural experiences.

MINOR IN ENVIRONMENTAL STUDIES For students in several colleges and schools, this program combines the basic interdisciplinary skills and perspectives necessary for the understanding of environmental issues with the curriculum of a traditional disciplinary major.

In addition to two introductory Environmental Studies courses and at least three intermediate or advanced ENVS courses, students complete a major in a related discipline or professional field.

Students in the College of Arts and Sciences may elect this minor to fulfill the minor requirements in that college. Minor programs are available on an elective basis in most other schools and colleges.

Consult appropriate sections of this catalogue for the exact requirements of each college or school.

COLLEGE OF EDUCATION AND SOCIAL SERVICES TEACHER EDUCATION STUDENTS Students enrolled in Early Childood, Elementary Education, Family and Consumer Services and Physical Education may complete the major concentration in Environmental Studies as a fulfillment of the liberal arts and sciences major requirement. Environmental Studies is not a Vermont State Department of Education approved endorsement area for Secondary Education.

Environmental Sciences

Integrated across the College of Agriculture and Life Sciences (CALS), the College of Arts and Sciences (CAS), and The Rubenstein School of Environment and Natural Resources (RSENR), the B.S. degree program in Environmental Sciences (ENSC) draws from a breadth of scientific inquiry on the environment that reflects the diversity of this naturally multidisciplinary endeavor. All ENSC majors receive a strong foundation in the basic sciences coupled with an in-depth exposure to and experience in today's environmental sciences. This prepares our students to successfully compete in the environmental sciences job market as well as continue their education in the environmental sciences or a related field.

Each unit has a unique perspective on the discipline, and students are free to explore the environmental sciences within a context that best fits their interests and future plans:

- In the College of Agriculture and Life Sciences, faculty research has a strong orientation toward applied environmental problems, not only in agricultural settings but also in the disciplines of plant biology, microbiology, soil science and international development. Students are engaged in experiential learning and hands-on research. Graduates have attained positions with environmental consulting firms, government and non-government environmental organizations, or continued with further education in a variety of fields.
- In the College of Arts and Sciences, the environmental sciences serve as a hub for a broad-based liberal arts education. Drawing from traditional science disciplines, such as Biology, Chemistry and Geology, this interdisciplinary degree program aims to develop in students the analytical skills and scientific background necessary for understanding the environment and environmental problems. By participating in active research programs involved in studying environmental problems, students are able to integrate and apply fundamental scientific inquiry with application to problems of environmental importance.
- In The Rubenstein School of Environment and Natural Resources, an in-depth knowledge of the environmental sciences is coupled with a familiarity with the social/policy aspects of environmental issues in order to analyze and solve problems caused by human impacts on the environment. Blending hands-on field and laboratory instruction with real-world environmental internship, research, and study abroad opportunities, students acquire the skill set needed to tackle complex environmental problems. With the school's emphasis on such cutting-edge areas as ecological design, restoration of damaged ecosystems and environmental risk assessment, RSENR graduates are equipped with the latest tools to protect our woods, waters and landscapes.

DEGREE REQUIREMENTS

The Bachelor of Science degree in Environmental Sciences is offered in the College of Agriculture and Life Sciences (CALS), the College of Arts and Sciences (CAS) and The Rubenstein School of Environment and Natural Resources (RSENR). Students must complete the distribution and credit hour requirements of their college or school in addition to the following specific requirements of the Environmental Sciences curriculum. CAS students enrolled in the program must complete 84 hours in courses offered by the departments and programs in the CAS. Students will be assigned an advisor in Environmental Sciences (in the College or School in which they are enrolled) who will assist them in selecting an appropriate program of study.

A. **Foundation Courses** (11 – 12 credits)
- CHEM *42 (**141 or **143) (*Organic Chemistry*)
- GEOL 55 (*Environmental Geology*)*** or PSS 161 (*Fundamentals of Soil Science)*
- STAT 141 (*Basic Statistical Methods*) or 211 (*Statistical Methods I*) or NR 140 (*Natural Resources Biostatistics*)

*CHEM 141/142 or CHEM 143/144 are acceptable alternatives to CHEM 42.
**CHEM 141 or 143 is *required* for the Environmental Biology and Chemistry Focus Tracks.
***GEOL 55 is *required* for the Environmental Geology Focus Track.

B. **Core Courses** (14 – 16 credits)
- ENSC 1 (*Introduction to Environmental Sciences*)
- ENSC 101 (*Pollutant Movement Through Air, Land and Water*)
- ENSC 130 (*Global Environmental Assessment*)

For CALS/RSENR Students:
- ENSC 201 (*Recovery and Restoration of Altered Ecosystems*)
- ENSC 202 (*Ecological Risk Assessment*)

For CAS Students:
- *BCOR 102 (*Ecology and Evolution*)

OR
- **CHEM 142 or 144 (Organic Chemistry II)

OR
- ***GEOL 110 (Earth Materials)

*BCOR 102 is *required* for the Environmental Biology Focus Track.
**CHEM 142 or 144 is *required* for the Environmental Chemistry Focus Track.
***GEOL 110 is *required* for the Environmental Geology Focus Track.

C. **Focus Tracks** (14 – 17 credits)
Students must complete the course requirements in one of the following areas. Up-to-date lists of approved coursework in these areas will be available in the Dean's Offices of the three participating units and posted on the website for the Program. Students may petition to develop a self-design track.

- ***Agriculture and the Environment*** *(14 credits)* – impacts of agriculture on the environment and strategies for minimizing environmental degradation.
- ***Conservation Biology and Biodiversity*** *(14 credits)* – endangered species and ecosystems, and strategies for conserving the diversity of the earth's life forms.
- ***Ecological Design*** *(14 credits)* – use of ecological systems to improve environmental quality.
- ***Environmental Analysis and Assessment*** *(14 credits)* – techniques for measuring environmental impacts and managing environmental data.
- ***Environmental Biology*** *(16 credits)* – ecological and molecular analysis of endangered populations, phenomena affecting biological diversity, the interrelationship of organisms and their environments, and conservation genetics.
- ***Environmental Chemistry*** *(17 credits)* – analytical methods for measuring and monitoring air, ground, and water pollutants.
- ***Environmental Geology*** *(16 credits)* – earth science, geomorphology, and the analysis of ground water.
- ***Environmental Resources*** *(14 credits)* – environmental processes in air, soil, and water.
- ***Water Resources*** *(14 credits)* – effects of pollutants on the structure and function of aquatic ecosystems.

D. Prerequisites and Corequisite courses (22-32 credits)

- BCOR 11/12
- MATH 19/20 or 21/22
- CHEM 31/32 or 35/36
- PHYS 11/12 or 31/42 – *Chemistry Focus Track only*

Environmental Engineering

Refer to the engineering curricula for a description of the requirements for the Environmental Engineering option offered by the College of Engineering and Mathematical Sciences.

Environmental Engineering: College of Engineering and Mathematical Sciences

The College of Engineering and Mathematical Sciences offers two undergraduate degrees; a Bachelor of Science degree in Civil Engineering with an Environmental Option accredited by the Accreditation Board for Engineering and Technology (ABET) and a new Bachelor of Science degree in Environmental Engineering that is currently in the accreditation process.

A civil or environmental engineering degree from the Universityof Vermont is excellent preparation for immediate employment in the engineering area.

Civil and environmental engineers plan, design, construct and manage the built bridges, airports, ski resorts, space stations, irrigation systems, water treatment plants, harbors, and much more. They find ways to clean the atmosphere, treat contaminated environments, and design energy efficient structures, improving the quality of our daily lives now and for the future.

Facilities in the Civil and Environmental Engineering program include numerous laboratories for instruction and research including: concrete, soils, and structures/materials testing laboratories. In addition the department has an environmental fluids laboratory that houses a state-of-the-art groundwater physical model (10' by 14' by8'), a large 40' flume, and other important hydraulic equipment. The department maintains GIS, transportation and surveying laboratories as well as several environmental engineering chemistry laboratories.

In addition to laboratory facilities inside,the department has several field sites/facilities for education and research activities. A *constructed wetland center* is currently being built at the campus dairy farm. This will be a fully functioning wetland with multiple treatment cells and smaller research cells entirely instrumented for evaluating flow and water quality in the wetland. A *natural ombrotrophic bog* is currently monitored to understand bog hydrology and its impact on biodiversity. Numerous streams and their watersheds, as well as Lake Champlain, are used for research.

UVM students find many unique and creative ways to contribute to projects developing and designing new technologies to solve practical, real-world problems. A team of undergraduates recently helped to develop technologies to clean contaminated groundwater by passing it through a permeable wall while still far below the earth's surface. Undergraduates have helped design treatment wetlands for systems in Italy and Mexico.

For curricula descriptions of requirements for the Bachelor of Science degree in Civil Engineering with the Environmental Option, or for the Bachelor of Science degree in Environmental Engineering please refer to section of the catalogue on the College of Engineering and Mathematical Sciences.

The College of Agriculture and Life Sciences

The programs of the College of Agriculture and Life Sciences (CALS) emphasize life sciences, agriculture and food systems, environmental protection, and the preservation of healthy rural communities. In cooperation with the Agricultural Experiment Station and The University of Vermont Extension Service, the College performs the four public functions of teaching, research, disseminating information, and providing related services.

As an integral part of the University of Vermont, the College of Agriculture and Life Sciences helps fulfill the University's mission to discover, interpret and share knowledge; to prepare our students to lead productive, responsible, and creative lives; and to promote the application of relevant knowledge to benefit the State of Vermont and society as a whole.

The College faculty strive for excellence in undergraduate education as evidenced by a sustained and enviable record of University teaching award winners. The College emphasizes the importance of each individual student and promotes significant student-faculty interaction. Students are provided with a firm foundation in the social and life sciences in order to excel and meet the challenges in future professional careers. Faculty and peer advisors provide a broad range of support, to help students develop high-quality academic programs that meet individual needs.

Opportunities abound for off-campus experiences such as internships, independent study, and study abroad. Graduates of the College are successfully meeting the requirements to pursue advanced education. Career choices are broad, but focus primarily in agribusiness, dietetics, international and rural development, agriculture, veterinary and human medicine, biotechnology, nutrition, research and teaching, horticulture, and botany.

Academic majors are enhanced by the on-campus and field facilities, labs, and research for which the College is renowned. Many CALS faculty working through the Experiment Station conduct mission-oriented, applied agricultural research, and faculty encourage undergraduate research.

The College of Agriculture and Life Sciences welcomes applications from international students. The specific procedures and requirements are listed in the Admissions section presented earlier in the catalogue.

The Office of the Dean of the College is located in Rooms 106 and 108 in Morrill Hall.

ORGANIZATION

The College's instructional units include six departments: Animal Science; Botany and Agricultural Biochemistry; Community Development and Applied Economics; Nutrition and Food Sciences; Microbiology and Molecular Genetics (a department shared with the College of Medicine); Plant and Soil Sciences; and interdepartmental programs in Biological Science, Biochemistry, Environmental Sciences, and Environmental Studies.

DEGREE PROGRAMS

The Bachelor of Science degree is awarded for the following programs:

- Agricultural and Resource Entrepreneurship
- Animal Science – concentration in:
  - Dairy Production / Farm Management
  - Equine Science
  - General Animal Science
  - Preveterinary / Preprofessional Science
- Biochemistry
- Biological Science
- Botany
- Community and International Development
- Dietetics
- Ecological Agriculture
- Environmental Sciences
- Environmental Studies
- Microbiology
- Molecular Genetics
- Nutrition and Food Sciences
- Public Communication
- Self-Designed Major
- Sustainable Landscape Horticulture

DEGREE REQUIREMENTS

All programs in the College of Agriculture and Life Sciences lead to the Bachelor of Science degree and require:

A. The successful completion of a minimum of 120 credit hours of course work plus two credit hours in physical education.

B. A minimum cumulative grade-point average of 2.00.

C. Completion of the CALS Core Curriculum (see below)

D. Completion of AGRI 001 and AGRI 002, "Foundations" or equivalent courses by all students in the College of Agriculture and Life Sciences.

E. One course addressing race relations and ethnic diversity for all (incoming first-year, incoming transfer and internal transfer) CALS students. Students may enroll in EDSS 011, the one-credit Race and Culture course, or may choose from a CALS faculty-approved list of alternative 3-credit courses: ALANA 51, ALANA 55, SOC 19, SOC 32, SOC 118, SOC 119, ANTH 187, EC 153, GEOG 60, HST 68, POLS 29, POLS 129, CMSI 160, ENGS 57, CDAE 2, ENGS 170, REL 21, SOC 219. Students choosing the 3-credit course option satisfy 3 of the 6-credit social science distribution requirement.

F. All courses as specified in individual program majors.

The applicability of courses to specific areas is based on content and not departmental label. Courses taught in the College of Agriculture and Life Sciences can be used to fulfill *knowledge* core curriculum requirements; however, they must be taken outside the department in which the student's program of study is located. Applicability of courses to fulfill requirements rests with the student's advisor and, if necessary, concurrence of the Dean of the College.

CALS CORE CURRICULUM

A. Knowledge

Students develop a fundamental base of knowledge that will serve as a foundation for lifelong learning.

1. Science: Students use the scientific method to understand the natural world and the human condition.

   a. Physical and Life Sciences: *Competency may be met by satisfactory completion of two courses in such subjects as: anatomy, animal science, biology, botany, chemistry,ecology, en-*

tomology, food science, forestry, geology, genetics, microbiology, nutrition, physics, physiology, plant science, and soil science.

b. Social Science: *Competency may be met by satisfactory completion of two courses in such subjects as: anthropology, community development, economics, geography, history, political science, public policy, psychology, and sociology.*

2. Humanities & Fine Arts: Students develop an understanding and appreciation for the creative process and human thought. *Competency may be met by satisfactory completion of two courses in such subjects as art, classics, history, literature, music, philosophy, religion, language, theater.*

B. Skills

Students develop abilities and use tools to effectively communication, analyze, problem solve, think critically and work with others.

1. Communication Skills: Students express themselves in a way that is easily understood at a level that is appropriate for the audience.

a. Oral: Students show confidence and efficacy in speaking before a group. *Competency may be met by satisfactory completion of AGRI 183 (or equivalent) or AGRI 001 where primary focus is public speaking, and an additional course or series of courses in which students present a minimum of three graded speeches, in total, to a group.*

b. Written: Students effectively communicate in writing. *Competency may be met by satisfactory completion of any English writing course and an additional course or series of courses that uses the writing process (redrafting) for a minimum of three graded papers in total.*

2. Information Technology: Students demonstrate mastery of technology for communication, data gathering and manipulation, and information analysis. *Competency may be met by satisfactory completion of AGRI 85 (or equivalent) or AGRI 002 and an additional course or series of courses that uses computers for a minimum of two applications in total.*

3. Quantitative Skills: *Students demonstrate the ability to understand and use numbers.*

a. Mathematics: Students demonstrate the use of numbers for problem solving. *Competency may be met by satisfactory completion of Math 9 or higher.*

b. Statistics: Students demonstrate the use ofnumbers for data analysis and inference. *Competency may be met by satisfactory completion of Statistics 111 or higher or NR 140.*

c. Quantitative Skills Application: Students apply mathematics or statistics skills in a course relevant to their major. *Competency may be met by satisfactory completion of one course that utilizes principles from math or statistics.*

4. Critical Thinking Skills: Students demonstrate ability to comprehend, judge, and present written/oral arguments and to solve problems. Students learn how to distinguish between fact, conjecture, and intuition. *Competency may be met by satisfactory completion of any course or series of courses in which students solve problems and analyze, judge, and construct arguments.*

5. Interpersonal Skills: Students demonstrate the ability to work well with other people by understanding and using skills of leadership, conflict resolution, and group process. *Competency may be met by satisfactory completion of any course or series of courses that includes leadership, working in diverse groups, conflict resolution, and group process.*

C. Values

Students are exposed to values that are expressed through relationships with community, the environment, and themselves that are consistent with the mission of the College of Agriculture and Life Sciences and the University of Vermont campus compact known as "Our Common Ground."

1. Citizenship & Social Responsibility: Students develop an understanding, appreciation and empathy for the diversity of human experience and perspectives. Students are exposed to solving problems for a community and contributing to the common good. *Competency may be met by satisfactory completion of EDSS 11 (or equivalent) and one other course or series of courses that exposes students to these values.*

2. Environmental Stewardship: Students develop a sensitivity for the interconnected relationship between human beings and the natural world and the responsibility for stewardship of the environment. *Competency may be met by satisfactory completion of two courses or a series of courses that expose students to these values.*

3. Personal Growth: Students develop an understanding and appreciation of a healthy lifestyle and a love for learning that will lead to continuous growth and development throughout their life-span. Students continue to improve self by developing and affirming the values of respect, integrity, innovation, openness, justice, and responsibility. *Competency may be met by satisfactory completion of AGRI 001 and 002, two credits of physical education, and one other course or series of courses that exposes students to these values.*

REGULATIONS GOVERNING ACADEMIC STANDARDS

The College of Agriculture and Life Sciences (CALS) Studies Committee reviews the semester grades of all students in the college whose semester or cumulative grade- point average falls below the 2.00 minimum, as well as the academic progress of all students placed on academic probation the previous semester. Detailed information may be obtained from the CALS Student Services Office, 106 Morrill Hall, (802) 656-2980.

Guidelines A student whose semester grade-point average falls below a 2.00 will be placed "on trial" and will be given a target semester average to achieve by the end of the following semester. A student whose semester grade-point average is below a 1.00, or who fails to achieve the stated target average while "on trial," may be placed on "intermediate trial." Any student with a prolonged history of poor grades, including students who consistently fail to achieve the target semester average, may be placed on "final trial." A student who does not achieve the target semester grade-point average while on "final trial" is a candidate for dismissal from the University.

Appeal A student may appeal a dismissal by submitting a written appeal to the CALS Studies Committee within two working days of the receipt of the dismissal letter. The student will be asked to appear in person before the Studies Committee to appeal the case.

Continuing Education and Readmission A student who has been dismissed from the College may take up to 6 credits of coursework through UVM Continuing Education in an attempt to improve his/her grades. To gain readmission to the College, the student must achieve no less than a 2.67 semester average on the six credits. Dismissed students may enroll in six credits at another institution, and should work with the Office of Transfer Affairs to insure transferability.

COLLEGE HONORS PROGRAM

The College Honors Committee promotes and encourages independent study by recognizing those students who especially excel in their creative, innovative, responsible, and inde-

pendent pursuit of study. Honors Committee Guidelines for student projects may be obtained in the Student Services office in Morrill Hall or they are available on the CALS web page at http://www.uvm.edu/cals/alumni/?Page=awards/honors.html.

Independent study can be an important aspect of a student's education. Undergraduate research, independent projects, and internships or field practica are examples of independent study which benefit students as they pursue graduate study or seek employment. Over the years a number of undergraduate research projects have been published in well-known scientific journals; and manuals, videotapes, and other products of special projects have been incorporated into classes to enhance the learning environment in the College.

The completed study, in a form appropriate to the area of study, is evaluated first by a departmental review committee. Independent studies of the highest quality will be chosen for College Honors by the Honors Committee. Students are recognized at College Honors Day.

JUSTIN MORRILL HONORS PROGRAM

The Justin Morrill Honors Program is a four-year honors sequence for CALS students who are accepted into the University Honors College. It is designed for highly qualified and motivated students desiring an academically challenging undergraduate experience in the broad areas of the life sciences and agriculture.

In their first two years, Justin Morrill scholars will join honors students from across the university in small, interdisciplinary, honors seminars conducted by renowned scholars from the University of Vermont and other institutions. In their junior and senior years, Justin Morrill scholars do honors work within the College of Agriculture and Life Sciences. The program culminates with an honors thesis, an opportunity to conduct independent scholarly research under the guidance of a faculty advisor.

Entering first-year students with outstanding academic records will be invited to participate in the Honors College. Scholars will be required to maintain a minimum grade point average, participate in program activities, enroll in honors classes and successfully complete a Senior Honors Thesis.

Matriculated students in CALS who demonstrate academic excellence during their first year may apply for sophomore admission to the Honors College.

PREPROFESSIONAL PREPARATION

Students striving for admission to professional colleges, such as dentistry, medicine including naturopathic, chiropractic, osteopathic, and veterinary medicine, can meet the undergraduate requirements for these programs through enrollment in the College of Agriculture and Life Sciences. Upon admission, each student will be assigned a faculty advisor knowledgeable in preprofessional preparation. Competition for admission to professional schools is very keen, and a superior academic record throughout an undergraduate program is necessary to receive consideration for admission. Due to the intense competition, only a small percentage of those first-year students declaring an interest in professional schools are admitted after completion of the baccalaureate. Consequently, students must select a major, in an area of their choice, to prepare them for a career other than medical sciences. The preprofessional requirements will be met concurrently with the major requirements for the B.S. degree. Students interested in human medical sciences often enroll in either biochemistry, biological sciences, nutrition and food sciences, microbiology or molecular genetics. Those interested in veterinary medicine usually enroll in animal science or biological sciences.

Each student prepares a four-year program of courses, with the guidance of a faculty advisor, to meet requirements for a B.S. degree in their major. It is recommended that students complete the following courses to meet minimum requirements of most professional schools. It is the responsibility of each student to contact the professional schools of choice to determine the exact entrance requirements.

Human Medical and Dental Schools:

Biology with laboratory	Biology 1,2 or BCOR 11,12
Chemistry with laboratory: inorganic	Chemistry 31, 32
organic	Chemistry 41,142
Physics with laboratory:	
with math	Physics 11/21, 12/31
with calculus	Physics 31/21, 42/31
Mathematics (requirement varies)	Math. 19, 20

Humanities, Social Sciences, Languages

Students must complete the minimum College requirements in this area that includes English composition and speech.

Advanced composition and additional courses in this area are encouraged as time allows.

Veterinary Medical Schools: All of the courses listed above under Human Medical Schools plus:

Biochemistry	Ag. Biochemistry 201/202
Written English	English 50 or 53
Genetics	BCOR 101
Microbiology	Micro. and Mol. Genetics 101
Nutrition	Animal Sciences 43

Several schools require a course in introductory animal sciences, vertebrate embryology, or statistics. Students should consult their advisor regarding specific requirements for the various veterinary schools.

Finally, both human and veterinary medical schools want to see a history of interest in medicine. It is important for students to work with physicians or veterinarians and gain first-hand knowledge of their chosen profession. Volunteer or paid work in hospitals, nursing homes, or emergency centers is important. Commercial farm experience is also valuable for preveterinary students.

Students applying to the College of Agriculture and Life Sciences who express an interest in medicine or preveterinary medicine should present evidence of high performance in high school level science and mathematics courses, plus additional supporting documentation such as high SAT scores, strong letters of recommendation, and a motivational summary statement.

Pre-Medical Enhancement Program:

The Pre-Medical Enhancement Program (PEP) is a joint offering of the College of Arts and Sciences , the College of Agriculture and Life Sciences, and the College of Medicine to provide enhanced opportunities for a select group of highly qualified pre-medical students. Interested students apply to PEP in the second semester of their first year. Those students accepted in the PEP program will be assigned a practicing physician-mentor who will introduce the concepts of patient care and practice management through regularly scheduled office-based/clinical experiences. The PEP Coordinator in the College of Medicine will provide information on opportunities for medical research experience and volunteer/employment possibilities in the health sciences or health policy fields. On a monthly basis, students will receive listings about special educational offerings at the College of Medicine and the Academic Medical Center. PEP students will also be able to participate in practice interviews with members of the University of Vermont Pre-Medical Committee. In their

junior year, PEP students will be able to apply to the University of Vermont College of Medicine. More information is available on Pep at: www.uvm.edu/~career/?Page=students/premed/pep.html&SM=students_submenu.html.

UVM/TUFTS SCHOOL OF VETERINARY MEDICINE PROGRAM

Tufts University School of Veterinary Medicine offers undergraduates at the University of Vermont an opportunity to apply for admission in the spring of their sophomore year. A limited number of students are admitted, and are guaranteed a space in the veterinary school class once they graduate.

Participants in this program are offered the assurance of veterinary school admission without the substantial investments of time and energy that other pre-veterinary students typically make in the process of preparing, researching, and applying to numerous veterinary schools, and preparing for optimal scores on the GRE. Program participants can select any undergraduate major, explore other areas of interest during their junior and senior years, and choose to study abroad, thus broadening their undergraduate experience.

To be eligible to apply, candidates for this program must be sophomores and must have demonstrated academic proficiency in their coursework, particularly in the pre-veterinary science courses.

It is expected that competitive applicants will have:

- completed at least two science sequences (most typically the year of introductory chemistry and the year of introductory biology) by the spring semester of their sophomore year.
- completed prerequisite courses at their undergraduate institution or at other universities by special permission of the veterinary school's admissions office.
- a highly competitive cumulative grade point average.

AP credit is acceptable as long as it appears on the student's transcript. The GRE is not required for applicants to this joint program; the applicant's SAT scores will be considered during the admissions process.

For more details on the application process and program requirements go to http://asci.uvm.edu/current/opportunities/early_acceptance.html?tp=true

UVM/MASSEY UNIVERSITY VETERINARY SCHOOL PROGRAM

The UVM College of Agriculture and Life Sciences and Massey University Veterinary School in New Zealand offer a B.S./B.V.Sc program. Their B.V.Sc Degree is equivalent to the D.V.M. or V.M.D. degree offered in the United States since Massey University is accredited by the American Veterinary Medical Association (AVMA). Massey has guaranteed admission for the top 5 UVM applicants each year.

The specific courses to be taken for this option start with the Core Program of the College. In addition, each student will be required to successfully complete the following courses and credit hours. The student must have maintained a minimum GPA of 3.0 in the sciences, and must also have met the required minimum score for the Graduate Record Exam (GRE) tests.

Course	Credit
Biology	8
Inorganic Chemistry	8
Organic Chemistry	8
Physics	10
Anatomy & Physiology of Domestic Animals	4

Applications will be made directly to Massey University during the Junior or Senior year at UVM and all decisions will be made by the Massey University Admissions Committee.

For information regarding admissions and/or applications to these exciting programs, contact the Admissions Office, 194 So. Prospect St., Burlington, VT 05401-3596. For specific program information contact Dr. Tom McFadden, Chair, Animal Science, College of Agriculture and Life Sciences, 102 Terrill Hall, UVM, Burlington, Vermont 05405, 802-656-0155 or e-mail Thomas.McFadden@uvm.edu .

INTEGRATED BIOLOGICAL SCIENCE

Students who have strong academic ability in the sciences and are excited about the future, concerned with contemporary issues, and want a challenging, dynamic career should consider the new cross-college Integrated Biological Science major. This program is designed to provide flexibility in developing a strong and broad background in the biosciences. Students can take advantage of the entire array of University course offerings by selecting basic and applied biology courses from departments within the College of Agricultural and Life Sciences (Animal Science, Botany, Nutrition and Food Sciences, Microbiology and Molecular Genetics, and Plant and Soil Science), the College of Arts and Sciences (Biology) and across the campus (Anatomy and Neurobiology, Forestry, Natural Resources, Pathology, Pharmacology, Molecular Physiology and Biophysics, Wildlife and Fisheries Biology). Selection of courses is not limited to CALS or CAS.

The Biological Science Program is interdisciplinary and draws on the expertise of faculty from both CALS and CAS. Each student is assigned a personal faculty advisor who helps the student select courses, develop career plans, and establish contacts in the field. The program is rigorous and designed to provide a broad exposure to different aspects of biology in the first and second years. Students refine their developing interests and specializations during the remaining two years by selecting electives and courses that fulfill the requirement for the B.S. degree in Biological Science in a manner that complements the student's interests. Alternatively, students transfer, as late as the beginning of their third year, to one of the traditional, biologically-based departments of CALS to complete their degree.

MAJORS: DEPARTMENTAL REQUIREMENTS

ANIMAL SCIENCE

Domestic animals play a major role in our lives through agriculture, recreation, biomedical science, and companionship. The mission of the Department of Animal Science is to provide a high quality, broad-based education emphasizing domestic animals and their interactions with humans.

Our graduates enter veterinary or other professional schools or pursue careers in biomedical science, agribusiness, companion animal care and breeding, zoos and aquaria, or education. To provide the necessary flexibility to achieve this diversity students work closely with faculty advisors to individualize their programs.

To advance our pre-veterinary program, the Department of Animal Science has established, with Tufts University School of Veterinary Medicine in Massachusetts, and Massey University Veterinary School in New Zealand, highly competitive programs for early acceptance/guaranteed admission to these veterinary colleges. For further information on these highly competitive options contact the Department of Animal Science directly at (802) 656-0155 or e-mail

helen.maciejewski@uvm.edu. Some limited veterinary scholarships are also available for upper-level students.

For students interested in dairy production, the FARMS (UVM/VTC Dairy Farm Management 2 + 2 Program) provides Vermont residents with scholarships and the opportunity to earn a B.S. after a two-year Associate's Degree in Dairy Farm Management from the Vermont Technical College.

An option for the outstanding student with an interest in a graduate degree is the Accelerated Master's in which students commence study for their master's degree in their senior year and have the potential to obtain a B.S. and M.S. in a five-year period.

The Department of Animal Science actively encourages participation in undergraduate research, internships, and study abroad. By combining classroom, laboratory, and practical experience students maximize their performance in a friendly environment and develop responsibility for and control over their education.

The Animal Science program deals with a range of options from basic sciences through companion and zoo animal care to farm management. Although programs are highly individualized by students working with the advisors, there are four basic options:

Preveterinary/Preprofessional Science: This is the option for students who intend to enter veterinary, professional, or graduate school. It provides the necessary background in the sciences, as well as opportunities for advanced study related to production, companion, and zoo animals.

Equine Science: Specialized courses are offered on the care, management, breeding, training, and health of horses. Students can specialize in either a teaching/training track or a management track.

The world-famous Morgan Horse Farm at Middlebury, about 45 minutes from campus, is also part of the Department and offers opportunities for study and research. Students may also enroll in equine courses at the Miner Agricultural Research Institute in Chazy, New York.

Dairy Production: Designed for the student seeking in-depth training in dairy herd management and milk production with strong links to agribusiness. Experiential learning is emphasized through the CREAM program and the FARMS program.

For students interested in dairy production, the UVM/VTC Dairy Farm Management 2 + 2 Program provides Vermont residents with scholarships and the opportunity to earn a B. S. after a two-year Associate's Degree in Dairy Farm Management from the Vermont Technical College.

General Animal Science: Under this concentration, students design a program to suit their needs, or pursue a broader-based program to meet a particular career goal. For example, this option is often used by students who have an interest in human/animal interactions, animal welfare, and zoo animals. The student and advisor select a combination of basic science, production, or companion animal courses and balance these with courses available elsewhere in the College or University. An internship experience is highly recommended.

Core Courses for All Animal Science Majors

Animal Science: ASCI 1, 43, 110, 122, 141, 281, plus two additional Animal Science courses; one course at the 200 level chosen from ASCI 205, 215, 216, or 220.
Animal Health: One course chosen from ASCI 117, 118, 263, 264, MMG 101, 222, 223, 225, BMT 242.
Biology: BIOL 1
Chemistry: CHEM 23 or 31, 26, 42 or 141
Computing: CS 2 or AGRI 002 (Foundations: Information Technology).
Genetics: ASCI 212 or BCOR 101
Mathematics: MATH 9 or higher
Statistics: STAT 111, 141 or 211

Additional courses are selected with the help of the advisor. See specific academic offerings for additional course requirements).

In addition, each student must complete all College and University requirements for graduation.

A Possible Curriculum in Preveterinary/ Preprofessional Science

First Year	**Hours**
Foundations	6
Cultural Diversity	1-3
Inorganic Chemistry	8
Math. through Calculus	6
Intro. to Animal Science	4
Biology	8
Electives	3
Total	36-38

Sophomore Year	Hours
Organic Chemistry	8
Animal Nutrition, Metabolism & Feeding	4
Statistics	3
Anatomy & Physiology of Domestic Animals	4
Fundamentals of Nutrition	3
Written English	3
Electives[1]	3-9
Total	28-34

Junior Year	Hours
Animals in Society/Animal Welfare	3
Horse, Health & Disease	3
Microbiology	4
Physics	10
English Composition	3
Career Seminar	1
Electives[1]	3–12
Total	27-36

Senior Year	Hours
Clinical Veterinary Med.	3
Appl Animal Health	3
Physiology of Reproduction	4
Endocrinology	3
Biochemistry	4
Genetics and Breeding	3
Dog Training and Behavior	3
Electives[1]	6-12
Total	29-35

[1]Include courses to meet college requirements and advanced courses for specific options. Many of the electives are normally taken in advanced science options.

A Possible Curriculum in Dairy Production

First Year	Hours
Foundations	6
Cultural Diversity	1-3
Intro. to Animal Science	4
Organic Chemistry	4
Inorganic Chemistry	4
Mathematics	3
Intro A & R Entrepreneurship	3
Written English	3
Electives[1]	3-6
Total	31-35

Sophomore Year	Hours
Anatomy & Physiology of Domestic Animals	4
Animal Nutrition, Metabolism & Feeding	4
Fundamentals of Nutrition	3
CREAM	4
Biology	4–8

Financial Management	3
Statistics	3
Animals in Society/Animal Welfare	3
Career Seminar	1
Electives[1]	3
Total	32-36

Junior Year	Hours
Dairy Cattle Judging	2
Advanced Feeds	2
Marketing	3
Advanced Dairy Management	15
Accounting	3
Physical Education	1
Electives[1]	6-9
Total	32-35

Senior Year	Hours
Physiology of Reproduction	4
Decision Making	3
Lactation Physiology	3
Senior Project	4-8
Risk Analysis & Forecast Procedures	3
Physical Education	1
Electives[1]	6-9
Total	24-31

A Possible Curriculum in Equine Science

First Year	Hours
Foundations	6
Cultural Diversity	1
Intro. to Animal Science	4
Inorganic Chemistry	4
Written English	3
Biology 1	4
Organic Chemistry	4
Mathematics	3
Introduction to Equine Studies	4
Electives[1]	0-3
Total	33-36

Sophomore Year	Hours
Anatomy & Physiology of Domestic Animals	4
Fundamentals of Nutrition	3
Horse, Health & Disease	3
Emergency First Aid	2
Principles of Agricultural Resources and Community Development Economics	3
Animal Nutrition, Metabolism & Feeding	4
Financial Management	3
Intro A & R Entrepreneurship	3
Physical Education	1
Electives[1]	3
Total	26

Junior Year	Hours
Physiology of Reproduction	4
Microbiology	4
Intro. to Plant Science	3
Equine Training Techniques or EQUUS	3 or 4
Speech	3
Animals in Society/Animal Welfare	3
Statistics	3
Equine Enterprise Management	2
Career Seminar	1
Marketing	3
Electives[1]	3-6
Total	32-36

Senior Year	Hours
Equine Reproduction & Management or Equine Instructing Techniques	3
Practical Equine Management	3
Forage Crops	3
Equine Industry Issues	3
Genetics	3
Equine Internship	3-6
Specialized topic	1-3
Decision Making	3
Physical Education	1
Electives[1]	6-8
Total	29-36

[1]Include courses to meet college requirements and advanced courses for specific options.

A possible curriculum in General Animal Science

First Year	Hours
Foundations	6
Cultural Diversity	1-3
Intro. to Animal Science	4
Organic Chemistry	4
Inorganic Chemistry	4
Mathematics	3
Biology	4
Written English	3
Physical Education	1
Electives[1]	3
Total	33-38

Sophomore Year	Hours
Anatomy & Physiology of Domestic Animals	4
Animal Nutrition, Metabolism & Feeding	4
Fundamentals of Nutrition	3
Zoos Exotics & Endangered Species	3
Biology	4
Environmental Biology	3
Principles of Wildlife Management	3
Statistics	3
Physical Education	1
Electives[1]	3-6
Total	31-34

Junior Year	Hours
Ornithology	3
Terrestrial Wildlife	3
Advanced Zoos, Exotics & Endangered Species	3
Dog Training & Behavior	3
Animals in Society/Animal Welfare	3
Animal Health	3
Career Seminar	1
Psychology Research Methods	4
Electives[1]	6-12
Total	29-35

Senior Year	Hours
Reproductive Physiology	4
Animal Behavior	3
Endocrinology	3
Clinical Topics in Companion Animal Medicine	3
Florida Ecology Field Trip	2
Field Experience	12
Electives[1]	3-9
Total	30-36

BIOCHEMISTRY

Biochemistry is the basic science that explores the chemical and physical properties of living organisms and the chemical changes that occur in these organisms. It is integral to the study of multiple disciplines within the life- and biomedical-sciences, including biology, chemistry, microbiology, genetics, anatomy, physiology, pharmacology, nutrition and food sciences, animal sciences, botany, and plant sciences. The Bachelor of Science in Biochemistry degree is an interdisciplinary undergraduate degree program offered through the College of Agriculture and Life Sciences (CALS) and the College of Arts and Sciences (CAS) in conjunction with the College of Medicine (COM). It draws upon a broad set of University resources from CALS, CAS, and COM to provide

students with a modern science-based education designed to emphasize fundamental knowledge of chemistry and biology along with advanced courses specializing in biochemistry and related life- and biomedical-sciences. The Biochemistry curriculum offers students with a strong academic ability in the sciences an opportunity to explore upper-level courses in areas of modern biochemistry and is designed to meet the needs of students wishing to compete in the job market at the B.S. degree level as well as students planning to continue with advanced studies in a graduate or professional degree program.

Students may apply to the program either through CAS or CALS, which vary in their college distribution requirements. The distribution categories and the number of required courses in each category differ slightly. In CAS, students are required to fulfill distribution requirements in six of the following seven categories: foreign languages, fine arts, literature, humanities, social sciences, physical sciences and mathematics, plus complete the general requirements in non-European cultures and race relations and ethnicity in the U.S. In CALS, students are required to fulfill distribution requirements in science, humanities and fine arts, communication skills, information technology skills, quantitative skills, critical thinking skills, interpersonal skills, citizenship & social responsibility values, environmental stewardship values, and personal growth values. Regardless of the College through which students choose to apply, all students must take a core set of basic courses in chemistry, biology, and mathematics in their first two years followed by advanced courses in biochemistry, chemistry, and / or molecular biology in their third and fourth years. Since biochemistry is a "hands-on" science, involvement of students in undergraduate research projects, most of which qualify as honors projects in either College, is strongly encouraged. For more information contact either co-directors of the program: Christopher Landry (Christopher.Landry@uvm.edu), Christopher Francklyn (Christopher.Francklyn@uvm.edu), or John Burke (John.Burke@uvm.edu).

In addition to the CALS or CAS college distribution requirements, the Biochemistry core requires satisfactory completion of BIOL 1, 2 *or* BCOR 11, 12; MATH 21, 22; PHYS 31, 42 with 21/22; CHEM 35, 36 (Introductory Chemistry); CHEM 143,144 (Organic Chemistry); CHEM 162; BIOC/CHEM/MMG 205; BIOC/CHEM/MMG 206, BIOC/CHEM/MMG 207; CHEM 221; BCOR 101; MMG 102 or BCOR 103; and advanced Biochemistry electives.

BIOLOGICAL SCIENCE

Many of the most exciting and controversial developments with the potential to benefit or improve society are in biological science. For example, consider how often the fields of biotechnology, medicine, ecology, and genetics are mentioned in the daily news. For students concerned about contemporary issues and who love the sciences, our Bachelor of Science Program in Biological Science (**BISC**) offers the flexibility, rigor and comprehensiveness to prepare for a dynamic and challenging career. Veterinarian, marine biologist, physician, lab technician – these are among the several hundred careers our graduates are leading. More than half use their degree as a professional stepping-stone to medical or veterinary school.

BISC is the generic degree in biology. Flexibility and quality are its biggest attractions. As a cross-college integrated major, BISC draws its expertise of faculty from several departments in the College of Agriculture and Life Sciences, the Biology department in the College of Arts and Sciences, and from other parts of the university, especially the College of Medicine. **BISC** students take two years of fundamental coursework: mathematics, chemistry, introductory biology, genetics, ecology and evolution, cell and molecular biology. During the Junior and Senior years, students study physics, statistics, advanced biology, and often do internships and undergraduate research working one-on-one with a professor in the student's subdiscipline of interest. Students use their electives to develop a rich expertise within a personal subdiscipline of generic biology or concentrate in specialized areas such as plant biology, biochemistry, nutrition, microbiology… Others expand their solid foundation by adding a second major or a minor in a complimentary field selected from the offerings in the Colleges of Agriculture and Life Sciences or Arts and Sciences.

The wealth of faculty among the diverse biological sciences allows our students to seek personal attention engaging with a professor in undergraduate research in the student's chosen field of interest. We encourage our students to participate in the lab or field research of a UVM professor with no restriction as to college. UVM has extensive teaching and research facilities, e.g., state-of-the-art laboratories and greenhouses, protected Natural Areas (from alpine tundra to Lake Champlain), Proctor Maple Research Center, Horticultural Farm, Morgan Horse Farm and Miller Research Center. Students find opportunities in biotechnology splicing genes and working on HIV, others examine how one gene may affect a cancer patient's sensitivity to chemotherapy drugs. One student is currently studying how drug-eluting stents affect the potential for blood clots. Another biological science student worked on a project studying how pH affects phosphorus level in streams, while another, in a biomedical engineering lab, helped design a way to simulate skiing injuries (the data to be used to manufacture a safer ski boot).

Internships, a path for students to get experience in the working world while still in college, are of growing importance on a graduate's resume. In the **BISC** major, we seek out a broad range of opportunities to offer our students. When one of our students did his independent study in dentistry, he completed comprehensive training in dental assisting and visited offices of many area dentists. Another interned at the Baltimore Zoo.

Our graduates are invited to some of the very best medical, veterinary, dental, and graduate schools in the country. You can request our careers list to see over 40 fields of advanced study for the M.Sci. or Ph.D. (e.g., Animal Science, Biochemistry, Genetics, Endocrinology, Pharmacology, Physiology, Plant Biology…) which our graduates have pursued.

SPECIFIC REQUIREMENTS:

The Biological Science B.S. core requires satisfactory completion of BCOR 11,12 (Exploring Biology); BCOR 101 (Genetics); BCOR 102 (Ecology and Evolution); BCOR 103 (Molecular and Cell Biology); CHEM 31, 32, 141, 142; PHYS 11 and 12 or PHYS 31 and 42 (either sequence must include laboratory sections 21 and 22); MATH 19, 20 or MATH 21, 22; STAT 141 or 211. In addition and in consultation with their academic advisor, students will design a course of study that includes an additional 26 credit hours of advanced life-science electives.

For more information contact the CALS Director of the program: David E. Kerr (David.Kerr@uvm.edu).

BOTANY

Our undergraduate program is designed to provide flexibility and personal attention. Each student plans an individualized program of study in consultation with a faculty advisor. Students have many opportunities to interact closely with faculty through field, lab and research experiences. Areas of

student research interest include ecology, evolution, cell and molecular biology, growth and development, and physiology (see our departmental web page for a list of completed student projects). Popular study opportunities include our biennial trip to Costa Rica and student-initiated research projects at our internationally known Proctor Maple Research Center or at the Pringle Herbarium, the third largest plant collection in New England. To learn more about our undergraduate program, visit the Botany Department web site at www.uvm.edu/~plantbio/.

Options for our Majors: Our students select from three concentrations: General Botany, Plant Molecular Biology, and Ecology and Evolutionary Biology of Plants. Basic courses that are required for all the concentrations, and additional courses specific for each concentration are listed below. Students may petition the department to substitute similar courses for those listed. Study of a modern foreign language is encouraged for those attracted to the many international career opportunities in plant biology.

Basic Course Requirements (29-32 hours) – required for all concentrations:

BCOR 11 & 12
Botany 104, BCOR 101
Chemistry – see specific concentration
Math 13, 14 or 19, 20 or 21, 22
Physics – one semester with laboratory
Statistics – one course (141, 211, or NR 140)

General Botany Concentration: This concentration offers broad training at all levels of plant biology ranging from molecular biology to plant communities. Students have the flexibility to study plants from many perspectives and to understand how the diverse areas are interrelated. Students, in consultation with a faculty advisor, can choose courses that meet their individual needs and interests. Students are encouraged to perform undergraduate research working directly with departmental faculty on laboratory or field projects in plant biology.

In addition to the basic course requirements for our departmental major (listed above), this concentration has the following requirements and electives:

Concentration Requirements (29 hours):
Botany 108 or 109, BCOR 102
Chemistry 31, 32, 141, 142
Physics – one additional semester, with laboratory

Concentration Electives (1-20 hours)
Botany – 5 additional courses, at least two of which are at the 200 level.

Ecology and Evolutionary Biology of Plants: This concentration offers broad training in organismal biology, with emphasis on population and physiological ecology, community structure and function, and plant evolution and diversity. Students choose from a menu of options in fulfilling most requirements; this flexible curriculum enables students to select from a wide range of courses while achieving proficiency in the ecology and evolution of plants. Students are encouraged to initiate an independent research project with one of our faculty.

In addition to the basic course requirements for our departmental major (listed above), this concentration has the following requirements and electives.

Concentration Requirements (28 hours):
Botany 108, 109, BCOR 102
Chemistry 31, 32, 141, 142

Concentration Electives (12-24 hours) – At least six courses from the following, at least two of which must be 200-level Botany courses.

Ag. Biochem 201, 202
Biology 203, 238, 254, 264, 270, BCOR 102
Botany 117, 205, 209, 213, 223, 232, 234, 241, 260, 261
Env. Sci. 101, 201
Forestry 21, 120, 121, 122, 225, 228, 234
Geography 81
Geology 1, 55, 151, 101
MMG 220
Nat. Res. 220, 224, 260
Plant and Soil Sci. 152, 161, 215

Plant Molecular Biology: This concentration focuses on the inner workings of plants at the molecular, cellular, and organismal level. Although the basic cellular functions of plants are the same as those of animals, plants face unique challenges and have evolved interesting solutions. To understand the unique biology of plants within a context of what is known about other organisms, courses examining the biochemistry and molecular biology of plants are supplemented by courses on the molecular functions and development of other organisms. In addition to coursework, students are encouraged to get hands-on laboratory experience by taking advantage of the many opportunities to participate in independent research with department faculty.

In addition to the basic course requirements for our departmental major (listed above), this concentration has the following requirements and electives:

Concentration Requirements (40 hours):
Ag. Biochem 201, 202, 220
Botany 261
Chemistry 31, 32 or 35, 36; 141, 142
MMG 101, 102
Physics – an additional semester with lab (31/42 or 11/12)

Concentration Electives (8-15 hours) – at least four courses from the following list:
Ag. Biochem. 191, 221, 230, 250
Animal Sci. 230
Botany 109, 117, 205, 257, 262
Biology 263, 265
MMG 220, 225, 240
Nutrition 243
Pharmacology 272, 290

COMMUNITY DEVELOPMENT AND APPLIED ECONOMICS

The Department of Community Development and Applied Economics (CDAE) uses economic, social, and environmental principles to identify needs, analyze problems and advance sustainable solutions in partnership with local and global organizations and communities. Students in CDAE focus on the application of economic principles and their relationship to leadership and management, economic and business development, environmental sustainability, and social responsibility.

Vision: CDAE is an international leader in sustainable community development.
Mission: CDAE supports sustainable local and international community development through interdisciplinary research, education, and outreach that serves the public interest.
Students in CDAE will focus on the application of economic principles and their relationship to leadership and management, economic and business development, environmental sustainability, and social responsibility. You may choose a major from three areas of study: Agricultural and Resource Entrepreneurship, Community and International Development, or Public Communication.

Agricultural and Resource Entrepreneurship (B.S)
With Vermont as your laboratory, you acquire knowledge in

applied economics and skills in management, strategic planning, marketing, and public policy related to developing or operating a small, natural-resource-based business.

Community Development and International Development (B.S)
Building on a strong, applied economics base, you acquire knowledge, skills, and values necessary to address rural economic and policy problems locally and globally.

Public Communication (B.S)
Majors in Public Communication at the University of Vermont use an integrated approach to communication in the public interest to critically analyze situations, manage information, and craft messages that work in an increasingly global society.

Community Development and Applied Economics General Requirements

CALS Core Curriculum: Students must complete the CALS Core Curriculum with the following specifications.
Social Science
Political Science 21
Economics 11
Communication Skills
a. Oral; AGRI 183 (or Foundations) required
b. Written; English I required
c. One additional communications course (either oral or written) required
Information Technology
AGRI 85 (or Foundations) required
Quantitative Skills
a. Mathematics; Math 19 required
b. Statistics; Statistics 141 required
c. One Additional math or stats applications course

CDAE Requirements:

- CDAE Courses: CDAE 002, 015, 061, 102, 127, and internship/service learning requirement.
- Major specific courses (ARE 35 credits, CID 33 credits, PCOM 36 credits)
- Minor or advisor approved focus (12-18 credits)

Required courses for Agricultural and Resource Entrepreneurship major: BSAD 65, CDAE 157, 166, 167, 168, 253, 254, 255, 264, 266 and 267.

Required courses for Community and International Development major: CDAE 166, 253, 254, 255, and 6 of the following courses: CDAE 156, 157, 171, 218, 237, 250, 251, 272, 273.

Required courses for Public Communication major: Students must complete CDAE 24, 120, 124, 129, 224, 250, PA 206 and 4 of the following courses: CDAE 128, 157, 159, 166, 168, 231, 251, CDAE 195 or PA 295, SOC 43 or 243 or 150, POLS 137 or CMSI 160.

The Department also offers five minors: Agricultural and Resource Entrepreneurship; Applied Design; Consumer Affairs; Consumer and Advertising; and Community and International Development.

ENVIRONMENTAL SCIENCES

Students may major in Environmental Sciences through the College of Agriculture and Life Sciences, the College of Arts and Sciences, or The Rubenstein School of Environment and Natural Resources. For general information about the curriculum, see the Environmental Sciences section.

Environmental Sciences majors through the College of Agriculture and Life Sciences must fulfill the following requirements for graduation:

A. General CALS distribution requirements.

B. Core distribution requirements for major (also fill distribution requirements): Animal Sci. 1, 230; Comm. Dev. and Appl. Ec. 2; Plant and Soil Sci. 11; BCOR 102; Micro. and Molec. Genetics 101.

C. Environmental Sciences minimal basic science/quantitative courses (also fill distribution requirements): BCOR 11 & 12; Chemistry 31, 32; Chemistry 42*; Geology 55 or Plant and Soil Sci. 161**; Math. 19, 20; Nat. Res. 140 or Statistics 141.

*Students should consider taking Chemistry 141/142.
**Plant and Soil Sci. 161 is required for many advanced PSS courses in several curricular concentrations; most students should take this course.

D. Environmental Sciences foundation courses: ENSC 1, 101, 130, 201, 202.

E. Concentration requirement, 14-17 credit hours in one of the following Focus Tracks: ***Agriculture and the Environment, Conservation Biology and Biodiversity, Ecological Design, Environmental Analysis and Assessment, Environmental Biology, Environmental Chemistry, Environmental Geology, Environmental Resources, Water Resources.*** Up-to-date course requirements for each Focus Track are available from your advisor or the Dean's Office; students may elect to petition to develop a self-design track.

ENVIRONMENTAL STUDIES

The Major in Environmental Studies is an interdisciplinary program available to qualified students upon approval of the Director of the Environmental Program.

Environmental Studies students majoring through the College of Agriculture and Life Sciences must complete a minimum of 122 credit hours, including two hours of physical education, with a minimum GPA of 2.0, and fulfill the following requirements: (1) the general CALS distribution requirements; (2) the Environmental Studies Major Core and the Individually-Designed Program: 30 credit hours of approved environmentally-related courses at the 100 level or above, including three hours at the 200 level, with at least one course in each of the following areas — natural sciences, humanities, social sciences, and international studies (may be fulfilled by study abroad experience).

MICROBIOLOGY AND MOLECULAR GENETICS

Undergraduates who undertake studies in the Department of Microbiology and Molecular Genetics receive instruction in the classroom and in state-of-the-art teaching and research laboratories. The Department offers either a Microbiology or a Molecular Genetics major or minor as well as courses in the areas of molecular genetics, general, clinical, and environmental microbiology, virology, and immunology which are available to students in other programs. Numerous research opportunities provide undergraduates with close interactions with faculty at the cutting edge of microbiology using molecular genetics technology.

The Microbiology and Molecular Genetics core courses total 65 credits. The courses comprising the core are: biology, biochemistry, genetics, inorganic and organic chemistry, mathematics, general microbiology, molecular genetics, cell biology, physics, and statistics. In addition to the core requirements departmental majors take a minimum of 15 credit hours from an array of approved elective courses including undergraduate research. As their core requirements, minors

take microbiology, molecular genetics, cell biology and genetics plus additional credit hours of courses as required. Students interested in the Accelerated Masters Program should contact the Department.

Outstanding students with an interest in a graduate degree may apply to enter the Accelerated Masters Program of the Department. In this program students commence study for their master's degree in their senior year and have the potential to obtain a B.S./M.S. in a five-year period.

See Minors in this section.

NUTRITION AND FOOD SCIENCES

The Department of Nutrition and Food Sciences (NFS) prepares students to enter the rapidly expanding field of dietetics, food science, nutrition, health, and fitness. Nutrition and Food Science, unique fields of study, are rooted in the physiological, chemical, and biochemical sciences but are comprehensive in scope since they integrate knowledge learned in the social and psychological sciences. The faculty in the department believe that excellence in teaching, research and undergraduate student advisement are critical components of their responsibility to undergraduate education. Through formal course work, field experience, and independent research, students prepare themselves in the biochemical, psychological, and socioeconomic aspects of diet, nutrition and foods. Thus NFS majors are able to meet the current and future needs in nutrition and food science and assume innovative, leadership roles in society and industry.

The course credits earned in NFS provide background in preventive and therapeutic nutrition as well as nutrient requirements for human growth, development, health, and fitness throughout the life cycle. Other courses focus on the physical, chemical, and nutritional properties of food, food safety, and consumer aspects of food related to socio-economic status, life style, cultural beliefs, and health. Although a series of courses providing knowledge in these areas is required of all majors, each student has a generous amount of free elective credits to pursue personal interests.

Department majors may elect to meet the undergraduate requirements needed for admission to medical schools (including naturopathic, chiropractic, or osteopathic) or graduate school in nutrition, food science, sports nutrition, or family and consumer sciences.

Depending on current interests and future plans, majors may select one of four department options:

Dietetics: Dietetics is a profession concerned with the science and art of human nutritional care, an essential component of human health science. The Didactic Program in Dietetics is currently granted developmental accreditation by the Commission on Accreditation for Dietetics Education of the American Dietetic Association, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, 312/899-0040 ext. 5400. This program prepares students for careers as Registered Dietitians by providing the undergraduate requirements needed to apply to dietetic internships.

To become a Registered Dietitian, students must complete our Didactic Program in Dietetics; complete an CADE accredited supervised practice/internship program and pass the National Registration Examination for Dietitians. This double major prepares graduates to counsel people about the preventive and therapeutic role of nutrition in the maintenance of health and fitness.

Nutrition and Food Sciences: This customized major is designed to provide a strong background in preventive nutrition, food science, and basic science. Students have an opportunity to integrate course work in medical, bio-chemical, biological, physiological, psychological, and sociological sciences or business. This option can prepare students for careers in the commercial food processing industry or in professions where the knowledge of food and beverage, nutrient content of foods, eating behavior, and the role of food in society is critical. The demand for qualified professionals with education and training in the food science arena greatly exceeds the number of graduates available thus making this option highly desirable for the career motivated student.

Students may choose the Nutrition and Food Science – Doctorate in Physical Therapy (DPT) Program called the 3+3 program. In the 3+3, all NFS requirements must be completed in three years and the student must apply for matriculation into the DPT.

Through appropriate selection and advisement, students in either DIET or NFS may meet the undergraduate requirements needed for admission to medical school (including naturopathic, chiropractic, or osteopathic) or graduate school in nutrition, food science, sports nutrition, or family and consumer sciences (see the Master of Arts in teaching Program description in the Department of Integrated Professional Studies).

Course requirements for all Department Majors

		Hours
I.	General Education Studies for all Majors	
A.	Communication Skills English 1 (or equivalent) AGRI 183 (or equivalent)	6
B.	Fine Arts and Humanities Two unspecified courses	6
C.	Social Science Core Psychology 1 Sociology 1 or 109, or Social Work 47	6
D.	Basic Science Core* Chemistry 23 (or 31); 42 (or 141) Anatomy and Physiology 19/20 Biochemistry 201 and 202	20
E.	Analytic Sciences Core* Statistics 111 (or equivalent) AGRI 85 (or equivalent) Mathematics 9 or higher	9
F.	Race and Culture (or equivalent), EDSS 11	1-3
G.	Physical Activity Two unspecified courses	2

*Students planning to attend medical or graduate school should have biology (one year), chemistry (two years), and physics (one year); plus calculus (one year) is recommended.

II.	Department Core Requirements for all Majors Nutrition and Food Sciences (NFS) 43, 44, 53, 54, 143, 153, 154, 203, 243	22
III.	Department Major Requirements	
A.	Dietetics: NFS 223, 244, 250, 260, 262, 263; BSAD 120; BMT 003;	24-26
	Electives	23-47
B.	Nutrition and Food Sciences	
	Nutrition and Food Sciences:	12
	In consultation with the student's academic advisor, select four additional didactic courses, at least two of which must be at the 200 level.	
	Electives	38-60

PLANT AND SOIL SCIENCE

Majors in the Plant and Soil Science Department include both Ecological Agriculture and Sustainable Landscape Horticulture that allow students to expand their knowledge of science and apply it to plant production, landscape design, and environmental issues related to plants, insects, soil, and water management. Our program provides a unique, interdisiplinary opportunity to study plant/soil ecosystems that are managed for food, feed, or fiber production, for landscape purposes, or for recycling/waste utilization, areas that are very important from societal and environmental perspectives. Our faculty represents the disciplines of entomology, soil science, horticulture, agronomy, plant pathology, and water pollution control.

The Plant and Soil Science program integrates classroom and field experiences and incorporates relevant environmental, social, and economic issues into the curriculum. It is flexible, allowing you to pursue your interest in plant production, landscape design, and environmental issues related to plants, insects, soils, and water management while preparing for career opportunities and graduate studies. Faculty help students develop individualized courses of study to match their interests and career goals.

ECOLOGICAL AGRICULTURE

Ecological Agriculture (ECAG) is a multi-disciplinary degree that provides a foundation in the natural sciences with an emphasis on the application of ecological principles to the production of horticultural or agronomic crops. Disciplinary synthesis is attained through advanced coourses in soils, plant pathology, entomology, and integrated farm management. Students are prepared to become practitioners through internship experiences and completing cross-disciplinary courses in ethics, policy and economics.

Specific Requirements:

Plant and Soil Science 11, 21, 106, 138, 158, 161, 162, 212, 215 and 281; Community Development and Applied Economics 61, 166 or Business Administration 120; Community Development and Applied Economics 208; Botany 4, 104 and 117; Natural Resources 103 or Forestry 120; Chemistry 23 and 26; Mathematics 10; Statistics 111, 141, 211 or Natural Resources 140 and 12 credits of PSS courses at level 100 or above (excluding PSS 195/196 "Special Topics" and PSS 197/198 "Independent Study" or WWW courses unless prior approval is obtained by the student's advisor.) All students must get a C- or better in all courses required by the EA major.

SUSTAINABLE LANDSCAPE HORTICULTURE

Sustainable Landscape Horticulture (SLH) provides a professional education in the use and care of trees, shrubs, flowers, lawn grasses, and other plants in the human environment. The program integrates professional training in landscape design and the plant sciences with courses in business and the liberal arts. The emphasis is on the preparation of students for the changing future and a variety of careers in the expanding field of Sustainable Landscape Horticulture. Students are required to participate in internships related to their studies.

This interdisciplinary program is coordinated by the Department of Plant and Soil Science; student majors in the program are therefore enrolled in the Plant and Soil Science Department.

Specific Requirements:

Plant and Soil Science 11, 106 or 107, 123, 125, 131, 132, 138, 145, 158, 161, 162, 281; Forestry 21; Community Development and Applied Economics 61, 166, *or* Business Administration 120; Botany 4, 104 and 117; Natural Resources 103; Natural Resources 25 or 143 or Community Development and Applied Economics 101; Chemistry 23 and 26; Mathematics 10; Statistics 111, 141, 211 or Natural Resources 140. All students must get a C- or better in all courses required by the SLH major.

THE SELF-DESIGNED MAJOR

Undergraduate students have the opportunity to define a personalized program of study when their personal educational objectives fall outside curricula defined by departments and programs of the College. The requirements for a Self-Designed Major are specified in a "Guide for Proposal Development and Submission," available through the Student Services Dean's Office in 106 Morrill Hall. Each student is asked to formulate their own program of study by working in association with a faculty advisor and the committee of faculty which oversees the major. Designing a major requires examination of personal goals and acquiring information about formal courses and other possible learning experiences (e.g. internships, independent studies, special topics studies, and independent research). The information is then formulated into a package of proposed course work and other learning experiences.

The objective is to design a coherent and unique plan of study to meet the specific learning needs of the student and by which the student will achieve an advanced state of skills, knowledge, and values in their chosen field. The student must justify the designed package in two ways: (1) value to the student; (2) uniqueness and deviation from curricula already available. The Self-Designed Major usually comprises about 60+ credits of study in the junior and senior years (after the College core requirements have been fulfilled).

The design of the Major is itself an intensive learning experience; therefore, students should plan to spend some time each week over the course of one semester while self-designing the Major.

MINORS

SPECIFIC MINOR REQUIREMENTS

Agricultural and Resource Entrepreneurship: 15-16 credits including 12 credits in required courses CDAE 166, 167, 168, 266; one course three to four credits from the following restricted electives: CDAE 157, 264, 267.

Arts and Sciences Majors: This minor is also available for Arts and Sciences students. Courses required are: CDAE 61, 166, 167, 168, and 266. Arts and Sciences students should note that BSAD 65, MATH 19, and CS 2 or instructor permission are listed as prerequisites for some of the upper level courses.

Animal Science: Any student in the College of Agriculture and Life Sciences interested in enrolling in this minor should contact the Animal Science department. If accepted, the student will be assigned a "minor advisor" from the department who must approve all program plans and course selections.

Five courses with a minimum of 16 credit hours. Required courses: ASCI 001 and ASCI 043, and 9 credit hours at 100 level or above and at least 3 credit hours at 200 level.

Applied Design: Nine credits in required courses: CDAE

15; 1 or 16; 101 or 231 plus two additional elective courses at or above the 100 level, approved by the student's advisor to define an applied design focus for a total of 15 credits.

Arts and Science Majors: Nine of the 15 hours must be at the 100 level or above. The Applied Design minor is not available to students majoring or minoring inn Studio Art.

Botany: At least 15 hours of course work to include Botany 4 or Biology 1 or 2; plus three additional courses in Botany, at least one at the 200 level.

Community and International Development: A total of 15 credit hours with twelve from required courses CDAE 2, 61, 102 and either 171 or 296 or 273; and three hours from a list of restricted electives as follows: CDAE 166, 167, 237, 253, 255, or 272.

Arts and Sciences Majors: This minor is also available to Arts and Sciences students. Courses required are: a total of 15 credits with 12 from required courses CDAE 2, CDAE 61 or EC 12, CDAE 102, and either CDAE 171, 273, or 296; and three hours from a list of restricted electives as follows: CDAE 166, 167, 237, 251, 255, 272, EC 140.

Consumer and Advertising: Fifteen credits including CDAE 15, 127, 128, 183, and an advisor-approved elective.

Consumer Affairs: 15 credits including CDAE 127, 128, 157, and 159, plus one of the following restricted electives: CDAE 102, 250, or 255. *Note: CDAE majors must take CDAE 250 as their "elective."*

Environmental Studies: Seventeen credit hours of Environmental Studies including 1, 2; nine hours at the 100 level or above, with at least three hours at the 200 level and may include one non-ENVS course with the approval of a student's advisor and Program Director.

Microbiology: Core requirements are MMG 101 and 104, BCOR 101, 103; plus an additional six credit hours of MMG courses chosen from MMG 195/196, 201, 203, 211, 220, 222, 223, 225, 240, 295/296, 320 depending on student needs.

Arts and Sciences Majors: A student may minor in Microbiology and Molecular Genetics upon permission of the departmental Undergraduate Affairs Committee and assignment of a minor advisor within the department who will direct the student's program plan and course selection.

Molecular Genetics: Core requirements are MMG 101, 104, BCOR 101, 103; plus an additional six credit hours of MMG courses chosen from MMG 195/196, 201, 203, 211, 223, 225, 231, 240, 295/296, 312, 320, 352 depending on students needs.

Arts and Sciences Majors: A student may minor in Microbiology and Molecular Genetics upon permission of the departmental Undergraduate Affairs Committee and assignment of a minor advisor within the department who will direct the student's program plan and course selection.

Nutrition and Food Science: A total of fifteen credit hours in Nutrition and Food Sciences, 9 credit hours consisting of 43, 53, 143, and six credits of NFS courses at or above the 100 level. Independent study, field experience and undergraduate research cannot be counted in this total.

Plant and Soil Science: Sixteen credits including Plant and Soil Science 10 or 11, 161, plus an additional 9 credits in Plant and Soil Science courses at the 100 level or above.

Sustainable Agriculture: Fifteen hours including nine in required courses ASCI 230 or CDAE 208, CDAE 61 and PSS 152; three or four credits from the following restricted electives: ASCI 110, 113, 115, 118, 213, 214, 215, 220, 231, 233, 234, 264 or CDAE 171, 205, 218, 272, 273 or PSS 106, 161, 123, 124, 125, 127, 138, 145, 154, 212, 215, 217; and a three- to six-credit hour internship: AGRI 195 - Special Topics, ASCI 197, 198 or 297, CDAE 196, or PSS 197, 198 or 297, 298.

Agriculture and Life Sciences Majors: Any student in the College of Agriculture and Life Sciences interested in enrolling in this minor should contact the Plant and Soil Science, Community Development and Applied Economics, or Animal Science departments. If accepted, the student will be assigned a "minor advisor" from the department who must approve all program plans and course selections.

Arts and Sciences Majors: Fifteen hours to include: CDAE 61, CDAE 208, PSS 152, one elective at 100 or 200 level in ASCI/CDAE/PSS (see list of approved electives in Department or Dean's offices) and three to six hours internship at 100 or 200 level in AGRI/ASCI/CDAE/PSS. *Note: Students should take their four academic courses before they design their internship experience. Thus, the internship will serve as a culminating event in this program of study. The College of Arts and Sciences requires their students to receive a letter grade for internships taken in minor programs of study.*

The College of Arts and Sciences

The College of Arts and Sciences at UVM combines the advantages of a small liberal arts college and the resources of a major research institution. It provides students with a sound liberal education through close interaction with nationally and internationally noted scholars. This close interaction helps students acquire knowledge and scholarly discipline that enables them to think critically about issues they will confront in their professional and personal lives. The College's academic programs acquaint students with the intellectual, cultural and aesthetic heritage of our complex world. Our programs also seek to prepare students for entry into rewarding careers in a variety of fields and for advanced study that may be prerequisite to other opportunities. More and more professional schools, corporate managers and graduate schools seek individuals who have a fine liberal arts background.

In UVM's College of Arts and Sciences students are encouraged to develop depth and breadth of knowledge, and critical thinking and communication skills that are the hallmarks of a liberal education. Students begin developing these skills in a first-year seminar, and as they complete degree requirements they have the opportunity to explore a wide range of disciplines spanning literature, the humanities, the fine arts, foreign languages, the natural and social sciences and mathematics. The College offers over forty majors from which students may choose.

The offices of the Dean of the College of Arts and Sciences are located in Waterman Building.

ORGANIZATION AND DEGREE ROGRAMS

The Bachelor of Arts degree program may be completed with an approved major in one of the following fields:

Anthropology
Area & International Studies
Art History
Art – Studio
Biology
Botany
Chemistry
Classical Civilization
Communication Sciences
Computer Science
Economics
English
Environmental Studies
Film and Television Studies
French
Geography
Geology
German
Greek
History
Italian Studies
Latin
Mathematics
Music
Philosophy
Physics
Political Science
Psychology
Religion
Russian
Sociology
Spanish
Theatre
Women's and Gender Studies
Zoology
Individually Designed Major

The following majors are available through the Evening University: English, Mathematics, Psychology, Sociology, Studio Art.

The Bachelor of Science degree program may be completed with an approved major in one of the following fields.

Biochemistry
Biological Science
Chemistry
Environmental Sciences
Geology
Physics
Psychology
Zoology

The Bachelor of Music degree program may be completed with an approved major in one of the following fields.

Music Performance

FIRST-YEAR PROGRAMS

The first year of university-level study is challenging. The College of Arts and Sciences offers students two programs that help them complete the first year successfully and acquire the skills and background necessary for success throughout their university careers.

In their first semester, students are encouraged to enroll in the Teacher-Advisor Program (TAP), which is designed to help students begin a successful liberal arts education. TAP combines interactive courses with careful academic advising. In TAP seminars, students approach significant issues from a variety of points of view, develop their critical thinking, and improve their skills in oral and written communication. Students' TAP instructors are also their academic advisors and help first-year students discover their interests and reach academic goals. TAP courses all satisfy the College's distribution requirements. Typical topics for TAP courses include "Science as a Way of Knowing," "Coming to America: Autobiography and Ethnicity," "Geology and Ecology of Lake Champlain," "Rationality: Belief in God," and "Student Movements in the Twentieth Century." More than forty different courses like these are available to first-year students each year.

As students enter their second semester, it is important for them to continue developing the critical thinking, speaking and writing skills cultivated in TAP, and also to reflect on their choices of majors and minors. Our second-semester program, AIM (Academic Introduction to the Major), is designed to facilitate the transition into a potential major. Courses identified in the AIM program encourage the intellectual shift from a broad exposure to the liberal arts to in-depth study in a particular field. The AIM program identifies courses in all disciplines that serve as "gateway" courses to the major, giving students an opportunity to begin exploring the discipline in a more substantial manner in coursework that introduces them to the nature of inquiry typical in the major.

THE JOHN DEWEY HONORS PROGRAM

The John Dewey Honors Program functions as the junior and senior year honors program for Arts and Sciences students coming out of their sophomore year in the Honors College. John Dewey Honors Program students are required to participate in one of the Program's junior-level honors seminars. They complete their senior year with a College approved honors thesis or major creative project typically in the departments in which they have chosen to major. A variety of special seminars and other co-curricular activities distinguish the Program. John Dewey Honors students are given priority enrollment for courses, enjoy special library privileges, and have access to an honors lounge which offers students a quiet space for studying and socializing.

PREPROFESSIONAL PREPARATION

Whether you are interested in medical, dental or law school, or graduate work in other fields, the College of Arts and Sciences offers you excellent opportunities to complete your preprofessional education.

Medicine and Dentistry: Minimum requirements for entry into medical and dental schools include one year each of biology, general chemistry, organic chemistry, physics and

calculus. Increasing numbers of medical and dental schools also are requiring a year of English, work in the humanities, social sciences, and languages. There is however no required or preferred major. As long as you complete the courses required by your chosen professional schools, you may pursue any undergraduate major in UVM's College of Arts and Sciences. Medical and dental schools are primarily concerned with the overall scope and quality of undergraduate work. Only about half the first-year students in medical or dental schools have majored in a science, for example. Thus, you should follow your true interests and work to achieve the academic standing necessary for. Your academic advisor will help you plan your program. In addition, the Center for Career Development coordinates pre-medical and pre-dental advising, and has information about the requirements of specific medical and dental schools.

Because the UVM College of Arts & Sciences offers the advantages of a small liberal arts college within a comprehensive university, students have the opportunity to do research with faculty who are nationally and internationally recognized leaders in their fields. We have an excellent record of placing graduates in medical and dental schools. Among the institutions where recent pre-medical graduates are now studying are Albert Einstein College of Medicine, Baylor, Boston University, Columbia, Cornell, Dartmouth, Hanaman Hospital and the Mayo Clinic, while pre-dental graduates are studying at Boston University, Columbia, NYU, Northwestern, and University of Pennsylvania.

The Pre-Medical Enhancement Program (PEP) is a joint offering of the College of Arts and Sciences , the College of Agriculture and Life Sciences, and the College of Medicine to provide enhanced opportunities for a select group of highly qualified pre-medical students. Interested students apply to PEP in the second semester of their first year. Those students accepted in the PEP program will be assigned a practicing physician-mentor who will introduce the concepts of patient care and practice management through regularly scheduled office-based/clinical experiences. The PEP Coordinator in the College of Medicine will provide information on opportunities for medical research experience and volunteer/employment possibilities in the health sciences or health policy fields. On a monthly basis, students will receive listings about special educational offerings at the College of Medicine and the Academic Medical Center. PEP students will also be able to participate in practice interviews with members of the University of Vermont Pre-Medical Committee. In their junior year, PEP students will be able to apply to the University of Vermont College of Medicine. More information is available at: http://www.uvm.edu/~career/?Page=students/premed/index.html&SM=students_submenu.html.

Law: A significant number of UVM students consider attending law school immediately or a few years after graduation. UVM is successful in placing its graduates in leading law programs around the country, including at Yale University, New York University, Columbia University, and the University of Michigan.

The University of Vermont provides guidance to its pre-law students through the Career Services and Faculty and Staff Advisors in Arts and Sciences. We begin working with students as soon as they express an interest in law and provide guidance throughout the undergraduate career.

Unlike pre-medical programs, where students must take a prescribed set of courses, there is no pre-law curriculum. "What law schools seek in their entering students is not accomplishment in mere memorization," states the Association of American Law Schools, "but accomplishment in understanding, the capacity to think for themselves, and the ability to express their thoughts with clarity and force." The Association does not prescribe a specific course of study to prepare undergraduates for law school, but rather suggests a broad approach to liberal arts including work in English, humanities, logic, mathematics, social sciences, history, philosophy, and the natural sciences.

Graduate Study in Other Fields: Arts and Sciences students pursue graduate education in a variety of fields ranging from ethnomusicology to journalism or immunology. Recent UVM College of Arts and Sciences graduates have been accepted at such institutions as the University of Wisconsin, Brandeis, Harvard, University of Michigan, Yale, New York University, Princeton, Cornell, Berkeley, Tufts, and Duke.

Secondary Teaching: Students in the College of Arts and Sciences who are interested in becoming eligible to teach in secondary grades (7-12) should review the College of Education and Social Services section titled Teacher Education. All requirements must be fulfilled as listed in the CESS Secondary Education State Approved program and not simply the sequence of Professional courses. The requirements are also available at http://www.uvm.edu/~cess/stservices

REQUIREMENTS FOR THE BACHELOR OF ARTS DEGREE

A. A student must earn a cumulative grade-point average of 2.0 in a program comprised of a minimum of 122 semester hours to include **two** hours of physical education activities. Students receiving degrees from the College of Arts and Sciences may apply no more than 10 credits of Physical Education toward the 122 required for graduation. Students 25 years of age or older at the time of admission to the University or students with a documented medical condition which precludes participation in such activities are exempt from the physical education requirement and must present a total of 120 hours of academic credit.

   Of the 122 hours of credit required, students electing a minor offered by the College must complete 96 hours in courses offered by departments and programs in the College of Arts and Sciences. The remaining 24 hours may be taken in courses offered by any academic unit at The University of Vermont. Students electing an approved minor offered by another school or college of the University (a cross-college minor), must complete 84 hours in courses offered by the departments and programs in the College of Arts and Sciences. The remaining 36 hours of credit, to include courses required for the minor, may be taken in courses offered by any academic unit of The University of Vermont.

   No more than eight hours of Military Studies credit may apply toward the degree. Courses taken on a pass/no pass basis may not be used toward completion of any requirement listed below under sections C and D and E.

B. A student must be matriculated in the College of Arts and Sciences and in residence at The University of Vermont during the period in which he or she earns 30 of the last 45 hours of academic credit applied toward the degree.

C. College of Arts and Sciences Guidelines for Second Bachelor's Degree

   - The Bachelor of Arts and the Bachelor of Science in the College of Arts and Sciences are not tagged degrees. As a consequence, someone who has completed either a BA or a BS in Arts and Sciences will not receive a second degree should s/he complete an additional major within the same degree.
   - If a BA or BS graduate of Arts and Sciences is readmitted and/or completes an additional major be-

yond the one used towards the original diploma, the additional major and course work will be added to the transcript. A second degree will only be awarded when the additional coursework completed satisfies the requirements for a different degree with a different major from the one initially awarded [i.e., BA graduate with major in Physics completes requirements for BS with major in Chemistry].

- Students who do not complete the degree within seven years must comply with the requirements in the catalogue current at the time of readmission. Students readmitted to complete a second degree, or to complete an additional major within the same degree must also comply with this rule.

D. A student must complete the following courses which comprise the general and distributive requirements for the Bachelor of Arts degree. All courses used to satisfy these requirements must carry at least three hours of credit and may not be taken on a pass/no pass basis. Each semester Special Topics courses and cross-listed courses (95, 96, 195, 196, 295, 296) are offered which may meet general and distributive requirements. Check in the Dean's office if you have a question about a specific course.

General Requirements

1. ***Non-European Cultures:*** One course, other than a foreign language, which deals with non-European cultural traditions.[1] The course selected to satisfy this requirement may also be used to fulfill the distributive requirement, but one course cannot be used to satisfy both General Requirements 1 and 2.
2. ***Race Relations and Ethnic Diversity in the United States:*** One course which addresses centrally the question of race relations and ethnic diversity in the U.S.[2] The course selected to satisfy this requirement may also be used to fulfill the distributive requirement, but one course cannot be used to satisfy both General Requirements 1 and 2.

Distribution Requirements

Six of the seven categories must be completed. However, the College requires that John Dewey Honors Program students complete the BA distribution requirements in all seven categories. No more than two courses from the same department may be used to satisfy the distribution requirement. No single course may satisfy more than one category, except that a foreign language course which fulfills the literature category simultaneously fulfills the category of foreign language. Courses which satisfy major and minor requirements may also be used to satisfy distribution requirements.

1. ***Foreign Language:*** One course numbered 52, or in Latin, 51 and 52, or one course numbered 100 or above (except Spanish 105). A student who has achieved a score of 4 or better on an appropriate Advanced Placement Test will be exempt from this requirement.[3] Exemption will also be granted to those students who achieve a score of 650 or better on the appropriate CEEB Achievement Test and who pass oral and written tests administered by the appropriate foreign language department.
2. ***Mathematical Sciences:*** One mathematics course numbered 17 or above or Statistics 51 or above or Computer Science 11 or above.
3. ***Fine Arts:*** One course in Studio Art or Art History, Music,[4] Theatre,[5] or Film and Television Studies.
4. ***Literature:*** One course selected from a list of approved offerings in Classics, English, French, German, World Literature, Greek, Italian, Latin, Russian, and Spanish.[6]
5. ***Humanities:*** Two courses selected from a list of approved offerings in ALANA Studies, U.S. Ethnic Studies, Art History, Classics, Greek, History, Latin, Philosophy, Political Science, and Religion.[7]
6. ***Social Sciences:*** Two courses selected from a list of approved offerings in Anthropology, Communication Sciences, Economics, Geography, Area and International Studies, Political Science, Psychology, Sociology, Vermont Studies, and Women's and Gender Studies.[8]

[1]The following courses have been approved for this category: Anthropology 21, 23, 24, 28, 64, 152, 160, 161, 162, 163, 165, 166, 167, 172, 179, 180; Art 8, 146, 185, 187, 188, 192, 285; Classics 145; English 61, 179, 182; French 289; Geography 1, 51, 56, 151, 154, 173; History 9, 10, 35,36, 40, 41, 45, 46, 50, 51, 62, 63, 140, 141, 142, 146, 149, 150, 151, 152, 240, 250, 252; Music 7, 107; Philosophy 3, 121, 122, 221; Political Science 157, 168, 170, 174, 175, 176, 177, 179, 266; Religion 20, 21, 130, 131, 132, 134, 141, 145, 230; Sociology 171, 213, 272; World Lit 145.

[2]The following courses have been approved for this category: All ALANA U.S. Ethnic Studies courses; Anthropology 64, 160, 169, 187; Communication Sciences 160; Economics 153; English 57, 111, 159, 160, 176, 177; Geography 60; History 68, 168, 169, 187, 188 189; Music 5, 105; Political Science 29, 129; Psychology 269; Religion 24, 80, 128, 151; Sociology 19, 31, 118, 119, 219. Art 295 "Working With Culturally Diverse Sources" and Art 295 "Cultural Transformations" will meet this requirement. Anthropology 187 is cross-listed with Sociology 119, WLIT 16, 116.

[3]See Admissions Section for information concerning academic credit for Advanced Placement Testing.

[4]Music Performance courses (one and two credit hours each) may be used to satisfy the Fine Arts requirement if their cumulative credit hour total is equal to or greater than three.

[5]Speech courses will not satisfy the Fine Arts requirement.

[6]The following courses have been approved for this category: Classics 37, 42, 153, 155, 156; all English courses except: 1, 4, 50, 53, 101, 102, 103, 104, 105, 107, 114, 117, 118, 119, 120; all French courses numbered 111 or above except course numbered 200-219 or 290-294; all World Literature courses; all German courses numbered above 100 except: 103, 104, 121, 122, 201, 202, 213; all Greek courses numbered above 200; Italian courses above 100; all Latin courses numbered above 100 except 111, 112, 255; all Russian courses numbered above 100 except: 101, 121, 122, 141, 142, 161, 221, 222, 251, 271; all Spanish courses numbered 140 or above except: courses numbered 200-219, or 290-294 or 299.

[7]The following courses have been approved for this category: all Art History, History, Philosophy, Religion courses; ALANA U.S. Ethnic Studies 55, 159; Classics 21, 22, 23, 24, 35, 121, 122, 149, 154, 157, 158, 159, 221, 222; Green 203, 205; Latin 255; Political Science 41, 141, 142, 143, 144, 146, 147, 241, 242, 243, 244, 249.

[8]The following courses have been approved for this category: all Anthropology, Economics, Geography, Psychology, and Sociology courses; Communication Sciences 20, 80, 90, 94, 162; Area and International Studies 91A, 91B; all Political Science courses except: 41, 141, 142, 143, 144, 146, 147, 241, 242, 243, 249; Vermont Studies 52; Women's Studies 73.

[9]Only one course may be applied toward completion of both a major and a minor requirement.

[10]The minor grade-point average will be calculated from the first set of courses which satisfy the minor requirements. However, if a student's grade-point average in these courses falls below 2.0, and there are additional courses which are approved for inclusion in the minor, a student may elect to drop for purposes of the grade-point calculation, one course graded below C and to replace this course with an approved alternate.

7. ***Natural Sciences:*** Two courses, one of which must include laboratory experience, from among the offerings in Astronomy, Biology (including BCOR), Botany, Chemistry, Geology, Physics.

- A student must complete an approved Major in the College of Arts and Sciences by satisfying the requirements specified by the department or program supervising the major and by maintaining a cumulative grade-point average of 2.0 in the major field. Unless specifically required no more than 45 hours of credit in courses with the same departmental prefix may be used toward completion of the 122 hours of credit required for graduation. At least one-half of the credit hours used toward the major requirements must be taken at The University of Vermont. Of these, at least 12 credits must be at or above the 100 level. Application of credits earned elsewhere to completion of the major is subject to approval by the appropriate department chairperson or program director. No courses applied toward satisfaction of major requirements may be taken on a pass/no pass basis.

- A student must complete a minor approved by the College of Arts and Sciences in a field other than the major by satisfying the requirements specified by the department or program supervising the minor.[9] Also, a student must maintain a cumulative grade-point average of 2.0 in the minor field.[10] Completion of a second major will satisfy the minor requirement. As with the major, at least one-half of the credit hours used toward completion of the minor requirements must be taken at The University of Vermont, and application of credits earned elsewhere toward completion of the minor is subject to approval by the appropriate department chairperson or program director. No courses applied toward satisfaction of the minor requirements may be taken on a pass/no pass basis.

REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE

A. A student must earn a cumulative grade-point average of 2.0 in a program comprised of a minimum of 122 semester hours to include **two** hours of physical education activities. Students receiving degrees from the College of Arts and Sciences may apply no more than 10 credits of Physical Education toward the 122 required for graduation. Students 25 years of age or older at the time of admission or students with a documented medical condition which precludes participation in such activities are exempt from the physical education requirement and must present a total of 120 hours of academic credit. Of the 122 hours hours of credit required, 96 hours must be taken in courses offered by departments and programs in the College of Arts and Sciences. The remaining 24 hours of credit may be taken in courses offered by any academic unit of The University of Vermont, although no more than eight credits of Military Studies may apply toward the degree. Courses taken on a pass/no pass basis may **not** be used toward the completion of any requirement listed below under sections D, E, and F.

B. A student must be matriculated in the College of Arts and Sciences and in residence at UVM during the period in which he or she earns 30 of the last 45 hours of academic credit applied toward the degree.

C. College of Arts and Sciences Guidelines for Second Bachelor's Degree

- The Bachelor of Arts and the Bachelor of Science in the College of Arts and Sciences are not tagged degrees. As a consequence, someone who has completed either a BA or a BS in Arts and Sciences will not receive a second degree should s/he complete an additional major within the same degree.
- If a BA or BS graduate of Arts and Sciences is readmitted and/or completes an additional major beyond the one used towards the original diploma, the additional major and course work will be added to the transcript. A second degree will only be awarded when the additional coursework completed satisfies the requirements for a different degree with a different major from the one initially awarded [i.e., BA graduate with major in Physics completes requirements for BS with major in Chemistry].
- Students who do not complete the degree within seven years must comply with the requirements in the catalogue current at the time of readmission. Students readmitted to complete a second degree, or to complete an additional major within the same degree must also comply with this rule.

D. A student must complete the General Requirement Race Relations and Ethnicity in the United States approved by the College. A student must complete the **Distributive Requirement** for the Bachelor of Science degree by completing six courses selected from at least two of the following areas: Foreign Language, Fine Arts, Literature, Humanities, and Social Sciences. Students opting for a Bachelor of Science degree in Psychology must also complete the College of Arts and Sciences distribution requirements for a Bachelor of Science degree and they may not use Psychology courses to fulfill the social sciences category. No courses applied toward satisfaction of the distributive requirements may be taken on a pass/no pass basis.

E. A student must complete an approved **Major** in the College of Arts and Sciences by satisfying the requirements specified by the department or program supervising the major, and by maintaining a cumulative grade-point average of 2.0 in the major field. Unless specifically required, no more than 50 hours of credit in courses with the same departmental prefix may be used toward completion of the 122 hours of credit required for graduation. At least one-half of the credit hours used toward the major requirements must be taken at UVM. Of these at least 12 credits must be at or above the 100 level. Application of credits earned elsewhere toward completion of the major is subject to approval by the appropriate department chairperson or program director. No courses applied toward satisfaction of major requirements may be taken on a pass/no pass basis.

Bachelor of Science (with optional minor) degree: A student electing this degree program must satisfy all of the requirements specified in sections A, B, C, D, and E (above), as well as:

F. A student must complete an approved minor in a field other than the major by satisfying the requirements specified by the department or program supervising the minor and by maintaining a cumulative grade-point average of 2.0 in the minor field. Students electing a minor offered by the College must complete 96 hours in courses offered by departments and programs in the College of Arts and Sciences. The remaining 24 hours may be taken in courses offered by any academic unit at The University of Vermont. Students electing an approved minor offered by another school or college of

the University (a cross-college minor) must complete 84 hours in courses offered by the departments and programs in the College of Arts and Sciences. The remaining 36 hours of credit, to include courses required for the minor, may be taken in courses offered by any academic unit of The University of Vermont. At least one-half of the credit hours used toward completion of the minor requirements must be taken at The University of Vermont, and application of credits earned elsewhere toward completion of the minor is subject to approval by the appropriate department chairperson or program director. No courses applied toward satisfaction of the minor requirements may be taken on a pass/no pass basis. No more than two of the courses from section D distribution requirements may be applied toward the completion of the minor requirements. Only one course may be applied toward completion of both a major and a minor requirement. The minor grade-point average will be calculated from the first set of courses which satisfy the minor requirements. However, if a student's grade-point average in these courses falls below 2.0, and there are additional courses which are approved for inclusion in the minor, a student may elect to drop for purposes of the grade-point average calculation, one course graded below C and to replace this course with an approved alternate.

REQUIREMENTS FOR THE BACHELOR OF MUSIC DEGREE

A. A student must earn a cumulative grade-point average of 2.0 in a program consisting of a minimum of 122 semester hours of academic credit for a Bachelor of Music degree with a concentration in Performance. Of these hours of required credit, **two** hours must be associated with physical education activities. Students receiving degrees from the College of Arts and Sciences may apply no more than 10 credits of Physical Education toward the 122 required for graduation. Students 25 years of age or older at the time of admission or students with a documented medical condition which precludes participation in such activities are exempt from the physical education requirement and must present a total of 120 hours of academic credit. Courses taken on a pass/no pass basis may not be used toward the completion of any requirement listed below under sections C, D, and E.

B. A student must be matriculated in the College of Arts and Sciences and in residence at UVM during the period in which he or she earns 30 of the last 45 hours of academic credit applied toward the degree.

C. A student must complete the **Distributive** and **General Requirements** identical to that required for the Bachelor of Arts degree.

D. A student must complete a **Major** with a concentration in performance by satisfying the requirements specified by the department, and by maintaining a cumulative grade-point average of 2.0 in the major field. Admission is by audition at the end of the first year. At least one-half of the credit hours used toward the major requirements must be taken at The University of Vermont. Of these, at least 12 credits must be at or above the 100 level. Application of credits earned elsewhere to completion of the major is subject to approval by the appropriate department chairperson or program director. No courses applied toward satisfaction of major requirements may be taken on a pass/no pass basis.

Bachelor of Music (with optional minor) degree. A student electing this degree program must satisfy all of the requirements specified in sections A, B, C, and D (above) as well as:

E. A student must complete an approved minor in a field other than the major by satisfying the requirements specified by the department or program supervising the minor and by maintaining a cumulative grade-point average of 2.0 in the minor field. Students electing a minor offered by the College must complete 96 hours in courses offered by departments and programs in the College of Arts and Sciences. The remaining 24 hours may be taken in courses offered by any academic unit at The University of Vermont. Students electing an approved minor offered by another school or college of the University (a cross-college minor) must complete 84 hours in courses offered by the departments and programs in the College of Arts and Sciences. The remaining 36 hours of credit, to include courses required for the minor, may be taken in courses offered by any academic unit of The University of Vermont. At least one-half of the credit hours used toward completion of the minor requirements must be taken at The University of Vermont, and application of credits earned elsewhere toward completion of the minor is subject to approval by the appropriate department chairperson or program director. No courses applied toward satisfaction of the minor requirements may be taken on a pass/no pass basis.

INTERNSHIPS

Arts and Sciences students are encouraged to do internships and may count up to 12 hours of internship credit towards their B.A. or B.S. Full information on internships and the regulations governing them is found in the Arts and Sciences Internship brochure, available in 304 Waterman.

REGULATIONS GOVERNING INDEPENDENT STUDY

A student may receive credit for a project or program of independent study which is supervised by an academic department or program within the University. Such independent study projects may be carried out under registration in courses entitled Readings and Research or Intern-ship. All such projects must conform to University guidelines for independent study. There is no limit on the number of independent study credits which may be earned, but prior approval by the Committee on Honors and Individual Studies is required if a student wishes to elect nine or more such credits in a single semester.

REGULATIONS GOVERNING COLLEGE HONORS

A. **Honors College** students in the College of Arts and Scences must earn College Honors via their activities as part of the John Dewey Honors Program. A student in the College of Arts and Sciences may apply for College Honors in a particular subject if, at the end of the junior year, he or she has a grade-point average of at least 3.20 and has been on the Dean's List for three semesters or has a grade-point average of at least 3.50. The program must have been approved by the sponsoring department and by the Committee on Honors and Individual Studies. All application materials must be turned in to the Committee by September 30 of the candidate's senior year. Students must present a satisfactory written report and pass an oral examination upon completion of the honors project. Students who wish to consider

undertaking a College Honors project during the junior year should contact the Office of the Dean for information concerning the circumstances in which such an exceptional arrangement is possible.

B. Some departments in the College, including Economics, English, History, Mathematics, Political Science, Religion, and Sociology, sponsor **Departmental Honors** programs. Participation in these programs is limited to those students who are specifically recommended by their department. Each department will define what is required to earn Departmental Honors. A student who successfully completes this program is granted a degree with Departmental Honors. These programs are administered directly by the sponsoring department and information concerning them may be obtained from faculty advisors.

C. Students admitted to the Honors College may also earn College Honors via their activities as part of the **John Dewey Honors Program.** In the senior year, John Dewey Scholars complete College Honors as described in Section A above. For further information, contact the Honors College or the John Dewey Honors Program.

REGULATIONS GOVERNING STUDY ABROAD

Students should refer to the general University regulations and procedures pertaining to Study Abroad. For Arts and Sciences students the following additional policies pertain to the application of credit earned in a Study Abroad program:

A. Regardless of the number of credits accepted in transfer by the University, a maximum of 16 credits earned in a one-semester Study Abroad program will be applied toward satisfaction of degree requirements. For year-long programs, a maximum of 32 credits will be applied toward the degree.

B. Students must complete 30 of the last 45 hours of degree credit in residence at UVM. One-half of the hours applied toward the satisfaction of major requirements, including 12 hours at the 100 level or above, must be completed at The University of Vermont. One-half of the hours applied toward the satisfaction of minor requirements must be completed at The University of Vermont.

C. Under no circumstances will a student in the College of Arts and Sciences be permitted to enroll in a University-sanctioned Study Abroad program while on trial.

REGULATIONS GOVERNING TRANSFER INTO THE COLLEGE

A student who wishes to transfer into the College of Arts and Sciences from another college or school at the University must comply with the Intercollege Transfer policy in the section on Academic and General Information. Applications for internal transfer may be submitted to the Office of the Dean at any time, and they will be reviewed on a continuous basis.

REGULATIONS GOVERNING ACADEMIC STANDARDS

The following criteria for academic trial and dismissal, while making allowances for the student in the first semester, are designed to encourage academic work of quality at least equal to the minimum which is required for graduation.

Trial

A. A student who earns a semester grade-point average higher than that which merits dismissal but below 2.00 is placed *on trial*. In order to avoid dismissal from the University, a student who has been placed on trial must in the following semester earn a 2.00 semester average, enroll in all courses for a letter grade, and maintain a program of 12 or more credit hours. No student will be removed from trial until both the semester and cumulative averages are at least 2.00. A student who is on trial may not enroll in a University-sanctioned study abroad program.

B. First-Year Students. Following the first semester of enrollment, a student who earns a semester grade-point average higher than that which merits dismissal, but below 1.67, is placed on trial and must in the following semester satisfy the same probationary requirements as described above. All first-year students who have a cumulative grade-point average which is below 2.00 after completion of the second semester will be placed on trial.

Dismissal

C. A student who does not satisfy the conditions of trial, or who earns a semester grade-point average of 1.00 or lower, or who earns failing grades in one-half of the semester credit hours attempted (excluding courses in physical education and military studies) will be *dismissed for low scholarship*. The period of dismissal is one year. Dismissed students must receive written approval from the Arts and Sciences Dean's Office before enrolling in any University course.

Readmission Following Dismissal

D. A dismissed student who presents evidence of his/her ability to perform satisfactorily may be considered for readmission on trial. A student who has been dismissed for a second time will not be considered for readmission on trial until at least three years have elapsed. Further information regarding readmission may be obtained from the Office of the Dean.

MAJORS: DEPARTMENT REQUIREMENTS

Bachelor of Arts, Bachelor of Science, and Bachelor of Music requirements are found under the appropriate department headings.

INDIVIDUAL DESIGN MAJOR The IDM is a nondepartmental, interdisciplinary major for those College of Arts and Sciences Bachelor of Arts candidates whose academic interests are not met by the major programs currently offered by the College. An IDM may not be a program of narrow professional training. Rather, it must lead to an intensive investigation of some broad area of human knowledge which is not covered by a single departmental discipline. During the senior year, IDM majors engage in a three-credit tutorial for which they complete a paper or an equivalent project which demonstrates the essential coherence of the major. A College Honors project (six credits) may be substituted for the tutorial requirement. Application to pursue an IDM should be approved by the Committee on Honors and Individual Studies before the end of the candidate's junior year. No more than 18 hours of the proposed major may be completed at the time of application. Additional information about the IDM program is available in the Office of the Dean.

ANTHROPOLOGY Thirty hours in Anthropology including 21, 24, 26, and 28; 225 or 228 (recommended for the junior year) and five additional courses of which three should be at the 100 level and at least one at the 200 level.

AREA AND INTERNATIONAL STUDIES PROGRAM

Entering students are invited to consider the option of concentrating in Area and International Studies. Courses in several academic disciplines can be combined so as to focus on a particular area of the world, thus providing an opportunity to test generalizations against the particular reality of a geographical area and its people.

Undergraduates who major in Area and International Studies usually accumulate sufficient credit to enable them also to fulfill department requirements in one of the social sciences, humanities, or foreign languages.

Major programs are available in the following five areas: Asia, Canada, Latin America, Russia/East Europe, Europe (Western, Northern, Mediterranean). Minor programs are also available in these areas, as well as in Africa and the Middle East.

The approach to undergraduate education combines exposure to the traditional disciplines with integrative knowledge and appreciation of a foreign culture and thus combines the broad liberal arts education with a more specific area competence.

During their first and sophomore years, students who plan to major in Area and International Studies should take the required foreign language courses as well as beginning courses in the humanities and social sciences which are prerequisites for subsequent required courses and also meet the general distribution requirements.

Students interested in concentrating in Area and International Studies are urged to contact the Director.

Specific requirements of the individual programs follow:

Asian Studies

In selecting courses from the Asian Studies listing, students must consult with an appropriate Asian Studies advisor and demonstrate in their choices thematic and/or geographic coherence.

The Asian Studies major consists of at least 33 credit hours in courses from the Asian Studies listing (see Courses of Instruction; Asian Studies) to include the following:

A. Completion of two years' (normally 16 hours) study of a language of the geographic subarea of concentration. No more than 16 hours of language study may be counted toward the major. For students who have demonstrated fluency in the language of the subarea of concentration (for instance, native speakers of the language), the language requirement will be waived. Such students will still be required to complete the 33-credit hour requirement.
B. The remaining credit hours must include at least nine hours at the 100 level and three hours at the 200 level. These hours must be selected from at least three academic disciplines. Language courses may not be used to fulfill this requirement.

Note: Courses significantly but not entirely on Asia may be counted toward a student's major requirements only if papers or projects relevant to their Asian subarea or their Asian thematic focus have been completed. The Dean's Office must receive written approval from the advisor in order for these courses to be counted toward the major.

Students who major in Asian Studies and minor in an Asian language may overlap only one course as stipulated in the section on Distribution Requirements.

Canadian Studies

The Canadian Studies major requires at least 30 credit hours to consist of the following:

A. Three required courses: Area and International Studies 91, Introduction to Canada; History 66, Canadian History: 1867 to the Present; Area and International Studies 296, Seminar on Modern Canada.
B. Seven additional courses, of which at least six must be at the 100 level or above, and of which at least five must be chosen from the following 100 percent Canadian content list: AIS 195, 196, 295; Anthropology 167; Art 180, 282 (when topic is Canadian); Bus. Admin. 234; English 157, 158; French 293, 285; Geography 52, 210; Geology 272, 273 (when this field course goes to Canada); History 65, 265, 165; Pol. Sci. 173.
C. Majors will study French language through the intermediate level (French 52) or higher.

Majors are strongly encouraged to acquire an intermediate/advanced proficiency by completing at least French 201. Majors pursuing intermediate/advanced proficiency should consult with the Canadian Studies faculty of the Romance Languages Department to determine an appropriate plan of study.

Latin American Studies

A. Twelve hours selected from the following five courses: Anthropology 161; History 62, 63; Geography 56; Political Science 174.

   Two additional semester courses selected from Area and International Studies, 193, 194, 195, 196, 197, 198; History 161, 163, 164, 262; or from courses recommended by the Program of Latin American Studies.
B. Plus six hours of advanced Spanish (Spanish 142, 279, 281, 286, 287, 293, 294).
C. An additional 12 hours from related courses chosen in consultation with advisor.

Russian/East European Studies

A. 30 hours of required courses to include the following: Two courses from HIST 27, 137, 138; ECON 116; POLS 172; WLIT 118; two courses at the 100 level or above in Russian; three additional courses in the major, chosen in consultation with an advisor in the major.
B. Recommended courses: Area and Int'l Studies 91.

The program also offers an interdisciplinary Individual Design Major in Russian/East European Studies and Business. The program of study must be planned with a member of the Russian/East European Studies faculty.

Required courses (35 hours):
Two courses in Russian at the intermediate level; four courses in Economics including 116; one Russian/East European Area Studies course other than those in Economics; two courses in Business Administration; two approved electives at the 100 level or above.

European Studies (Northern, Western, Mediterranean)

A total of 33 hours in approved European Studies courses to include nine hours at the 200 level. No more than 12 hours may be taken from any one discipline. Only 15 hours of transfer credit may be applied toward the major. Students must consult closely with their European Studies advisor in the development of a coherent program of courses.

A. *European Studies seminar:* Senior research project: All seniors must complete a research project for at least three credits on a subject focused on northern, western, or Mediterranean Europe and approved by the European Studies subcommittee. This requirement can be fulfilled by International Studies 291 (European Studies Seminar); In-

ternational Studies 234 and 235 (Honors/International Studies); International Studies 297 or 298 (Advanced Readings and Research). Students should expect to use their competency in a European language (other than English) in this research project where relevant. Upon request, the European Studies subcommittee may approve a research project done in conjunction with a 200-level seminar offered by one of the college's departments.

B. *European culture and thought:* Twelve hours from the approved list to include six hours at the 100 level or above.

Art: 5, 6, 148, 149, 155, 158, 161, 164, 165, 170, 172, 174, 177, and 179 or 282 (when the content is European); **Classics:** 24, 33, 35, 37, 42, 153–159; **English:** 21, 22, 25–28, 85, 86, 102, 131, 133, 134, 135, 136, 137, 144, 145, 146, 161, 162, 165, 221, 222, 241, 242; **Film:** 5, 6, 107, 161; **French:** 111, 112, 235, 247, 255, 265, 266, 275, 276, 291, 292; **German:** 104, 121, 122, 155, 156, 201, 213, 214, 225, 226, 237, 238, 247, 248, 251, 252, 263, 264, 271, 273, 275, 276, 278, 279, 281, 282; **Greek:** all courses above 100 level; **Italian:** 121, 122, 157, 158; **Latin:** all courses above 100 level; **Music:** 111–113; **Philosophy:** 101, 102, 105, 107, 140, 147, 151, 160, 260; **Political Science:** 141, 142, 146; **Religion:** 22, 111, 116, 122, 124, 173, 224, 226, 228, 280; **Spanish:** 141, 236, 237, 246, 265, 276, 277, 291, 292; **Theatre:** 136, 137, 138, **World Literature** 11, 14, 17, 18, 24, 35, 87, 95, 96, 111, 114, 117, 118, 122, 153-156.

C. *European history and society:* Twelve hours from the approved list to include six hours at the 100 level or above.

ANTH: 151; **BSAD:** 236; **Economics:** 113; **Geography:** 55, 155; **History:** 13, 14, 19, 21–27, 85, 86, 115, 120–136, 139, 185, 186, 190, 191, 221, 222, 224–228, 285; **Political Science:** 171, 257, 276, 287.

D. *European language:* Six hours of a European language other than English at or above the 100 level. Students who fulfill nine or more hours of their "Culture and Thought" requirement through the study of any one such language must fulfill this requirement in a second European language other than English.

Note: Other equivalent courses within each area may be accepted with permission of the Director of European Studies.

ART Students may major in one of the following:

Studio Art: Thirty hours in Studio Art, including nine hours in foundation courses (to include Art 3 and two from 1, 2, 4) with three different instructors; 15 hours at the 100 level (only three of which may be 197; six of which may be 195) with two different instructors, including courses in the areas of two-dimensional study (drawing, painting, printmaking, photography, film, and video) and of three-dimensional study (sculpture, ceramics, fine metals); and six hours at the 200 level, three of them in the senior year; nine hours of Art History, including two of the following: 5, 6, or 8; and one of the following: 140, 170, 172, 174, 177, 179, 180, and 199 when approved for this requirement (permission depends upon topic; check with Art Department).

Note: A Studio Art major may not take more than one Evening Division course per semester in Studio Art.

Art History: Thirty hours in Art History, including six hours from 5, 6 and 8; 12 hours to include three hours from each of four different categories (196 courses in these categories also qualify): Ancient and Medieval (146, 148, 149, 155), Early Modern European (158, 161, 164, 165), Modern, American, and Canadian (170, 172, 174, 177, 180), Asian (185, 187, 188, 192), Other Non-Western Traditions, New Approaches to Art History, and Contemporary Art (140, 179, 189, 199); 12 additional Art History hours, to include at least one course (three hours) numbered 282 or above to be taken during the junior or senior year, preferably during the senior year. Six hours of Studio Art; the study of a foreign language through 51–52. French or German is strongly recommended for students considering eventual graduate work in Art History.

For Art Education, see College of Education and Social Services.

BIOCHEMISTRY The Biochemistry core requires satisfactory completion of BIOL 1, 2 or BCOR 11, 12 (Introductory Biology); MATH 21, 22 (Calculus); PHYS 31, 42 with 21/22 (Physics); CHEM 35, 36 (Introductory Chemistry); CHEM 143, 144 (Organic Chemistry); CHEM 162 (Thermodynamics); BIOC/CHEM/MMG 205 (Biochemistry I); BIOC/CHEM/MMG 206 (Biochemistry II); BIOC/CHEM/MMG 207 (Biochemistry Lab); CHEM 282 (Senior Thesis); BCOR 101 (Genetics); BCOR 103 (Cell Biology); and nine credits of advanced biochemistry-related electives. In addition, students must select one course from the following group of intermediate-level laboratory electives: CHEM 121 (Quantitative Analysis), MMG 104 (Introduction to Recombinant DNA Technology), MMG 201 (Molecular Cloning Laboratory), BIOL 204 or 205 (Advanced Genetics Laboratory).

BIOLOGY The Biology Department offers two degrees in biology: a BA in Biology and a BS in Biological Science. Both are rigorous majors that prepare students well for graduate school, medical and veterinary school, and work in federal and state government, technical jobs in the pharmaceutical industry, and many other careers paths. Most students enter the BA program and make a choice between the BA and BS around their junior year, but students can enter either the BA or BS and easily change between them as their interests develop. Students who opt for the BS degree take 8-9 courses at the upper level from a broad selection. Students who opt for the BA degree take 3 upper level courses, also from a broad selection, and a special Capstone Physiology course with a self-designed project to consolidate their learning. All of our courses emphasize experiential learning, critical thinking, written expression, and data analysis. Hands-on experience in biology also is an important feature of our majors and we encourage students to work with faculty during the academic year and summers, and to take advantage of grant funds, such as through the HELiX program, especially for summer internships. To guide the BA students' choices of courses, we recommend series of science courses that make up 6 concentrations, including our newest one in Forensic Biology. These are advising tools and students can always remain generalists and sample broadly to best prepare them for their career goals.

Bachelor of Arts in Biology: Chemistry 31, 32 or 35, 36 to be taken the first year if possible; 141, 142; Physics 11 or 31 in combination with 21 (and Physics 12 or 42 in combination with 22 recommended); Math. 19, 20; or 21, 22. Thirty-three hours of biology including introductory biology (BCOR 11, 12 or BIOL 1B, 2B is preferred, but BIOL 1A, 2A is accepted), BCOR 101, 102, 103; BIOL 255, and three additional 200-level courses in one of several concentrations (including at least one with a laboratory). A list of courses in each concentration is provided below. One course may be taken from outside the Department from approved offerings in other departments, consult the Biology Department Office. Neither College honors nor BIOL 297/298 will count toward the required major hours. **NOTE: Most professional schools (e.g. medicine, dentistry, veterinary, physical therapy) require the equivalent of Physics 12 or 42 in combination with 22.**

Cell and Molecular Biology Concentration: This

concentration serves students with interests in Cell, Molecular, and Developmental Biology. Students may choose from: Biology 205, 212, 223, 231, 263, 265, 267, and Honors 208, 209. In addition, students may take approved courses offered by other biologically-oriented departments.

Environmental Biology Concentration: This concentration is appropriate for students with interests in Ecology, Evolution, Conservation Biology, or Animal Behavior. BCOR 102 is required of all Biology majors. Other recommended courses in this concentration include, but are not restricted to: Biology 203, 206, 208, 217, 238, 246, 254, 255, 264, 270, 295.

Forensic Biology Concentration: This concentration is appropriate for students wishing to explore the fast growing discipline of criminal forensics and prepares students for government positions and for entry into graduate programs. Concentration courses are: Biology 288 (a one-credit Forensic Biology seminar) and Chemistry 121. Students should also take 3 courses from Pharmacology 272, Biology 205, 209, 212, 254, 268, 295, 296 (Self-Designed Genetics Laboratory).

General Biology Concentration: This concentration serves students who wish a very broad training in life science, including zoology. After consultation with their Biology Department faculty advisor, students take a variety of courses drawn from the approximately three dozen offered by the Biology Department or from other approved courses in life science. Consult the Biology Department for a listing.

Neurobiology Concentration: This concentration focuses on molecular and cellular aspects of the nervous system. Funding from the Howard Hughes Medical Institute allows students to take courses offered by faculty of three departments. Three courses are required, Biology 261 and 295 (Neurobiology Lecture and Neurobiology Laboratory) and PSYC 221 (Physiological Psychology). Students may also take ANNB 202, PSYC 121, 220, 223, PHRM 290 as well as other advanced courses in cell and molecular biology.

Professional Biology Concentration: Students with interest in the medical, veterinary, dental, and allied health fields may choose from the following courses: Biology 205, 212, 217, 219, 223, 246, 254, 265, 295, and Honors 208, 209. In addition, students may take approved courses offered by other biologically-oriented departments.

BIOLOGICAL SCIENCE The Integrated Biological Science B.S. core requires satisfactory completion of BCOR 11, 12 (Exploring Biology); BCOR 101 (Genetics); BCOR 102 (Ecology and Evolution); BCOR 103 (Molecular and Cell Biology); CHEM 31, 31, 141, 142; PHYS 11 and 12 or PHYS 31 and 42 (either sequence must include laboratory sections 21 and 22); MATH 19, 20 or MATH 21, 22; STAT 141 or 211.

In consultation with their academic advisor, students will design a course of study that includes an additional 26 credit hours of advanced life-science electives. Consult the Integrated Biological Science advisors for a list of approved advanced courses.

Students majoring in the B.S. program in Biological Science are required to take at least 84 credit hours of coursework in the College of Arts and Sciences.

BOTANY Math. 21, 22; or Math. 21 and Statistics 141 or 211; or Math. 19, 20 and Statistics 141 or 211; Physics 21, 22; and 11, 12 or preferably 31, 42; Chemistry 42 or preferably 141, 142; Biology 1, 2 or BCOR 11, 12; BCOR 101, BOT 104, 108; and BOT 109 or BCOR 102; two additional semester courses in Botany, at least one at the 200 level. Six credits of modern foreign language are strongly recommended. Students may petition the department to substitute other courses for certain requirements in the planning of individual programs.

CHEMISTRY Students may select either of two degree programs:

Bachelor of Arts: Students choose to concentrate in one of three areas: General, Biomolecular, or Environmental Chemistry. All three are acceptable degrees for continuation to a variety of advanced degree programs in Chemistry or other sciences as well as Medicine, Veterinary Science, Law, or Business.

General Concentration: Chemistry 35, 36 (or 31, 32; or 31, 36), 121, 131, 143, 144 (or 141, 142; or 141, 144), 146, 161, 162, 167, 201, 202, 221, 282; Math. 21, 22; Physics 21, 22, 31, 42.

Biomolecular Concentration: Chemistry 35, 36 (or 31, 32; or 31, 36), 121, 131, 143, 144 (or 141, 142; or 141, 144), 162, 167, 201, 205, 282; Math. 21, 22; Physics 21, 22, 31, 42; Biology 1, 2 (or BCOR 11, 12), BCOR 103; and one of the following: Biochemistry 206, 320, 321 or Pharmacology 328 or one course chosen from a list of approved courses.

Environmental Concentration: Chemistry 35, 36 (or 31, 32; or 31, 36), 121, 131, 143, 144 (or 141, 142; or 141, 144), 161 or 162, 167, 201, 221, 282; Math. 21, 22; Physics 21, 22, 31, 42; and two courses from the following, at least one of which must be Civil and Environmental Engineering 252 or 253: Civil and Environmental Engineering 150, 252, 253, Geology 233, 234, 235, or 255.

Bachelor of Science: Students pursuing a Bachelor of Science degree in Chemistry complete an extensive set of courses including research and biochemistry, providing them with a degree which is certified by the American Chemical Society. The B.S. degree is particularly good preparation for graduate school in Chemistry.

Chemistry 35, 36 (or 31, 32; or 31, 36), 121, 131, 143, 144 (or 141, 142; or 141, 144), 146, 161, 162, 167, 201, 202, 205, 221, 282; six hours of advanced chemistry-related course work, which must include 3 hours of Chemistry 291 or equivalent; Math. 21, 22; Physics 21, 22, 31, 42.

CLASSICS Student may major in:

Latin: Thirty hours in courses above 50, among which 111, 112, and Classics 122 are required and one Classics course above 100 and one course in Greek above 100 are applicable; a second foreign language, at least through the intermediate level, is recommended.

Greek: Thirty hours in courses above 50, among which 111, 112, and Classics 121 are required and one course in literature in translation above 100 and one course in Latin above 100 are applicable; a second foreign language, at least through the intermediate level, is recommended.

Classical Civilization: 36 hours consisting of 30 in the Major Discipline and 6 in Related Courses. Of these 36 hours, 12 must be at the 100-level or above. Major Discipline. All courses in Classics, Latin, Greek, Ancient History, and Ancient Art are applicable, of which 1 course in Ancient Art (Art 146, 148, or 149) and any 2 courses in Ancient History (Classics 21, 23, 121, 122, 149, 221, 222) are required. Related Courses: For a list of approved related courses in Fine Arts, Humanities, Social Sciences and Natural Sciences, students should consult with the Classics department. Foreign Language: Fulfillment of the language distribution requirement of the College of Arts and Sciences is required, preferably with Latin or Greek.

COMMUNICATION SCIENCES 80, 90, 94, 101, 160 or 162, 164, 208, 262, 271, 272, 281; Additional Requirements: Biology 4, Psychology 001, Psychology 161; Statistics 111 or 141 and one physical science course with lab from Physics, Chemistry, Geology or Astronomy.

COMPUTER SCIENCE Students may select among three degree programs in Computer Science: the Bachelor of Arts degree, described below, is offered through the Col-

lege of Arts and Sciences. Additionally, a Bachelor of Science is offered through the College of Engineering and Mathematical Sciences, with majors in either Computer Science or in Computer Science and Information Systems (students interested in the Bachelor of Science degree are referred to the descriptions under the College of Engineering and Mathematical Sciences).

Bachelor of Arts: Computer Science 21, 26, 100, 101, 103, 104, 224 or 243, 292, and three additional computer science courses at the 200-level or above, for at least nine additional credits, not more than three credits of which may be independent study; Mathematics 19+20 or 21+22 (Math. 21+22 are recommended), 54; Statistics 153; the distribution requirement in natural science must be satisfied, and it is recommended that this requirement be fulfilled with a two-semester laboratory science sequence.

ECONOMICS Thirty-three hours in Economics and three hours in Mathematics as follows: Economics 11, 12; Math. 19; three courses numbered Economics 20-160 or 194-196, two of which must be numbered 110 or higher; the methods and theory courses in Economics numbered 170, 171, 172; and three Economics courses numbered 200 or higher. No more than three credits from Economics 218, 219, 291, 292, 297, 298 may be applied towards the major. Students are urged to take Math. 19 early in the program.

ENGLISH Thirty-three hours at the level of 5 or above to include: 86 (85 is recommended for first-year students planning to major in English) and at least twenty-one hours at or above the 100 level, at least three of which must be from courses numbered 201-282 (Senior Seminars). Of the credit hours above 100: (a) at least three hours must be in study of the English language (listed in Departmental offerings as (Category A); (b) at least three hours must be in Ancient, Medieval and 16th – and 17th – Century Literary Traditions (listed in Departmental offerings as Category B); (c) at least three hours must be in 18th – and 19th – Century Literary Traditions (listed in Departmental offerings as Category C); and (d) at least three hours must be in 20th – and 21st – Century Literary Traditions (listed in Departmental offerings as category D). One World Literature course approved by the English department may count toward the major; where appropriate, this course may be substituted for one course in the distribution categories. No more than nine hours of Advanced Writing (English 117-120) shall count toward the major. No more than nine hours of Film and Television Studies at any level shall count toward the major.

ENVIRONMENTAL SCIENCES CHEM 042 or 141* or 143*; GEOL 055** or PSS 161; STAT 141 or 211 or NR 140; ENSC 001, 101, 130; BCOR 102*** or CHEM 142**** (or CHEM 144)**** or GEOL 110**; and 14-17 credits of advanced coursework, chosen in consultation with your advisor, in one of the following Focus Tracks: Agriculture and the Environment, Conservation Biology and Biodiversity, Ecological Design, Environmental Analysis and Assessment, Environmental Biology, Environmental Chemistry, Environmental Geology, Environmental Resources, Water Resources. Up-to-date course requirements for each Focus Track are available from your advisor or the Dean's Office; students may elect to petition to develop a self-design track. Also: BCOR 011 and 012; CHEM 031 and 032 (or 035 and 036); MATH 019 and 020 (or 021 and 022); Physics 011 and 012 (or 031 and 042) – *Physics is required only for the Environmental Chemistry Focus Track.*

College of Arts and Sciences students majoring in the B.S. program in Environmental Sciences are required to take at least 84 credit hours of coursework in the College of Arts and Sciences.

*Required for Environmental Biology and Environmental Chemistry Focus Tracks.

**Required for Environmental Geology Focus Track.

***Required for Environmental Biology Focus Track.

****Required for Environmental Chemistry Focus Track.

ENVIRONMENTAL STUDIES Thirty-eight credits including ENVS1,2,151,201, and six credits of ENVS202 and/or 203; plus an Individually-Designed Program containing 18 credits of approved environmentally-related courses at 100 or higher level, including three credits at the 200-level, six credits of Environmental Studies courses, with at least one course in each of these areas*: environmentally-related natural sciences, humanities, social sciences, and international studies (may be fulfilled by study abroad experience). The courses of the Individually-Designed Program combine, along with the senior project and thesis, to provide a coherent major for the student.

* Students are cautioned that courses approved in these areas by Environmental Studies are not intended to fulfill the distribution requirements in the College of Arts and Sciences.

FILM AND TELEVISION STUDIES Thirty-three hours, including at least six credits from among Art 4, FTS 7, 8, and 9; at least 21 hours at or above the 100-level, including these four required courses: FTS 121, 122, 123 and 124; and either 271 or 272. The remaining courses are to be selected in consultation with the FTS program director from courses in FTS (100-level FTS courses may be repeated for credit as topics vary) and from courses on media studies and production in other departments in the College of Arts and Sciences, such as Art 140, 143, 144 and 244; Italian 122; Sociology 43, 150 and 243; and Spanish 290.

FRENCH Thirty-three credits in French numbered 100 or above of which fifteen credits must be at the 200-level. Required courses: French 101 and French 111 or 112. Literature requirement: twelve credits (including 111 or 112). Culture requirements: three credits (104, 105, 292, or 293).

Note: Only three credits of Readings and Research (197, 198) and Advanced Readings and Research (297, 298) may be counted toward the major.

GEOGRAPHY Ten courses (thirty hours), which must include: 2 or 43; 60 or 73; 81; any one regional course (from 51, 52, 55, 56, 57, 90, 92, 151, 154, 155, 162, 190 or 192); any three courses at the 100-level; any one course at the 200-level.

GEOLOGY

Bachelor of Arts: One introductory Geology course (1, 5, 55)*, 62, 101, 110, 260. At least three credits of field experience are highly advisable (Geology 197, 198, 201), field camp or field-based thesis. Three Geology courses at level 100 or above. Two additional courses in Geology or approved science, mathematics, engineering or statistics courses at level 100 or above selected in consultation with Geology advisor. Math 19, 20 or 21, 22; Chem 31, 32 (or 35, 36); Physics 11, 21, (12 and 22 also strongly recommended.)

*Geology 7, Earth Hazards, will not count as an introductory course for the major or minor.

Bachelor of Science: One introductory Geology course (1, 5, 55)*, 62, 101, 110, 260. At least three credits of field experience are required (Geology 197, 198, 201), field camp or field-based thesis. Four Geology courses at level 100 or above. Two additional courses in Geology or approved science, mathematics, engineering or statistics courses at level 100 or above selected in consultation with Geology advisor. Math 21, 22 or 19, 20, 22; Chem 31, 32 (or 35, 36); Physics 31, 21, 42, 22; Statistics 141.

*Geology 7, Earth Hazards, will not count as an introductory course for the major or minor.

GERMAN Thirty hours of German courses at the 100 level or above, including 155, 156; 281 or 282; two courses of

world literature or English; and two courses of European or German history.

HISTORY Thirty-three hours including six hours of any approved sequence of courses at the introductory level (00), nine hours at the intermediate level (100), and three hours at the advanced level (200). They must also include 15 hours of concentration in one of the Department's three areas of study (Western Hemisphere; Europe; Africa / Asia / Latin America) and six hours in each of the others. The 15-hour concentration must include one course at the intermediate level and one seminar at the advanced level. (The Western Hemisphere concentration must include three hours in Canadian or Latin American history.)

ITALIAN STUDIES Thirty-three credit hours chosen from the categories below. Among the courses taught in English, no more than 12 credits may be applied from any one academic discipline. Students should consult with their Italian Advisor to assist in selecting a program of courses. Other equivalent courses may be accepted with permission of an Italian Advisor and the Chair of the Department of Romance Languages.

Category A: *Courses in Italian.* At least 15 credits in courses taught in Italian at the 100-level or above. One course in Readings and Research (197, 198) or Advanced Readings and Research (297, 298) may be applied to this category. A College Honors Thesis may be applied to this category if written in Italian.

Category B: *Significant Italian content.* Up to 18 credits from among the following courses: **Art** 149, 161, 164, 282 (if topic predominantly Italian): **Classics** 23, 35, 37, 42, 122, up to 6 credits of Latin language / literature any level; **English** 163 ("Italian American Literature"); **History** 125; **Music** 128, 228; **Philosophy** 105; **Religion** 124; **Theatre** 150; **World Literature** 13, 113, 122. A College Honors Thesis may be applied to this category if written in English.

Category C: *Partial Italian content.* Up to 9 credits from among the following course: **Art** 5, 6, 155 (Category B if predominantly Italian content); **Classics** 154, 155, 156; **Geography** 55, 155; **History** 9, 10, 13 / 14, 24, 25, 26, 127, 130; **Music** 111, 112, 205 (if some Italian content); **Political Science** 141 / 142 (if some Italian content); **Religion** 122, 173 (if topic pertinent to Italian culture), 226.

MATHEMATICS Mathematics majors may choose from three concentrations. Students interested in any of these three concentrations should consult an advisor in the Mathematics and Statistics Department. A Handbook for Majors is available from the department office.

Mathematics: Math. 21, 22, 121, 52, and 124, plus 18 additional credits in Math. / Statistics courses at 100 level or above, with at least 12 hours numbered 200 or higher.

Statistics: Computer Science 21. Thirty-three hours of Mathematics / Statistics courses numbered 21 or higher, including Math. 121 and 124, and Statistics 141, 143 or 211, 151 or 251, 201, 221 or 227, 241 or 261, and 281 or 293. At least 12 hours must be at the 200 level or higher.

Applied and Interdisciplinary Mathematics: This concentration combines a major in applied mathematics with an approved minor that emphasizes the application of mathematics. Such minors include various disciplines in the physical, life, and earth sciences, the social sciences, and business. A student may expand the approved minor to form a double major with mathematics. The requirements for this option are: (a) Math. 21, 22, 121, CS 21, Math. 124, 230, and 237; (b) at least nine additional hours in mathematics, statistics, or computer science courses number 100 or above, at least three of which must be in mathematics or statistics, at least six of which must be numbered 200 or above; (c) an approved minor. Parts (b) and (c) must form a coherent program that has the written approval of the student's faculty advisor in the Mathematics and Statistics Department.

MUSIC Students may apply to either the Bachelor of Arts or Bachelor of Music degree programs. All students interested in majoring in music must first pass an entrance audition (Level II Examination) on an instrument or voice. In order to complete the major, all students must attain intermediate level on a single instrument or voice (Level III Examination), and must have or acquire piano skills sufficient to pass the Piano Proficiency Examination. Students in programs that require a Senior Recital (B.A. with performance concentration, and B.Mus. in performance) will be expected to pass the Level III Examination before being permitted to declare the concentration, usually at the end of the second year, and must pass a performance examination (Level IV Examination) before being permitted to present the Senior Recital.

Bachelor of Arts: In the **Bachelor of Arts** program, music majors may choose from four concentrations: music history and literature, performance, theory and composition, and jazz studies.

General requirements:

Forty hours in Music. Majors in all concentrations except Jazz Studies (see below) must take the following core courses: 111, 112 (history); 53, 54, 55, 56, 153, 154, 155, 156 (theory); and eight hours of performance study (two hours of ensembles plus six hours of lessons, excluding group piano lessons).

Concentrations:

Music history and literature: Six additional hours at the 100 or higher level in music history and literature, three hours in music concentration other than history and literature, and 211. Students must attain intermediate level on an instrument chosen from the department's offerings.

Music performance: Six additional hours at the 100 level in performance study, three hours in a music concentration other than performance, and Music 250. Students must appear each year in departmental recitals.

Music theory and composition: Six additional hours at the 100 or higher level in theory and composition, three hours in a music concentration other than theory and composition, and Music 260. Students must attain intermediate level on an instrument chosen from the department's offerings.

Jazz Studies: Concentrators must take MU 053 / 054, 055 / 056 (theory); MU 111 or 112 (history); three additional credits selected from the following offerings: MU 106, 107, 113, 201, 203, 205; eight credits of performance study (two credits of ensembles plus six credits of lessons, excluding group piano lessons); MU 024, 025, 105, 159, 257, 259; three additional credits at the 100-level in performance study and MU 250 (senior recital). At least two credits of performance study must be in the "classical" idiom. Additionally, students must appear each year in department recitals.

Bachelor of Music: The **Bachelor of Music** program, with concentration in performance, is designed for talented students who wish to pursue a career in music as a performer. To earn the degree, students must demonstrate technical competence, and a broad knowledge of musical style and literature. Performance as a soloist and in ensembles is key. Admission through audition at the end of the freshman year.

Students must complete the degree requirements (40 hours) for the Bachelor of Arts with concentration in performance (see Music-B.A.), and these additional 40 hours:

Ensembles	14 hours
Applied lessons	4 hours
Secondary instrument or voice	4 hours

(four semester of half-hour lessons)

Sophomore Recital/Performance Seminar	1 hour
Junior Recital	1 hour
Senior Recital	1 hour
(in addition to the one hour credit given for MU 250)	
World Music	3 hours
Electronic Music	3 hours
Music electives	9 hours
(pedagogy courses strongly recommended)	

PHILOSOPHY Thirty hours including: (a) 101 and 102; (b) a total of at least four 200-level courses in Philosophy. Students considering graduate work are urged to take Philosophy 13 and to study a foreign language.

PHYSICS Students may select either of two degree proram:

Bachelor of Arts: Thirty-two hours in Physics, including 31 with 21, 42 with 22, 128 with 130, 201 or 202, 211, 213, 273; mathematics through 121 and three hours of approved mathematics electives; Computer Science 21. An additional laboratory science is strongly recommended.

Bachelor of Science: All courses in core and all courses in one of the listed options. Core: Physics PHYS 031 with 021, 042 with 022, 128 with 130, 211, 213, 273; 214 or 274; Mathematics MATH 021, 022, 121; 271 or 230; 124 or 272; Chemistry CHEM 031 and 032; Computer Science CS 021 (C++).

Options: (a) Pure Physics: Physics 201, 202, 265, twelve hours of approved physics electives. (b) Mechanical Engineering: ME 12, 14, 40 with 44, 42, 101, 111, and 143; CE 1; EE 100. (c) Civil & Environmental Engineering: CE 1, 10, 100, 150, 170 and 173; ME 12, 40 with 44; EE 100. (d) Electrical Engineering (Signals and Systems): EE 3, 4, 81, 82, 120, 121, 171, 174, 275 and one course from 276, 277, 295; recommended elective Statistics 270. (e) Electrical Engineering (Circuits and Devices), EE 3, 4, 81, 82, 120, 121, 131, 163, 183, 184, 221.

POLITICAL SCIENCE

Thirty hours in Political Science:

1. Four (12 hours) core courses (21, 41, 51, 71).
2. At least 15 hours at the advanced (100 or 200) level in political science subject to the following restrictions:
   a. Three hours must be at the 200 level.
   b. Students must complete at least one advanced (100 or 200 level) course in three of the four subfields (American Politics; Political theory; International Relations; Comparative Politics).
   c. Twelve of those fifteen hours, including the three hours at the 200 level, must be in UVM political science courses (excluding study abroad, transfer credit, readings and research).
3. Three additional hours in political science at any level (can include transfer credit).
4. At least fifteen of the thirty hours used to satisfy this major must be taken at the University of Vermont.

Note: Internships will not count toward the 30 hours required for the major.

PSYCHOLOGY Students may select either of two degree programs: the Bachelor of Arts or the Bachelor of Science. Within the Bachelor of Science degree program, students may select either the traditional Psychology concentration or the Biobehavioral concentration.

Bachelor of Arts: Thirty-four hours of psychology including: (1) 1, 109 and 110; (2) five of the following: 104, 119, 121, 130, 152, 161; (3) two of the following: 205, 206, 207, 220, 221, 222, 223, 230, 231, 233, 236, 237, 239, 240, 241, 250, 251, 252, 253, 254, 255, 257, 259, 261, 262, 263, 265, 266, 268, 269 and (4) one additional course at / above 100 level.

Bachelor of Science: Forty-four hours of psychology including 1, 109, 110, 119, 121, 130, 152, 161, and upper division psychology courses as described below; Math. 19, 20 or 21, 22; biology courses as indicated below; and at least three additional hours in an approved science or statistics. For a list of approved offerings in science and statistics, consult the Psychology Department Office. Students opting for a Bachelor of Science degree in Psychology must also complete the College of Arts and Sciences distribution requirements for a B.S. degree and they may not use psychology courses to fulfill the social sciences category.

Traditional Concentration: This concentration is most appropriate for students wishing a broader training in psychology, often in preparation for graduate school. Required courses include: Biology 1, 2; one course from each of the following categories A, B, and C: (A) 205, 206, 207, 208, 215, 220, 221, 222, 223; (B) 230, 231, 233, 234, 236, 237, 239, 240, 241, 254*, 257*, 261, 262, 263*, 265, 266, 268; (C) 250, 251, 252, 253, 254*, 255, 257*, 259, 263*. The remaining hours must be psychology courses at or above the 100 level. Independent research is encouraged and these hours may be counted towards the total 44 hours required. A minor in mathematics, statistics, or biology is strongly recommended.

*Category B or C, but not both.

Biobehavioral Concentration: Students who are interested in behavioral neuroscience and related medical fields, including premedicine preparation, should select this concentration. Required courses include: Biology 1, 2; three category A courses, one from each of the following subcategories (i) 221 or 222, (ii) 205 or 220, (iii) 206 or 223; and one course from 207, 208, 215, 230, 231, 233, 234, 236, 237, 239, 240, 241, 250, 251, 252, 253, 254, 255, 257, 259, 261, 262, 263, 265, 266, 268. The remaining hours must be psychology courses at or above the 100 level. Independent research is encouraged and these hours may be counted towards the total 44 hours required. A science minor is strongly recommended.

RELIGION Thirty-three hours in Religion, including 100 and 201; one course chosen from the 20-27 range; one course from the 101-109 range (comparative); one course from the 110-130 range (Biblical traditions); one course from the 130-149 range (Asian traditions); an additional course at the 200 level. Religion 130 may count for either the Biblical or Asian traditions requirement, but not for both. Three hours in related non-departmental courses may count toward the thirty-three hour requirement. A list of approved courses is available from the Religion Department.

RUSSIAN Thirty hours of courses in Russian at the 100 level or above among which at least one course must be Russian literature in translation (WLIT 118); one additional course in English literature or world literature; one Russian history course; and two additional courses chosen from among the listings of the Russian and East European Area Studies Program. All course work to be chosen in consultation with the student's major advisor.

SOCIOLOGY Thirty-four hours in Sociology including Sociology 1; 100 and 101; three hours in each of three different areas at the 100-level (total nine hours); and three hours in each of the three different areas at the 200 level (total nine hours). It is recommended that 1, 100, and 101 be completed before the start of the junior year. 1 and 100, or 1 and 101, or instructor's permission is a prerequisite for enrollment in any 200-level course. Students planning to focus in a particular area of study are strongly encouraged to take an additional 200-level course in that area. Students interested in completing the Social Gerontology concentration are encouraged to consult their faculty advisor early in their program. Students planning postgraduate training in

Sociology or related areas are strongly encouraged to take at least two courses from the advanced Theory/Methods area (274, 275, 279). Areas and their approved courses are: Crime, Law, and Deviance: 114, 115, 118, 214, 216, 217, 255, 258; Social Inequality: 119, 122, 132, 219, 232, 240, 254; Social Change and Development: 102, 103, 105, 171, 202, 203, 205, 206, 207, 211, 213, 272; Culture, Institutions, and the Individual: 109, 128, 145, 150, 151, 155, 156, 161, 209, 225, 243, 250, 252, 255, 288, 289; The Life Course: 120, 128, 145, 154, 161, 222, 223, 229; Theory and Methods: 274, 275, 279.

The Department of Sociology offers an optional twelve-hour concentration in Social Gerontology including Sociology 20 and 120; either 220 or 222; and at least one course from 154, 254, or 255.

* Courses numbered 195, 196, 281, 282, 295, or 296 may qualify to fulfill area requirements with approval of student's advisor.

SPANISH A minimum of thirty-three hours of courses numbered above 100*, of which: twelve must be in literature and eighteen must be in courses numbered above 200*. Required courses among those thirty-three hours: Spanish 140; one 3-credit course in Latin American literature (142, 262, 274, 279, 281, 286, 287 or Topics); one 3-credit course in Spanish Peninsular Literature (141, 236, 237, 245, 250, 252, or Topics); one 3-credit course in culture and civilization (290, 291, 292, 293, 294 or 299). At least one of the literature courses taken must be a survey (141 or 142) and one must be devoted specifically to literature written before 1800 (Examples are 236, 237, 245, 287 or Topics on pre-1800 literature).

*Only three credits of Readings and Research (197, 198) and Advanced Readings and Research (297, 298) may be counted toward the major.

THEATRE A total of 48 hours to include 10, 20, 30, 40, 50, 110; one of the following three: 120, 130 or 140; 150, 151, 250, 251; three hours in 190: Theatre Practicum; nine hours in selected areas of emphasis: Design/Tech; or Performance; or History/Criticism. Design/Tech: 41, 42, 120, 130, 131, 140, 141, 142, 143, 144, 160, 200, 230; Performance: 111, 112, 200, 210; History/Criticism: nine hours from English 135, 136, 165; Classics 153; Theatre 200; or other courses by departmental permission.

Note: Students entering the College of Arts and Sciences should be advised that Theatre 1 is not recommended for students intending to major or minor in Theatre. Those students should enroll in required courses immediately. If Theatre 1 is taken, it will not be counted toward the required 48 hours for the major but will be counted toward the total 122 hours required for graduation.

WOMEN'S AND GENDER STUDIES A total of thirty-six hours (twelve courses) are required for the major. (a) Core (twelve hours): Women's Studies 73, 101, 273, and 191 or 192; (b) Electives (nine hours): One additional race/ethnicity class beyond the A&S requirement, one additional non-European culture class beyond the A&S requirement and any one course in fine arts or humanities cross-listed with Women's and Gender Studies. (c) Concentration (fifteen hours): An individually-designed concentration consisting of five approved Women's and Gender Studies electives, at least four of which are at or above the 100 level.

ZOOLOGY Students may select either of two degree programs:

Bachelor of Arts: Chemistry 31/ 32 or 35/ 36, to be taken the first year if possible; 141/142; Math 19 (or higher), plus at least six additional credits in quantitative disciplines from among Mathematics (20 or higher), Physics (11 or higher), or Statistics (141 or higher). BCOR 11/12 (preferred, but BIOL 1/2 is accepted), 101, and either 102 or 103, and at least fifteen additional credits in Biology from BCOR 102 or 103 (whichever was not taken above) or 200-level courses. Students preparing for entry into professional schools, such as veterinary or human medicine or dentistry, should consult with their department advisor to select the proper sequence of electives.

Bachelor of Science: Chemistry 31/ 32 or 35/36, to be taken the first year if possible; 141/142; Math 19 (or higher), and at least at least fifteen credits in quantitative disciplines from among Mathematics (20 or higher), Physics (11 or higher), or Statistics (at least one course is required from 141 or higher). BCOR 11/12 (preferred, but BIOL 1/2 is accepted), 101, and either 102 or 103, and at least twenty-seven additional credits in zoology or related fields from the approved list available from the Biology Department office or department advisors. Students preparing for entry into professional schools, such as veterinary or human medicine or dentistry, should consult with their department advisor to select the proper sequences of electives.

MINOR REQUIREMENTS

ALANA U.S. ETHNIC STUDIES

Eighteen hours (six courses) to include: ALAN 51 and fifteen hours to be chosen from the list of ALANA approved courses (consult program webpage or office for list) of which at least nine hours must be at the 100-level or above. Students should consult with an ALANA U.S. Ethnic Studies program advisor in devising their course of study.

ANTHROPOLOGY

Social Anthropology: 21; two topical courses plus one "peoples" course, or one topical and two "peoples" courses; and any 200-level course except 200, 210, 297, 298. Nine hours must be at 100-level or above.

Archaeology: 24; 210; three from the following: 160, 161, 188, 200, 250.

Linguistic Anthropology: 15 hours to include ANTH 28; 176 or 178; 276 or 284 or PSYC 237; and two of the following: CMSI 160, 162; any course in Anthropology at the 100 level or above.

AREA AND INTERNATIONAL STUDIES

African Studies: A total of 18 credit hours (six courses), at least nine of which must be at the 100 level or above, and which must include the following:

A. CORE coverage. At least four of the following:

Anthropology 162, English 61, Geography 51, either History 40 or 41, Political Science 177

B. SECONDARY coverage. Two courses chosen from among the following:

AIS 93; English 173; French 289; Geography 151; History 40 or 41, 140, 141, 142, 241; Sociology 272

Courses in Category B may be replaced by any of the following courses provided that the student undertakes significant research or projects covering African material. Students may count these courses towards fulfillment of the minor requirement only with the approval of the director of African Studies. Such petitions will be decided on a case by case basis.

ANTH 23, 179, 181, 220, 283; EDUC (EDFS) 206; ENGS 177, 182; GEOG 154, 177, 179; HIST 240; POLS 71, 277; SOC 171, 213; Appropriate Honors Thesis

Asian Studies: In selecting courses from the Asian Studies listing, students must consult with an appropriate Asian Studies advisor and demonstrate in their choices thematic and/or geographic coherence. Such courses must also accord with the following requirements:
Eighteen hours in courses from the Asian Studies listing (see

Courses of Instruction; Asian Studies) including at least two courses in an Asian language, and at least one course in each of two other academic disciplines. At least nine credit hours must be at the 100 level or above. For students who have demonstrated fluency in an Asian language relevant to the other courses they have chosen for their minor concentration (for instance, native speakers of the language) the language requirement will be waived, and courses from a third academic discipline will be substituted.

Canadian Studies: Eighteen hours to include International Studies 91 or History 66 (History 65 upon approval of advisor), and 15 hours to be chosen from the Canadian content list (see major listing for approved courses) of which at least 12 hours must be at the 100 level or above. Students will fulfill the language requirement with French.

Latin American Studies:

A. Students who are not Spanish majors: 18 hours (six courses)
   1. Completion of Spanish 52 or above (three hours).
   2. Completion of five of the following courses: Anthropology 161; History 62 or 63, 161, 163, 164 or 262; Geography 56; Political Science 174; Spanish 142, 279, 281, 286, 287, 293, or 294; International Studies 195 or 196.
B. Students who are Spanish majors: 18 hours (six courses)
   1. Completion of one of the following courses: Spanish 279, 281, 286, 287, 293, or 294.
   2. Completion of five of the following courses: Anthropology 161; History 62 or 63, 161, 163, 164 or 262; Geography 56; Political Science 174; International Studies 195 or 196.

Middle East Studies:

A. History 45 and 46
B. Four courses from among the following: Art 146, Hebrew 195 though 198; History 146, Political Science 157,168, Religion 116, 130. Other courses with sufficient Middle Eastern content can be used to satisfy this requirement with the permission of the Director of the Middle East Studies program.
C. Completion of the College of Arts and Sciences language distribution option in any language <u>or</u> transfer of equivalent credits in a Middle Eastern language from another institution or program.

Russian/East European Studies: Twenty hours to include Russian 51, 52 or its equivalent, and four courses from the following: Economics 116; World Literature 118; History 27, 137, 138; Political Science 172.

European Studies: Eighteen hours to include three hours at the 200 level from both European culture and thought and European history and society areas; and six hours at the 100 level or above from the European language area.

Note: See the European Studies major requirements for list of approved courses.

ART

Studio Art: Eighteen hours, including six hours at introductory level of which at least three hours must be in 1, 2, 3, or 4. Twelve hours at the 100 level or above.

Art History: Eighteen hours, including six hours from 5, 6, and 8; 12 hours of 100-level courses or above.

BIOLOGY BCOR 11, 12 or Biology 1, 2; three courses at the 100 level or higher chosen from courses acceptable for the Biology major, at least one of which must include a laboratory. One course may be taken from the advanced offerings of other biologically-oriented departments. Consult the Biology Department for a list of approved courses.

BOTANY At least 15 hours of course work to include Botany 4 or Biology 1 or Biology 2; plus three additional courses in Botany, at least one at the 200 level.

CHEMISTRY

A. Chemistry 31, 32 or 35, 36.
B. One of the two following sequences:
   1. Chemistry 141, 142* and one of the following: 121, 131, 160, 161, 162, 221 (with instructor permission).
   2. Chemistry 161, 162, and one of the following: 42, 141.

*143, 144 can be used in place of 141, 142.

CLASSICS

Latin Language and Literature: Fifteen hours (including nine at the 100-level or above) of Latin at 51 or above, which may include one three-hour course at the 100-level or above in Greek or Classics.

Greek Language and Literature: Fifteen hours (including nine at the 100-level or above) of Greek at 51 or above, which may include one three-hour course at the 100-level or above in Latin or Classics.

Classical Civilization: Eighteen hours from the following (of which at least nine hours must be above 100); all courses in Greek or Latin above level 50; all courses in Classics; Art 146, 148, 149; and all special topics courses (95, 96, 195, 196, 295, 296) in Classics, Latin or Greek All Classical Civilization minors must fulfill the College foreign language requirement, preferably in Greek or Latin.

COMMUNICATION SCIENCES 80, 90, 94, 101, 164, 208.

COMPUTER SCIENCE Eighteen hours in Computer Science to include 100 or 103, 104, and three additional hours at the 100 level or above.

EAST ASIAN LANGUAGES

Chinese: Fifteen credit hours of Chinese with at least nine of those hours at or above the 100 level, including 102 or its equivalent. Three credit hours at or above the 100 level in Chinese linguistics or literature may be substituted for three credits of language study beyond 102 or its equivalent.

Japanese: Fifteen credit hours of Japanese with at least nine of those hours at or above the 100 level, including 102 or its equivalent. Three credit hours at or above the 100 level in Japanese linguistics or literature may be substituted for three credits of language study beyond 102 or its equivalent.

ECONOMICS Eighteen hours including Economics 11, 12; and four courses numbered 20-196, three of which must be numbered 110-196.

ENGLISH Eighteen hours including six hours taken from one of the following sequences: 21-22, 23-24, 25-26, 27-28, or 85-86; and a minimum of nine credits at the 100 level or above.

ENVIRONMENTAL SCIENCES

Biology emphasis: Biology 1, 2 or BCOR 11, 12; and BCOR 102, and two additional upper-division non-biology courses chosen in consultation with co-advisor.

Chemistry emphasis: Chemistry 31, 32; 121 or 42; and two additional upper-division non-chemistry courses chosen in consultation with co-advisor.

Geology emphasis: Geology 55, 101, 155, and two additional upper-division non-geology courses chosen in consultation with co-advisor.

ENVIRONMENTAL STUDIES Seventeen credits in Environmental Studies consisting of 1, 2, and nine hours at the 100 level or above, including three hours at the 200 level. (Of the nine hours, one non-ENVS course at the appropriate level may be substituted with the approval of the student's

advisor and the Environmental Program.)

FILM AND TELEVISION STUDIES Eighteen hours, including (a) at least one from FTS 7, 8 or 9; (b) FTS 121, 122, and 123; (c) six hours chosen from any other FTS offerings; Art 4, 139, 140, 143; Italian 122; Sociology 43, 150, 243; Spanish 290 or additional courses approved by the Director of Film and Television Studies. (Students should consult the FTS course brochure and the Registrar's web page each semester for details about available courses.)

FRENCH Eighteen hours in French numbered 100 or above. Required courses: French 101; and three of the following four: 104, 105, 111, 112. Six of the 18 credits must be in courses at the 200 level. Readings and Research (197, 198) or Advanced Readings and Research (297, 298) may not be counted toward a minor.

GEOGRAPHY

Five courses (fifteen hours) which must include: one course from this array: 1, 2, 43, 60, 73, 81; any one regional course (from 51, 52, 55, 56, 57, 90, 92, 151, 154, 155, 162, 190, or 192); any three courses at the 100-level or above.

GEOLOGY One Geology course from 1, 5, 55; 101, 110; plus six additional hours at the 100 level or above.

•Geology 7, Earth Hazards, will not count for the major or minor.

GERMAN AND RUSSIAN

German: Five courses at the 100 or 200 level, one of which must be 155 or 156.

Russian: Russian 51, 52; four courses in Russian at the 100 or 200 level.

HISTORY Eighteen hours of history including three hours in any course at the introductory level (00), plus nine hours at the intermediate level (100) or advanced level (200). These must also include six hours in each of two of the department's areas of study (Western Hemisphere; Europe; Africa / Asia / Latin America).

HOLOCAUST STUDIES History 26; 2 semesters of German (another European foreign language may be substituted after consultation with the director). Requirements: 18 hours of relevant course work, at least 9 of which must be at the 100 level or above, and must include History 139 and 190. No more than three credit hours may come from classes also used to fulfill a major.

INDIVIDUAL DESIGN MINOR The ID Minor must consist of at least 18 hours of course work, of which at least nine hours must be at the 100 level or above. No more than nine hours completed prior to application for the ID Minor may be applied to the 18 hours required for the proposed minor. No courses in the student's Arts and Sciences major department may be applied to the 18 hours required for the minor. An application must be submitted to the Committee on Honors and Individual Studies for approval. Applications may be found in the Dean's Office, College of Arts and Sciences.

ITALIAN Eighteen hours in courses taught in the Italian language and numbered 100 or above. Readings and Research (197, 198) or Advanced Readings and Research (297, 298) may not be counted toward a minor.

ITALIAN STUDIES Eighteen credit hours (of which at least 9 credits must be at 100-level or above) from the following categories:

(A) Courses in Italian: at least 6 credits in courses taught in Italian at the 100-level or above; (B) Significant Italian content: Up to 12 credits from among the courses listed under Category B in the description of the Italian Studies Major; (C) Partial Italian content: up to 3 credits from among the courses listed under Category C in the description of the Italian Studies Major. Among the courses taught in English, no more than 6 credits may be applied from any one academic discipline.

MATHEMATICS

Pure Mathematics: Math. 21 (or equivalent), 22, 52 or 121, and nine additional credits in Mathematics courses numbered 100 or above. Computer Science or Computer Engineering majors may substitute Math. 54 for 52. The course plan for a Mathematics minor must be approved by a Mathematics faculty advisor.

Applied Mathematics: Fifteen hours of mathematics courses numbered 52 or higher, including one of 230, 237, 271.

MUSIC Eighteen hours in Music (MU) comprised of six credits in music history / literature, six hours in music theory (except MU 051) and six credits in performance lessons or ensembles. Nine credits must be at the 100 level or above.

PHILOSOPHY One course from 101, 102, 140; one 200-level course in Philosophy; and 12 additional hours in Philosophy, at least three of which must be at the 100 level or above.

PHYSICS Seventeen hours including 31 with 21, 42 with 22, 128 with 130, and three additional hours at the 200 level excluding 201 and 202. *Note:* Mathematics through 121 is needed for 128.

POLITICAL SCIENCE Eighteen hours in political science, including at least six hours from the "core" courses (21, 41, 51, 71), and at least nine hours at the level of 100 or above. Of the nine hours at the 100 level or above, students must complete at least six hours in UVM political science courses (excluding study abroad, transfer credit, readings and research). Internships will not count toward the eighteen hours required for the minor. At least nine of the eighteen hours used to satisfy this minor must be taken at the University of Vermont.

PSYCHOLOGY Eighteen hours including: (1) 1 and 109*; (2) three of the following: 104, 119, 121, 130,152, 161; (3) one of the following: 205, 206, 207, 220, 221, 222, 223, 230, 231, 233, 236, 237, 239,240, 241, 250, 251, 252, 253, 254, 255, 257, 259, 263, 261, 262, 263, 265, 266, 268, 269. *

*Students earning the minor may instead complete Sociology 100.

RELIGION Eighteen hours in Religion including: one introductory course from the 20-27 range; 100; one course from 101-109 range; one intermediate level course on a particular religious tradition (from 110-149); one course at the 200 level; an additional Religion course.

SEXUALITY AND GENDER IDENTITY STUDIES The Sexuality and Gender Identity Minor will require 18 credit hours, including WGST 75 (Introduction to LGBT Studies). Nine hours must be at or above the 100 level. No more than nine credit hours may come from any one department. No more than 3 total credit hours may come from WGST 191, 192, 297, 298 (internship and Independent Study). No more than three credit hours may come from classes also used to fulfill a major.

SOCIOLOGY Eighteen hours in sociology including Sociology 1; either 100 or 101; three hours in each of two different areas at the 100-level (total six hours); three hours at the 200-level (total three hours). (See Sociology major requirements for list of approved area options.) It is recommended that 1 and 100 or 1 and 101 be completed before the start of the junior year, 1 and 100, or 1 and 101, or instructor's permission, is a prerequisite for enrollment in any 200-level course.

GERONTOLOGY The minor in Gerontology consists of 18 hours. Required courses (12 hours): Sociology 20 (or Human Development and Family Studies 20 or Nursing 20), 120, 220, and 222. Electives (six hours): Anthropology 189; Human Development and Family Studies 266, 282, 283, 284; Nursing 100 or Human Development and Family Studies 152; Sociology 154, 254.

Courses used to meet the requirements of the minor should constitute a coherent program and will be selected in consultation with the student's minor advisor. A list of current course offerings suitable for the minor, including special topics courses in individual departments, is available from the Department of Sociology or the Center for the Study of Aging.

Note: This minor cannot be the sole minor for sociology majors but is acceptable as a second minor, especially for students interested in careers involving work with the aged. Sociology majors who intend to complete a second minor in Gerontology should plan their course of study in close consultation with their advisor so as not to exceed the 45-hour rule and the limit of one course counting toward both a major and a minor.

SPANISH Eighteen hours in Spanish above 100, including: Language: six credits from 101, 201, 202; Literature: six credits (3 of those credits must be in Spanish 140); Electives: six additional credits from courses numbered above 202. Readings and Research (197, 198) or Advanced Readings and Research (297, 298) may not be counted toward a minor.

STATISTICS A Statistics Minor consists of 15 credits of statistics (STAT) courses, acquiring calculus knowledge equivalent to MATH 19 or 21, and gaining computer experience equivalent to STAT 201 or a computer programming course (CS 16 or higher or MATH 52). EC 170: Economic Methods can also be counted in place of STAT 11 or 141 as an introductory statistics course. Not more than seven credits of introductory Statistics 11/51/111/140/141/143/211 or EC 170 may be counted. The course plan for the Statistics Minor must be approved by a Statistics faculty advisor. See more complete guidelines at http://www.cems.uvm.edu/math/undergrad/statminor.php.

Note that Mathematics majors can minor in Statistics as well. In Arts and Sciences you must earn 12 of your 15 credits in statistics beyond any statistics courses counted in your major courses. In Engineering and Mathematics you must earn 15 credits in statistics beyond any statistics courses.

THEATRE Theatre 50, 150; two courses from 10, 20, 30, 40; two additional 3 credit courses above level 100.

SPEECH Eighteen hours to include 12 hours from Speech 11, 111, 112, 283-4 or Theatre 5; and six hours from Speech 214 or 283-4, or Sociology 141.

VERMONT STUDIES Eighteen hours (at least five courses), of which at least nine hours must be at the 100 level or above. As an interdisciplinary minor, it must include at least fifteen hours from departments outside the major. Completion of Vermont Studies (VS) 52, three of the following VS courses: 55, 64, 92 or 192, 123, 160, 184, and two additional courses from an approved list chosen in consultation with the Vermont Studies advisor.

WOMEN'S AND GENDER STUDIES Eighteen hours of course work to include WGST 73, 273 and six hours at the 100 level or above to be chosen with the approval of the Women's and Gender Studies Committee or the consent of a Women's and Gender Studies advisor. Students may take a maximum of nine hours in any one discipline toward the minor. Not all sections of a multisection course will necessarily meet Women's and Gender Studies approval for the minor. (Students should consult the course listings each semester for further details.)

ZOOLOGY BCOR 11, 12 or Biology 1 and 2; three courses at the level of 100 or above, chosen from courses within the Biology department, at least one of which must include a laboratory.

CROSS-COLLEGE MINORS

The minors listed below have been approved for College of Arts and Sciences students and will fulfill minor requirements for Bachelor of Arts candidates (plus satisfy minor requirements for Bachelor of Science and Bachelor of Music candidates for whom completing a minor is optional.) Please look in the online catalogue at the following link www.uvm.edu/academics/catalogue2005-06/?Page=read.php&p=/Colleges_and_Schools/College_of_Arts_and_Sciences/RequirementsCollege_of_Arts_and_Sciences_Cross_College_Minors&SM=collegemenu.html for the individual courses required for each minor. In some cases, minor requirements differ for Arts and Sciences students and students from other colleges at UVM. In those cases, Arts and Sciences students must complete the requirements listed separately for "Arts and Sciences majors."

Accounting
Agricultural and Resource Entrepreneurship
Animal Science
Applied Design
(*this minor is not available to students majoring or minoring in Studio Art.*)
Business Administration
Community and International Development
Consumer Affairs
Consumer and Advertising
Forestry
Human Development and Family Studies
(*this minor cannot be the sole minor for sociology or psychology majors, but is acceptable as a second minor.*)
Microbiology
Molecular Genetics
Nutrition and Food Sciences
Plant and Soil Science
Recreation Management
Special Education
Sustainable Agriculture
Wildlife Biology

The following Arts and Sciences minors are NOT available to students pursuing degree programs not offered by the College of Arts and Sciences:

English
Film and Television Studies
Psychology
Studio Art

The College of Education and Social Services

The College of Education and Social Services (CESS) offers programs in Athletic Training, Human Development and Family Studies, Social Work, and Teacher Education (Art, Early Childhood PreK-3 Education, Early Childhood Special Education, Elementary, Family and Consumer Sciences, Middle Level, Music, Physical Education, and Secondary Education). First-year students may elect an Undecided major while exploring the above options within the College. Students who have completed one year of course work at UVM and who demonstrate interest in an area of study related to CESS offerings may pursue an Individually Designed program. All programs require course work in the liberal arts and sciences along with professional preparation through course work and internships in school and community settings.

Enrolled UVM students wanting to transfer may secure an application at the Office of Student Services (528 Waterman Building) in the College of Education and Social Services or access the form on-line at http://www.uvm.edu/~cess/stservices/?Page=forms.html. Students enrolled in appropriate programs in other colleges may apply to complete teacher licensure requirements for Secondary Education while they remain in their home college. Information and applications for admission to the Teacher Education program are available in the Secondary Education Office, 405A Waterman.

Students will only be considered eligible for transfer if they currently have an overall average of 2.5 and students in teacher education programs must also be able to earn an overall average of 3.0 or above by the time they reach program completion.

DEGREE PROGRAMS

Programs in the College of Education and Social Services lead to four bachelor's degrees.

Bachelor of Science. The programs listed below lead to this degree.

Athletic Training. Recently approved as a program at the University of Vermont.

Human Development and Family Studies. This program examines the way people grow and develop, form relationships and families, and learn to cope with the common and uncommon events of life.

Social Work. The principal educational objective of the program is to prepare students for beginning social work practice with individuals, families, small groups, organizations, and communities.

Teacher Education/Early Childhood PreK-3 Education. Focus is on the education and development of children birth to age 8 leading to licensure birth to grade 3.

Teacher Education/Early Childhood Special Education. Focus is on the education and development of children ages birth to age 5 with special needs leading to licensure in early childhood special education.

Teacher Education/Family and Consumer Sciences Education (7-12). The Family & Consumer Sciences program offers licensure for grades 7-12.

Bachelor of Science in Art Education.

Teacher Education/Art Education (K-12). The College works cooperatively with the Art Department in the College of Arts and Sciences to offer a program in Art Education which leads to both degree and licensure for grades K-12.

Bachelor of Science in Education.

Individually Designed Major. Earn degree not licensure.

Teacher Education/Elementary Education(K-6). The Elementary Education program offers licensure through grade 6.

Teacher Education/Middle Level Education (5-9). The Middle Level Education program offers licensure for grades 5-9.

Teacher Education/Physical Education (K-12). Students who pursue the teacher education program are prepared for teaching grades K-12.

Teacher Education/Secondary Education (7-12). The Secondary Education program offers licensure for grades 7–12.

Bachelor of Science in Music Education.

Teacher Education/Music Education (K-12). The College works cooperatively with the Music Department in the College of Arts and Sciences to offer a program in Music Education which leads to both degree and licensure for grades K-12.

In addition to the undergraduate degree programs, the College offers a fifth-year certificate, the Postbaccalaureate Teacher Preparation Program. This program is for individuals who have earned a B.S. or B.A. and now desire to be licensed to teach.

DEGREE REQUIREMENTS

Students must meet standards and requirements for each program approved by the College Academic Affairs Committee, the College faculty, the Dean, and the University Academic Affairs Committee. All programs nationally accredited meet the standards of their professional group: Social Work by the Council on Social Work Education (CSWE); Teacher Education programs (Art, Early Childhood Birth-Gr3, Early Childhood Special Education, Elementary, Family and Consumer Sciences, Middle Level, Music, Physical Education and Secondary Education) by the Vermont State Department of Education and by the National Council for the Accreditation of Teacher Education (NCATE).

Copies of the degree requirements for each program are available in our Student Services Office (528 Waterman), on the web at www.uvm.edu/~cess/, and are also provided to students during Orientation sessions.

Students receive an Orientation Advising Packet which explains how the requirements can be fulfilled during a four-year period. Discussions with advisors provide students with information needed to plan the time span for program completion that meets their needs. Students who enroll in the College of Education and Social Services are expected to become very familiar with the degree requirements for their programs.

Criminal Record Check (CRC) Requirement

Students who matriculate in the College of Education and Social Services should expect to complete a Criminal Record Check (CRC) as a prerequisite for working in schools and agencies. Evidence of a Criminal Record may prevent students from being eligible to fulfill the field placement/teaching internship requirement.

Human Development and Family Studies and **Social work** majors may be required by individual agencies to complete the CRC to be eligible for an internship in a specific agency. It is also important to note that membership in professional associations upon graduation, at least in the case of most social work organizations, typically requires a criminal background check as does employment in an ever-increasing number of human service agencies.

Students enrolled in the **Teacher Education** programs are required to complete the CRC to be eligible for the public school teaching internship and may also be required to complete the CRC during the sophomore and junior years. Each individual school makes the determination concerning the sophomore and junior experiences, but it is a State requirement that all students complete the CRC for eligibility to student teach.

The cost for fingerprints and FBI processing is covered by each individual student and is subject to change.

Disciplinary Action Related To Academic Performance

Disciplinary actions, such as placement on trial, disenrollment, or dismissal are designed to encourage high level academic work from students. The CESS guidelines are more stringent than those for the University. Students, including first-year and new transfer students, can be dismissed without first being placed on trial.

A student is subject to academic disciplinary action, including dismissal from the University, if (a) his or her semester or cumulative average falls below 2.0; ***or*** (b) if he or she has failed six or more credit hours of course work in a given semester. This includes first-year and new transfer students.

A student who has a cumulative grade-point average of 2.0 or higher, but too low to meet specific program requirements, will be warned of pending disenrollment. Also, students who do not follow course requirements or who have not earned an appropriate grade point average for their program will be warned of pending disenrollment. If at the end of two subsequent semesters the student has failed to meet the requirements (courses and/or gpa) of his/her program, he/she will be disenrolled from the College.

Students who are placed on trial rather than being dismissed and who do not meet the conditions of trial will then be dismissed.

Students with "on-trial" status will not be allowed to participate in their senior internship, and they will not be eligible to graduate.

Programs of Study

Human Development and Family Studies, Social Work and Teacher Education (Art, Early Childhood PreK-3, Early Childhood Special Education, Elementary, Family and Consumer Sciences, Middle Level, Music, Physical Education and Secondary Education.)

HUMAN DEVELOPMENT AND FAMILY STUDIES PROGRAM

The Human Development and Family Studies program examines the ways people grow and develop, form relationships and families, and learn to cope with the common and uncommon events of life. Students learn basic and applied concepts of human development and acquire skills in working with individuals and families of different ages and backgrounds in a variety of settings. Field experience is required of all students.

Students in Human Development and Family Studies complete General Education requirements in Behavioral and Social Sciences, Communication Skills, Humanities, Physical and Biological Sciences and Multicultural Electives. They also enroll in a sequence of courses and field experiences designed to provide a comprehensive understanding of individual and family development across the life span. These courses are arranged in two blocks: the introductory core and the advanced core.

The introductory core in Human Development and Family Studies involves three components. The first, Introduction to Human Development and Family Studies and Academic Service-Learning, provides students an introduction to the topics pursued in the major, how they relate to everyday life settings, how knowledge in the discipline is gained, and the types of skills necessary to both acquire and use this knowledge. The second component in the introductory core is a course covering individual development across the entire life span. Students learn what is typical of individuals at different points in their lives and the various factors, such as gender and social class, that influence development. The third component in the introductory core is a two-semester course dealing with the impact of families and other social institutions such as the school system on individual development. A course on Human Relations and Sexuality completes the introductory core.

The advanced core in Human Development and Family Studies consists of a series of advanced seminars and a field experience. All majors take seminars in Developmental Theory and Family Ecosystems. Four additional advanced seminars must be selected in consultation with an advisor. The field experience requires 15 to 20 hours per week. Students choose a placement from a variety of public and private local agencies. Field placement sites have included museums, the court system, battered women's shelters, centers for abused and neglected children, city and state government agencies, group homes, rehabilitation centers, local business and industry, child-care settings, hospitals, senior-citizen centers, and other human service agencies.

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall	Spr
HDFS 001–Intro to HDFS and Academic Services-Learning	3	–
HDFS 005–Human Development	3	–
General Education Electives	6	9
Electives	3	3
HDFS 060–Family Context of Development	–	3
Race & Culture	–	1
Total	15	16

SOPHOMORE YEAR	Fall	Spr
HDFS 065–Human Relationships & Sexuality	3	–
HDFS 161–Social Context of Development	3	–
Physical Education Electives	1	1
General Education Electives	6	12
Electives	3	3
Total	16	16

JUNIOR YEAR	Fall	Spr
HDFS Adv. Seminar	6	3
General Education Electives	6	3
Electives	3	9
Total	15	15
SENIOR YEAR	Fall	Spr

HDFS 266–Seminar: Theory	3	–
HDFS 296–Field Experience	6	–
HDFS 260–Family Ecosystem	–	3
Electives	3	12
Total	12	15

Human Development and Family Studies is also available as a major concentration for students in the Early Childhood, Elementary, Family and Consumer Sciences, and Physical Education licensure programs, and as a cross-college minor.

SOCIAL WORK PROGRAM

The principal educational objective of the Social Work Program is to prepare students for beginning generalist social work practice with individuals, families, small groups, organizations, and communities.

The Program provides education for social work practice based on a liberal arts education in the social sciences and humanities. The program is fully accredited by the Council on Social Work Education. Throughout the program of study, students gain the values, knowledge, and skills necessary to provide social services and to effect social change in institutions and communities.

The Bachelor of Science degree in Social Work requires a minimum of 122 approved credit hours, 27 credits of which are general education components from the six approved academic areas (Arts and Letters, Mathematics, Science, Social Sciences, Humanities, Health and Physical Education), including two credits for physical education activities and one credit for Race and Culture Studies. Additionally, students are required to take at least one course that focuses substantially on issues concerned with Africa, Asia, Latin America, the Middle East, or countries known as the Third World.

The student in consultation with his/her advisor, selects elective courses which will provide the opportunity to develop individual interests. Additional courses in anthropology, education, foreign language, history, philosophy, political science, psychology, sociology, statistics, special education, and women's studies are recommended. Students who intend to pursue a Master of Social Work (MSW) degree are strongly advised to take a course in statistics.

A committee of Social Work faculty may review students' progress each semester throughout the four years. Students may be asked to participate in that process if the faculty deems necessary.

Students must complete the required liberal arts courses with a minimum grade of C-; completion of the initial Social Work courses (SWSS 2, 3, 5, 47, 48, 60) with a minimum grade of C; completion of the upper level Social Work courses (SWSS 164, 165, 166, 168, 169, 171, 172, 173, 174) with a minimum grade of B and an overall GPA in all courses of 2.0.

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall	Spr
SWSS 2, Foundations of Social Work	3	–
Third World Elective	3	–
SOC 1	3	–
Humanities Elective	3	–
Electives	3	6
Race and Culture	–	1
POLS 21	–	3
PSYC 1	–	3
SWSS 3, Human Needs & Social Services	–	3
Total	15	16

SOPHOMORE YEAR	Fall	Spring
SWSS 47, Human Behavior in the Soc. Env. I	3	–
EC 11	3	–
PSYC 152	3	–
ENG 50	3	–
Physical Education Elective	1	–
Electives	3	6
BIOL 3 or SWSS 5, Biosociopolitial Issues	–	3
SWSS 48, Human Behavior in the Soc. Env. II	–	3
SWSS 060, Racism & Contemporary Issues	–	3
Total	16	15

JUNIOR YEAR	Fall	Spr
SWSS 164, Intro Social Work Research	3	–
SWSS 165, Issues & Policy in Soc. Welfare I	3	–
Electives	9	12
Physical Education Elective	–	1
SWSS 166, Issues & Policy in Soc. Welfare II	–	3
Total	15	16

SENIOR YEAR	Fall	Spr
SWSS 168, Social Work Intervention I	3	–
SWSS 171, Field Experience Seminar I	3	–
SWSS 173, Field Experience	6	–
SWSS 169, Social Work Intervention II	–	3
SWSS 172, Field Experience Seminar	–	3
SWSS 174, Field Experience II	–	6
Electives	3	3
Total	15	15

In the senior year, students spend approx. 15 hours/wk. over two semesters (450 total hours) as interns in a public or private social service agency. In the Fall semester, students must enroll concurrently in SWSS 168, SWSS 171, and SWSS 173. In the Spring semester, students enroll in SWSS 169, SWSS 172, and SWSS 174.

Typically students apply for SWSS 173 Field Experience in the spring of Junior year. Application for the Field requires consultation with the student's advisor to determine that all introductory and intermediate professional and required courses have been successfully completed. The process includes a written statement by the student describing his/her interests and qualifications. The advisor and Field Education Coordinatort also review professional readiness issues, including strengths, conduct, maturity, and areas to strengthen. When there are concerns about a student's field readiness, these concerns will be reviewed by the Undergraduate Field Committee, and recommendations will be made.

TEACHER EDUCATION

The undergraduate Teacher Education programs include Art, Early Childhood PreK-3, Early Childhood Special Education, Elementary, Family and Consumer Sciences, Middle Level, Music, Physical Education and Secondary Education. All students are required to meet specific criteria for admittance into the professional portion of the program and for a teaching internship placement as well as for a recommendation for licensure.

Requirements for Teacher Preparation Programs

Candidacy The professional programs begin with the student enrolling in the College of Education and Social Services as a candidate for licensure. Candidacy status is the stage prior to acceptance into the professional education sequence and, for some programs, may also be available to students enrolled in other colleges at UVM.

Intercollege Transfer Students transferring to the College of Education and Social Services for the Teacher Education

programs are required to have a minimum overall grade point average of 2.5 or higher and it must be possible to earn an overall average of 3.0 before reaching program completion.

Academic Major All students who enroll in the Teacher Education programs are required to complete a 30 hour (minimum) major in the liberal arts and sciences. It is essential for students to complete many liberal arts and sciences requirements during the first two years of their program. Copies of the options and the requirements are available through the Office of Student Services, 528 Waterman and on the web at www.uvm.edu/~cess/.Students are encouraged to select one Highly Qualified Teacher (HQT) approved content area.

Students in Secondary Education complete a major (minimum 30 hours) and a minor (minimum 18 hours) or a broadfield major (minimum 48 hours) from a very specific list of options.

Students in Middle Level Education complete an Individually Designed Interdisciplinary Major Concentration (IDIMC).

Students in Early Childhood, Elementary, Family and Consumer Sciences, and Physical Education complete a 30 hour (minimum) major concentration and are strongly encouraged to select a specific discipline, but they also have the option of creating an Individually Designed Interdisciplinary Major Concentration (IDIMC).

Portfolio Development and Professional Licensure In accordance with the Standards for Vermont Educators (Vermont State Board of Education, 1991), students seeking a license to teach must develop documentation that they can perform in ways that address State standards. Each candidate must assemble that documentation in a preprofessional portfolio according to program guidelines. While students have candidacy status, they should maintain a file which includes all materials from courses completed so that selected items can be included in the portfolio.

Application to Teacher Education Candidates interested in pursuing teaching as a career apply to the teacher education program of their choice. Applications are available in each departmental office. Once the candidate's application is complete, the program faculty will review the materials which include a record of academic performance at UVM, recommendations from University and public school faculty, evidence of superior course work, passing scores on PRAXIS I (or fulfillment of this requirement by one of the approved alternate options), as determined for Vermont, and other pertinent sources of information. All students must apply for acceptance into the teacher education segment of their program. Students are required to complete this application and gain acceptance before being eligible to enroll in the professional education courses. This includes: CESS students who are already enrolled as candidates in the teacher education programs; students who transferred to the CESS; and students in other colleges on campus who plan to maintain their primary affiliation with their home college while completing the SDE approved requirements in the CESS.

Students who meet the criteria and are eligible will be accepted. CESS students who do not meet the criteria for admission to Teacher Education will receive a warning of pending disenrollment letter. Students who are warned of pending disenrollment should meet with the program coordinator and determine if program completion is an option.

Students who have not successfully fulfilled the PRAXIS I requirement may appeal for conditional acceptance.

Application to Student Teaching If a candidate's application to a teacher education program is approved, the candidate completes a sequence of professional education courses and applies during the junior year to intern as a student teacher senior year. The candidate submits his/her portfolio and application to student teach to the Program Coordinator. The application lists the current set of criteria that permit a candidate to qualify for student teaching. Included among the criteria are a record of strong academic performance in program and University courses, recommendations from education faculty, and evidence of superior course work and passing scores on PRAXIS I as determined for Vermont. Once admitted to student teaching, the student must successfully complete the interview process and be accepted by an approved public school teacher/administrator before being placed for student teaching. After placement, the student will carry out an internship under the guidance of an approved cooperating teacher and department supervisor. Student teachers will be placed in Professional Development Schools or Partnership Schools. Although many students remain in the Burlington area, not all can be placed close to campus. Effort is made to accommodate student preference regarding placement site and the semester during which student teaching will occur. All students should be prepared to student teach in either the fall or spring semester of their senior year. Candidates must meet specific requirements to be recommended for licensure. These requirements are available in the Office of Student Services, 528 Waterman.

Note: Students who are not admitted to student teaching may appeal through the College Student Affairs Committee.

Application for Licensure Students who successfully complete a Teacher Education program are eligible to apply for licensure. The Licensing Newsletter which explains this process is available in 528 Waterman as well as on the web at www.uvm.edu/~cess/. Applications for licensure are ***only*** available from the Vermont State Department of Education (802-828-2445).

Teacher Assessment–PRAXIS Undergraduate Students: Students are required to submit passing scores for PRAXIS I (refer to chart) as part of their application to the professional portion of their Teacher Education program. If all three areas have not been passed, the student may appeal for conditional acceptance. Passing scores must be received by the program for all three content areas of PRAXIS I before the student is considered eligible for a teaching internship placement.

Teaching endorsements as listed on the chart require passing scores on PRAXIS II for Vermont licensure. Science endorsements require passing scores on both General Science as well as the specific area (e.g. Chemistry, Biology, etc.). Endorsement areas which have both multiple choice and a constructed response (essay) options require a passing score in one option for PRAXIS II. Refer to the Vermont Department of Education website for current information.

PBTP and Licensing Masters: Applicants will provide passing scores on PRAXIS I & PRAXIS II (if required for endorsement) before being admitted to the program. Students who receive conditional acceptance must provide passing scores for PRAXIS I & PRAXIS II (if required for endorsement) before being eligible for a teaching internship placement.

PRAXIS 1 Options:

1. Candidates for initial licensure may meet **either** the three individual Praxis I test scores (i.e., Reading–177, Writing–174, and Mathematics–175) **or** a composite score of 526 (i.e., the total of the three test scores).

2. The following assessments have been approved as alternatives to PRAXIS I. Students must meet both the total score as well as the minimum scores as equivalent to earning passing scores on PRAXIS I.

	Total Score	*Verbal/ English*	*Math/ Quantitative*
Graduate Record Exam (GRE)	1100	500	500
Scholastic Aptitude Test (SAT)	1100	500	500
ACT		22	22

PRAXIS II	
Art	Essay: 148
Biology	Multiple Choice: 161/Essay: 150
Chemistry	Multiple Choice: 150/Essay: 150
Earth Science	Multiple Choice: 158/Essay may be added.
Elementary	Multiple Choice: 148/Essay may be added.
English	Multiple Choice: 172/Essay: 160
General Science	Multiple Choice: 157/Essay may be added.
Mathematics	Multiple Choice: 141/Proofs, Models, & Problems, Part I: 154
Music	Multiple Choice: 153/Essay: 150
Physical Education	Multiple Choice: 147/Essay: 154
Social Studies	Multiple Choice: 162/Essay: 165

2003-2004 Teacher Examination Pass Rate – PRAXIS I Basic Skills
Reading: 95%; Writing: 98%; Mathematics: 90%.

Testing Requirements for Educator Licensing Brochure - http://www.state.vt.us/educ/new/html/maincert.html

Teacher Education/Art Education (Grades K-12)

The College works cooperatively with the Art Department in the College of Arts and Sciences to offer a program in Art Education which leads to both degree and licensure for grades PreK-12. Students fulfill course requirements in general education, professional art education, professional education courses, studio art, art history, and related subjects. Graduates satisfy College of Education and Social Services requirements for teacher licensure and partake in coursework in the Art Department in the College of Arts and Sciences. The program allows sufficient additional advanced courses as recommended by the Art Department for admission to graduate school.

Students must be enrolled in the College of Education and Social Services. Those admitted as first-year students or sophomores to the Art Education Program are considered Candidates in the Program. Admission as Majors is made at the beginning of the junior year following formal review procedures during the second semester of the sophomore year.

Students must meet with their advisors and get approval to set up student teaching and accompanying courses prior to enrolling in student teaching.

A minimum of 124 approved semester hours is required for the degree including three semester hours of teaching reading for teacher licensure.

Students are responsible for obtaining information regarding teacher licensure and degree requirements from the Office of Student Services, 528 Waterman, or the College Web site: www.uvm.edu/~cess/.

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall	Spr
HDFS 005–Human Development	3	–
Studio Art Foundation	3	3
Art History	3	3
General Education Courses	6	6
EDSP 005–Iss. Affecting Persons with Disabilities	–	3
EDSS 011–Race & Culture	–	1
Total	15	16

SOPHOMORE YEAR	Fall	Spr
Studio Art Foundation	3	–
Art History Elective	3	–
Studio Art	3	6
Physical Education Activities	1	1
General Education Courses	6	6
Elective	–	3
Total	16	16

Students apply to the Art Education Major during second semester of sophomore year. Students must be accepted in order to enroll in required methods courses.

JUNIOR YEAR	Fall	Spr
EDAR 177–Curriculum & Pract. in Elem. Art	4	–
EDAR 178Curriculum & Pract. in Middle/HS Art	4	–
Studio Art	6	6
Electives	3	3
EDAR 283–Current Issues in Art & Ed.	–	3
EDAR 284–Current Issues in Art & Ed.	–	3
* Literacy Requirement	–	3
Total	17	18

* EDSC 215, EDML 177 or EDLT 236

SENIOR YEAR	Fall	Spr
EDFS 203–Soc., Hist. & Phil. Found. of Ed.	3	–
Studio Art	6	–
Electives	6	–
EDSC 226–Teaching Internship	–	12
Total	15	12

Teacher Education/Early Childhood Education (Birth-Gr3)

The Early Childhood Education Program is designed to provide students with the perspectives and skills necessary to work with young children from birth through grade three in inclusionary, developmentally appropriate settings. These include the abilities to:

- Facilitate children's development of literacy, quantification, and inquiry skills.
- Offer instruction in an integrated day format.
- Assess educational progress from a portfolio perspective.
- Use educational materials in an open-ended fashion.
- And recognize and respect the diversity of family structures within our society.

The program involves a large field-based component and makes significant use of the UVM Campus Children's Center and elementary schools as practicum sites. Graduates of the program who successfully complete all requirements are eligible for licensure from the State of Vermont.

The Birth-Gr3 Professional Preparation Sequence involves three components. The first is a course in Child Development and a course in Family Relations. The child development course introduces students to the concepts that form the practical and theoretical foundation of the program's educational approach. The family relations course provides students a foundation in family dynamics and parent-child relationships and serves to emphasize the important links between children's home and school experiences. These two courses are taken prior to formal admission into the Birth-Gr3 program.

The second component is a three-part professional practices sequence. This sequence provides students a first exposure to the rationale, practices, and procedures used in the provision of developmentally appropriate educational experiences for young children. The sequence includes opportunities for observation and hands-on work with children, opportunities to assist teachers in the provision of developmentally appropriate educational experiences and to discuss with teachers

and other professionals the issues surrounding the provision of developmentally appropriate educational experiences.

The professional practices sequence is structured as three course blocks, taken sequentially. The first block course deals with techniques for observing and documenting children's development; the second deals with developmentally appropriate educational practices for children through age six (preschool/kindergarten); and the third for children between the ages of six and eight years (grades one through three). A significant portion of this professional practices sequence takes place in one or more preschools and elementary schools.

The third component is a two-semester student teaching sequence across the birth to eight-year age (preschool through grade three) range. This student teaching experience provides the opportunity to develop, implement, and assess (both in a cooperative and an independent fashion) developmentally appropriate educational practices. One experience would be in the Campus Children's Center and the other would be in a child centered, inclusionary grade K-3 setting.

The course of study consists of 128 credits which are divided into eight categories.

Major concentration in a liberal arts and sciences discipline
General Education courses
Professional Preparation Sequence
Health and Physical Education modules
Race and Culture course
Multicultural Electives
Physical Education Electives
Electives*

* The number of electives depends on the degree of course overlap in the General Education, major concentration, and the multicultural requirements.

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall	Spr
EDEC 063–Child Development	3	–
Physical Education Activity	1	–
Major Concentration	3	3
General Education Courses	9	6
EDEC 001–Intro to Early Education	–	4
HDFS 060–Family Context of Development	–	3
Race & Culture	–	1
Total	16	17

SOPHOMORE YEAR	Fall	Spr
EDEC 100–Inquiry & Pedagogy in Early Education	10	–
EDPE 197–Issues in Health Education or PEAC 021–Walking for Fitness	1	–
General Education Courses	3	–
Major Concentration	3	3
EDEC 189–Early Childhood Practices	–	12
Physical Education Activity	–	1
Total	17	16

JUNIOR YEAR	Fall	Spr
EDSP 005–Issues Affecting Persons with Disabilities	3	–
General Education Courses	6	–
Major Concentration	6	3
EDEL 156–Teaching Math for Meaning	–	3
EDEL 176–Language Arts & Literacy Skills	–	3
EDEL 177–Children's Lit & Literacy	–	3
EDEC 296–Field Experience (Literacy)	–	3
Multicultural Elective	–	3
Total	15	18

SENIOR YEAR	Fall	Spr
General Education Courses	3	–
Multicultural Elective	3	–
Major Concentration	9	–
EDEC 187–Field Practicum	–	12
EDEL 187–Planning, Adapting and Delivering Reading Instruction	–	3
Total	15	15

Education: Teacher Education/Early Childhood Special Education (Age 3-6)

The Early Childhood Special Education (ECSP) Program is designed to provide students with the perspectives and skills necessary to work with all young children from birth through kindergarten and their families in a range of family-centered, culturally responsive, inclusionary and developmentally appropriate settings. These include the abilities to:

- Promote children's learning and development within natural environments and/or inclusive settings;
- Recognize and respect the diversity of family structures, preferences, and participation levels;
- Offer instructional practices that are guided by and sensitive to the family and child, supported by meaningful assessment information, and linked to developmentally and/or individually appropriate curricula;
- Strive to foster collaborative relationships with family members, peers of the same discipline, and individuals across disciplines.

The ECSP program builds upon the early childhood competencies obtained through the Birth-Gr3 Early Childhood program and involves a large field-based component which makes significant use of the wide array of early intervention and early childhood services and supports within the campus community (UVM Campus Children's Center) as well as throughout the local community and region.

Specific Requirements

In addition to completing University and College requirements for all students, ECSP students complete both a sequence of professional courses related to early childhood and early childhood special education as well as an academic major concentration in an arts and science discipline.

The ECSP Professional Preparation Sequence begins with a series of coursework that build the foundation and skills for any educator working with young children and/or their families. This sequence begins with two foundation courses followed by a series of professional courses. The two foundation courses are HDFS 60 and EDEC 63. EDEC 63 (Child Development) serves to introduce students to the basic principles and research findings in the discipline of child development and how this knowledge can form the basis for educational practice. The second course, HDFS 60 (Contexts of Human Development), examines the context of development and in so doing establishes the foundation for recognizing that development is an interdependent and intertwined process.

The first professional course (EDEC 1) provides the theoretical rationale for the ECSP approach to early childhood special education as well as considerable opportunity to practice techniques for observing young children's development. Observational skills are an essential component of the ECSP Program since an awareness of children's interests and investigations forms the basis for the development and provision of appropriate educational experiences for young children.

The second professional course (EDEC 100) involves both a pre-student teaching internship at either the UVM Campus Children's Center or a community placement and extensive seminar work in the documentation of children's learning. Documentation is an essential element of the ECSP since a careful analysis of children's activity is the basis for child

assessment and the development of curriculum.

The third professional course (EDEC 189) is a full semester full time student teaching experience in either one of the rooms of the UVM Campus Children's Center or in a community placement. Over the course of the semester, students, under the supervision and mentorship of the classroom teachers, gradually assume more responsibility for all aspects of the curriculum as well as contact with families.

Once students complete EDEC 189, their professional course work becomes increasingly focused on learning to design services and supports for young children with diverse abilities and their families. EDSP 5 helps students gain a fuller appreciation for the issues affecting persons with disabilities, including the legal issues affecting the provision of services to individuals. CMSI 94 helps students gain a fuller understanding of the development of spoken language. Since issues related to early language development are a common element in working with young children with disabilities, an understanding of the process of language development is an essential component of all good teaching. ECSP 202 focuses on the characteristics of and interventions for infants, toddlers, preschools and kindergarten children who have disabilities and their families. The course reviews the nature of these disabilities and the strategies that are used for interventions. ECSP 211 covers the various assessment strategies that are used in early childhood special education to help determine eligibility; priorities, resources, and concerns of the family; strengths and areas of growth for the child; and the most effective ways to best support the child's developmental and educational growth. ECSP 210 focuses on curriculum planning to meet the needs of young children with disabilities and their families within home, center, or other settings (play groups).

The ECSP Professional Sequence is completed with ECSP 187, a student teaching experience in two settings (0-3 and 3-6) working with young children with diverse abilities and their families.

For more information, contact Dale Goldhaber (dale.goldhaber@uvm.edu) at 656-2025 or Susan Maude (susan.maude@uvm.edu) at 656-4018.

The course of study consists of 128 credits which are divided into eight categories:

- Major concentration in a liberal arts and sciences discipline
- General Education courses
- Professional Preparation Sequence
- Health and Physical Education modules
- Race and Culture course
- Multicultural Electives
- Physical Education Electives
- Electives*

* The number of electives depends on the degree of course overlap in the General Education, major concentration, and the multicultural requirements.

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall	Spr
EDEC 63, Child Development	3	–
Physical Education Activity	1	–
Major Concentration	3	3
General Education Courses	9	6
EDEC 001, Intro to Early Education	–	4
HDFS 60, Family Context of Development	–	3
Race & Culture	–	1
Total	16	17

SOPHOMORE YEAR	Fall	Spr
EDEC 100, Inquiry & Pedagogy in Early Education	10	–
General Education Electives	3	–
EDPE 197, Issues in Health Education (or PEAC 21, Walking for Fitness)	1	–
Major Concentration	3	–
EDEC 189, Early Childhood Practices	–	12
EDSP 5 Issues Affecting Persons w/Disabilities	–	3
Physical Education Activity	–	1
Total	17	16

JUNIOR YEAR	Fall	Spr
ECSP 202 Char. Of Children with Disabilities	3	–
ECSP 211, Assmt Intervention Early Childhd Spec Ed	4	–
Major Concentration	6	–
General Education Courses	3	6
CMSI 94 Develop of Spoken Language	–	3
ECSP 202 Char. Of Children with Disabilities	–	3
ECSP 210 Assessment in ECSP	–	4
Multicultural elective	–	3
Total	16	16

SENIOR YEAR	Fall	Spr
Multicultural elective	3	–
Major Concentration	12	3
ECSP 187, Field Practicum	–	12
Total	15	15

Teacher Education/Elementary Education (Grades K-6)

The Elementary Education Program prepares teachers for assignments in grades kindergarten through six. The Bachelor of Science in Education is awarded upon satisfactory completion of the approved program which includes a planned sequence of professional courses, field experiences, and a full-semester internship experience.

The Elementary Education Program is a designed sequence of professional course work that achieves coherence from its theme "teaching all children strategically in diverse communities." Embedded in a state known for its progressive schooling traditions, Elementary Education students have ample opportunity to learn about and practice the art and science of teaching. Through a web of unique relationships with area schools, Elementary Education majors build friendships with a diverse variety of children by the second year of their professional program. Several features distinguish the program:

Blocked Professional Course Work Grounded in a theoretical orientation that seeks to limit the necessity for piecemeal education, faculty of the program have designed course work that fits together in naturally occurring curricular blocks: literacy (reading/writing, children's literature, mathematics), inquiry (social education, science, visual and performing arts), and the professional internship (student teaching, classroom management, and portfolio development).

Integrated Fieldwork Professed theory about teaching is constantly exposed to the reality of public school practice. Each curriculum block has field experience attached to it. Students are thus placed in situations where theory and practice reside in reciprocal tension.

Authentic Assessment The State of Vermont requires a results-oriented demonstration of teaching competence to qualify for the teaching license. The Elementary faculty have built in portfolio driven authentic assessments at every step of the professional program. Interns thus learn the portfolio process from the inside out and are able to apply it to themselves while learning to apply it within their public school classes.

Full Inclusion The State of Vermont has the highest

rate of inclusion of learners with special challenges in the regular classroom setting. Being educated at UVM means elementary education students learn about and practice the application of instructional adaptations for learners of exceptional need.

Elementary Education Curriculum The elementary education curriculum includes a general education component of 60 credits from the academic areas outlined earlier. Included in the 60 hours must be two semester hours of physical education activities. Students are required to complete an approved major concentration, consisting of at least 30 hours of study in a liberal arts and sciences discipline. Specific information may be obtained from advisors or from the Office of Student Services, 528 Waterman or at the website: www.uvm.edu/~cess/stservices/majorcon. In addition to the major concentration and professional education requirements, certain courses are recommended to meet specific state and national requirements in elementary education.

Full-time students enroll in 12 to 18 credits. Elementary education students enroll in the required education courses each semester, along with several additional required courses.

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall		Spr
EDEL 010–Intro to Teaching & Learning	1		1
EDEL 011–Computers in El. Ed. Classroom	3	or	3
EDEL 024–Learners and Learning Process	3	or	3
Major Concentration	3		6
Physical Education Activity	1	or	1
Diversity	1-3	or	1-3
General Education Courses	6		6
Total	12-18		12-18

SOPHOMORE YEAR	Fall		Spr
[1]EDEL 056–Teachers & the Teaching Process	3	or	3
[1]EDEL 178–Meeting Indiv. Needs: Assessment & Insruction	3	or	3
[1]EDSP 005–Issues Affecting Persons With Disabilities	3	or	3
EDPE 197–Issues in Health Education	1	or	1
EDPE 100–Integrating Movement Across the Elementary School Curriculum	2	or	2
Major Concentration	3		6
Physical Education Activity	1	or	1
General Education Courses	6		6
Total	12-18		12-18

During the sophomore year, students must complete an Application to Teacher Education form available in 533 Waterman Building. Students will follow requirements specified in the Application to Teacher Education. Students will not be permitted to enroll in advanced education courses until they have been accepted to teacher education. The advanced courses include:

JUNIOR YEAR	Fall		Spr
[2]EDEL 155–Lab Experience in Inquiry	3	or	3
[2]EDEL 156–Teaching Science for Meaning	3	or	3
[2]EDEL 157–Social Ed. & Social Studies	3	or	3
[2]EDEL 158–Teaching Science for Meaning	3	or	3

ACADEMIC MAJORS

Requirements for majors are listed at http://www.uvm.edu/~cess/stservices/?Page=requirements.html

Major Concentrations
(Early Childhood, Elementary, Family and Consumer Sciences, and Physical Education)

Animal Sciences*
Anthropology
Biological Science
Chemistry
Classical Civilization
Communication
Communication Sciences
Earth Science
English
Environmental Studies
Exercise and Sport Science
French
Geography
German
Greek
History
Human Development and Family Studies
Individually Designed Interdisciplinary (IDIMC)**
Latin
Mathematics
Music
Nutrition and Food Sciences
Physics
Psychology
Psychology and Comm. Sciences
Religion
Sociology
Spanish
Studies in Cultural Diversity
– Africa
– East Asia
– Latin America
– Middle East

Majors
(Secondary Education)

Animal Sciences*
Biological Science
Chemistry
Earth Science
English
Environmental Studies***
French
Geography
German
History
Latin
Mathematics
Physics

Minors
(Secondary Education)

Anthropology
Coaching****
Economics
English
Environmental Studies***
French
Geography
German
History
Latin
Mathematics
Political Science
Psychology
Russian
Sociology

Broadfield Majors
(Secondary Education)
Biological Sciences
Economics
Geography
History
Physical Science
Political Science

*Animal Sciences is an aternate route for Biology endorsement.

**All students enrolled in the Middle Level program must complete the IDIMC).

***Environmental Studies is not a Vermont State Department approved endorsement area. Students in Secondary Education who select Environmental Studies will need a second 30-hour major from the above list of majors in order to be eligible for a Vermont Teacher's license and their first content endorsement. Students who are completing a minor in Environmental Studies will not be eligible

[3]EDEL 175–Lab Experience in Literacy	3	or	3
[3]EDEL 176–Language Arts & Literacy Skills	3	or	3
[3]EDEL 177–Children's Lit. & Literacy	3	or	3
[4]EDEL 187–Planning, Adapting and Delivering Reading Instruction	3	or	3
Major Concentration	3		3
Electives	3		3
Total	12-18		12-18

Students are required to complete a student teaching internship application in their junior year before being assigned a placement as seniors. Students will be notified by the Elementary Education Program (656-3356) of a general meeting and are expected to attend to initiate this process. Students will follow requirements specified in the Application to Student Teaching. The course work for this stage of the program follows.

SENIOR YEAR	Fall		Spr
[5]EDEL 185–Student Teaching Internship	12	or	12
[5]EDEL 188–Principles of Classroom Management	3	or	3
EDFS 203–Social, Hist. & Phil. Foundations of Education	3	or	3
Major Concentration	6	or	6
Electives	6	or	6
Total	12-18	or	12-18

A minimum of 127 approved credit hours is required for the degree.

[1] Courses taken concurrently
[2] Courses taken concurrently
[3] Courses taken concurrently
[4] EDEL 187 must be taken after completion of the Literacy Block and prior to student teaching
[5] Courses taken concurrently

Teacher Education Family and Consumer Sciences Education (Grades 5-12)

The Family and Consumer Sciences Education Program is an interdisciplinary program that includes a sequence of courses in: family, personal, and consumer issues, food and nutrition, consumer management, human development, and housing. The variety of courses taken for the major expands career possibilities.

Because of the interdisciplinary and comprehensive scope of Family and Consumer Sciences Education, graduates with this major have a variety of career alternatives in business, social agencies, and different types of educational programs for youth and adults. Graduates are licensed to teach in public schools in Family and Consumer Sciences fields such as family studies, child development, consumer education, food and nutrition, housing and interiors, and resource management found in middle, junior, and high school programs.

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall	Spr
NFS 043–Fund of Nutrition	3	–
HDFS 5 Human Development	3	–
Physical Education Activity	1	–
General Education Courses	9	6
NFS 053/054 Basic Concepts of Foods	–	4
Major Concentration	–	3
HDFS 60 Family Context of Development	–	3
Race and Culture	–	1
Total	16	17

SOPHOMORE YEAR	Fall	Spr
CDAE Elective	3	–
EDSP 005 Iss Affecting Pers w/Disabilities	3	–
Physical Education Activity	1	–
EDFC 123 Meth in Nutrition Educ	3	–
NFS 143 Nutrition in the Life Cycle	3	–
General Education Courses	3	3
Major Concentration	–	3
CDAE 15 Design Strategies	–	3
HDFS Elective	–	3
Electives	–	3
Total	16	15

JUNIOR YEAR	Fall	Spr
* Literacy Requirement	3	–
EDFC 220 Observ & Part in Public Schls	3	–
Housing Requirement	3	–
Major Concentration	6	9
EDFC 221 Mgmt of Schl Youth Org	–	2
General Education Courses	–	3
Elective	–	3
Total	15	17

* EDSC 215, EDML 177 or EDLT 236

SENIOR YEAR	Fall	Spr
EDFC 225 Teaching Practicum	12	–
EDFC 222 Curr Dev in Human Sci.	–	3
EDFC 224 Eval Tech in Human Sci.	–	3
Major Concentration	–	9
Total	12	15

Teacher Education / Middle Level Education (Grades 5-9)

The organizing theme of the Program is "Education for High Achievement and Personal Efficacy." The Program provides a minimum of four supervised internships whereby university students participate in the most highly successful middle level school programs that are within reasonable commuting distance.

Students who satisfactorily complete the program earn a minimum of 127 credit hours of study across three areas: General Education, Academic Concentration, and Professional Studies. This design ensures that each student achieves a balance of academic and professional preparation to meet the expectations and challenges associated with teaching at any level. During the students' first year they enroll in a required advising course, EDML 10 "Introduction to Teaching," where faculty guide them in devising an eight semester plan that is balanced across three areas of study. Those three areas are briefly described below.

General Education Students earn at least 39 credits in liberal arts and sciences from an array of disciplines such as: English, Mathematics, Social Science, History, Political Science, Humanities, Diversity, Art and Physical Education. Six credits are designated as Electives. Most of these courses are generally completed during the first three to four semesters, and since students sometimes transfer from one program to another, these credits easily transfer to other degree programs in the College of Education and Social Services as well as other colleges within the University.

Academic Concentration Every Teacher Education student is required to complete an academic major referred to as a "major concentration." Students enrolled in the Middle Level Program organize their concentration around two disciplines in order to accomplish the middle level licensure requirement for two teaching areas. This design is referred to as an IDIMC (Individually Designed Interdisciplinary Major Concentration), and it consists of 18 credits in each of two disciplines for a total of 36 credits. For example, one student might choose to combine Science and English while another decides on Mathematics and Social Studies. These academic combinations enable a student to teach in multiple areas as a member of a middle level team consisting of two to five or more teachers. Program advisors and students work closely together, especially over the first two years, to design an

IDIMC that accommodates the student's interests and fits the needs of middle level teachers. One of the two areas must be an approved Highly Qualified Teacher (HQT) content area.

Professional Studies Courses that concentrate on the professional work of teaching, span all four years. These studies are grounded in theory, research and policies associated with the very best practices in middle level education. Studies of young adolescent learning and development, teachers and teaching, literature for young adult readers, special education and technology are taken in the first two years as Pre-Professional Requirements. These courses include a minimum of one field placement with a middle level team of teachers. More heavily field-linked courses in curriculum, pedagogy, assessment, team organization, literacy, mathematics, and evaluation and assessment are taken the last two years. Required professional courses over four years total of 57 credits.

Fieldwork The faculty is committed to providing students as much field experience as possible and practical. Four courses (EDML 56, 261, 271, 285) are primarily field-based, and while taking these courses students will enjoy working with teachers on four different teaching teams. Emphasis is placed on high levels of integration between campus-based learnings and field experience to insure that students are sufficiently oriented and prepared for the real work of exemplary middle level schools.

Cohort Cooperation and collaboration among teachers is a hallmark of middle level teaching teams. That same spirit is given emphasis through building a cohort of middle level teacher education students who receive group advising, who take courses together, and who participate in professional activities such as school events and professional conferences. Additionally, the Middle Level Teacher Education Program includes a Teacher Advisory Committee composed of exemplary middle level teachers from area schools who consult with students and faculty about the Program, field placements, job searches and other issues related to advancing one's professional development and beginning career.

Professional Portfolio In the aforementioned EDML 10 course, students are introduced to the process of documenting and preserving samples of their professional work and development. These samples are maintained in individual portfolios that grow cumulatively semester by semester. A final Professional Portfolio is assembled during the student teaching semester to more fully define the professional background and aspirations of the novice teacher. These final portfolios constitute completion of the Program, and they are valuable to seniors reflecting on their preparation and accomplishments as well as beginning a job search. These full portfolios are drawn upon to create a more succinct "presentation portfolio" for use in interviews. Seniors also receive faculty guidance in creating resumes and applying and interviewing for teaching positions. The demand for teachers well prepared for teaching middle level schools is such that the portfolio is an excellent and comprehensive way to present one's candidacy.

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall	Spr
EDEL 011- Computers in El. Ed. Classroom	3	–
Diversity	1	–
EDML 010-Introduction to Teaching	1	1
Physical Education Activities	1	1
General Education Courses	9	6
EDML 024-Learners, Development & Learning	–	3
IDIMC	3	3
Total	17	16

SOPHOMORE YEAR	Fall	Spr
EDML 056-Teachers & the Teaching Process	3	–
EDSP 005- Issues Affecting Persons w/Disabilities	3	–
EDML 177-Children's Lit. & Literacy	3	–
IDIMC	6	6
General Education Courses	3	6
Electives	–	3
Total	18	15

JUNIOR YEAR	Fall	Spring
EDML 260-Teaching Young Adolescents	6	–
EDML 261-Teaching Practicum I	3	–
IDIMC	6	6
Electives	3	3
EDML 270-Middle School Organiz. & Pedagogy	–	6
EDML 171-Teaching Practicum II	–	3
Total	18	18

SENIOR YEAR	Fall	Spr
EDFS 203- Soc, Hist. & Phil. Found. of Ed.	3	–
IDIMC	6	–
Electives	3	–
EDML 285-Student Teaching Internship	–	12
EDML 286-Internship Support Seminar	–	3
EDML 287-Literacy & Mathematics	–	3
Total	12	18

Teacher Education/Music Education (PreK-12)

The College works cooperatively with the Music Department in the College of Arts Sciences to offer a program in Music Education which leads to both degree and licensure for grades PreK-12.

The curriculum in music education, leading to the degree of Bachelor of Science in Music Education, is recommended to students who have sufficient training and musical ability to justify a career in music. Prospective students must audition before entering the program. Those admitted as first-year students or sophomores to the Music Education program are considered *Candidates* in the program. Admission as a *Major* is made at the beginning of the junior year following formal review procedures during the second semester of the sophomore year. Graduates are qualified for positions as instructors of music in public schools.

A minimum of 128 approved semester hours is required for the degree including three semester hours of teaching reading for teaching licensure. Students must pass the piano proficiency and PRAXIS I examinations prior to student teaching. Students are responsible for obtaining information regarding teaching licensure and degree requirements from the Office of Student Services, 528 Waterman, or website: www.uvm.edu/~cess/.

Pedagogy classes are taken as available.

A typical, but not all-inclusive, program outline follows:

FIRSTYEAR	Fall	Spr
HDFS 005, Human Dev	3	–
MU 021 Beginning Group Piano	1	–
MU 053 Harmony and Form I	3	–
MU 054 Harmony and Form Lab I	1	–
Pedagogy	4	2
MU 133 Applied Lessons	2	2
Ensemble	1	1
General Education Courses (Math, Science)	3	3
Diversity Course	–	1
MU 022 Group Piano	–	1
MU 055 Harmony and Form II	–	3
MU 056 Harmony and Form Lab II	–	1
MU 085 Introduction to Music Education	–	1
Physical Education Activity	–	1
Total	18	16

Students apply to the Music Education major during the second semester of their sophomore year

SOPHOMORE YEAR	Fall	Spr
MU 023 Group Piano	1	–
MU 060 Introduction of Music	3	–
Pedagogy	2	–
MU 111 Music History and Literature I	3	–
MU 153 Harmony and Form III	3	–
MU 154 Harmony and Form Lab III	1	–
Physical Education Activity	1	–
MU 133 Applied Lessons	2	2
Ensemble	1	1
Pedagogy	–	2
MU 112 Music History and Literature II	–	3
MU 155 Harmony and Form IV: Twentieth-Century Techniques	–	3
MU 156 Harmony and Form Lab IV	–	1
MU 181 Conducting Or MU 253 Orchestration	–	3
General Education Course (Humanities or Social Science)	–	3
Total	16	18

JUNIOR YEAR	Fall	Spr
MU 281 Advanced Conducting Or MU 280 Historical & Philosophical Foundations of Music Ed.	3	–
EDSP 005 Issues Affecting Persons with Disabilities	3	–
General Education Courses (Humanities or Social Science)	3	–
MU 141 Applied Lessons	2	2
Ensemble	1	1
Electives	3	3
MU 276 - Elementary Music Ed. Methods	–	3
MU 181 Conducting Or MU 253 Orchestration	–	3
* Literacy Requirement	–	3
Total	15	15

* EDSC 215, EDML 177 or EDLT 236

SENIOR YEAR	Fall	Spr
Ensemble	1	–
MU 141 Applied Lessons	3	–
MU 250 Senior Recital	1	–
MU 278 - Secondary Music Ed. Methods	3	–
MU 281 Advanced Conducting Or MU 280 Historical & Philosophical Foundations of Music Ed.	3	–
EDFS 203 Soc., Hist., & Phil. Found. of Ed.	3	–
Electives	3	–
MU 290 Teaching Internship	–	12
Total	17	12

Teacher Education/Physical Education (PreK-12)

The Professional Physical Education Program qualifies candidates for licensure to teach in grades PreK-12. Course work around the program theme, Moving and Learning, includes a series of courses designed to provide a background to the field of physical education. Specialty courses assist the student in the development of physical education program content and teaching skills important in providing developmentally appropriate programs of physical education to children and youth in today's schools. Laboratory experiences in schools throughout the program aid students in recognizing the relationship between theory and practice.

Courses in general education and professional education as well as a liberal arts and sciences major/major concentration are required. A major concentration in Exercise and Sport Science is available to students in the Physical Education program.

A typical but not all-inclusive program outline follows:

FIRST YEAR	Fall	Spr
EDPE 021–Foundations of Phys. Ed.	3	–
EDHE 046–Personal Health	3	–
PEAC 125–Team Sports 1	1	–
PEAC 050–Individual Sports	1	–
Major Concentration	3	6
Gen. Education Courses	6	6
PEAC 126–Team Sports 2	–	1
PEAC 070–Racquet Sports	–	1
AT 157–Care & Prevent Athletic Injury	–	3
Total	17	17

SOPHOMORE YEAR	Fall	Spr
EDPE 023–ARC Emergency Response*	3	–
HDFS 005–Human Development	3	–
ANPS 019–Hum. Anatomy & Physiology	4	–
PEAC 016–Gymnastics	1	–
PEAC 028–Conditioning	1	–
Major Concentration	6	6
Diversity	–	1
EDPE 104–Phys. Ed. Teaching Experience	–	5
ANPS 020–Hum. Anatomy & Physiology	–	4
PEAC 190–Dance	–	1
PEAC 105–Outdoor Recreation	–	1
Total	18	18

*or evidence of American Red Cross Basic Emergency Response certification

JUNIOR YEAR	Fall	Spr
EDPE 105–Phys. Ed. Teaching Exper.	5	–
EDPE 167–Exercise Physiology	4	–
EDPE 220–Sport in Society	3	–
EDPE 260–Adapted Physical Activity	3	–
General Education Courses	3	3
EDPE 155–Phys. Ed. in Secondary Schools	–	3
EDPE 166–Kinesiology	–	3
EDPE 240–Motor Skill Learning & Control	–	3
Major Concentration	–	3
Total	18	15

Students are required to complete a student teaching application before being assigned a placement.

SENIOR YEAR	Fall	Spr
* Literacy Requirement	3	–
EDFS 203–Soc., Hist., & Phil. Found. of Ed. or EDFS Elective	3	–
Major Concentration	6	–
Electives	3	–
EDPE 181–Student Teaching	–	12
EDPE 182–Student Teacher Seminar	–	2
Total	15	14

* EDSC 215, EDML 177 or EDLT 236

Teacher Education/Secondary Education (Grades 7-12)

The Secondary Education Program prepares teachers to work with students with diverse needs in public school classrooms in grades 7–12. The curriculum includes general education; a major, a minor, or a broadfield major; a professional education component; and electives. A minimum of 124 approved semester hours is required for the degree. Specific requirements, including PRAXIS information, as approved by the State Department of Education, may be obtained from the Office of Student Services, 528 Waterman. Program information is also available from the Secondary

Education Program, 405A Waterman or on the web (http://www.uvm.edu/~cess/). During the first two years, students concentrate on completing general education and major/minor requirements, while also taking selected coursework in education. The majority of professional education coursework is completed in the junior and senior years.

General Education Component (Minimum of 27 credits) The general education courses must include the following courses.

English Composition and English Literature
Science
Mathematics
U.S. History
American Government
Psychology 1
Humanities (Philosophy, Religion, Foreign Language)
Physical Education activities (2 semester hours total)
Race and Culture (EDSS 11 or approved equivalent)

Academic Major and Minor Components (major minimum of 30 credits, minor minimum of 18 credits or broadfield major of 48-52 credits): Students who successfully complete their Teacher Education programs are recommended for licensure with a first endorsement in their major.

Professional Education Component (45 credits) By the time students begin the intensive professional education component of their program as juniors, they should have completed most of their general education requirements, have taken 12 credits of professional education coursework, and be well into their academic major (15-18 credits completed) and their academic minor (six-12 credits completed). Students must complete the remainder of their requirements as they complete the following phases of the professional education component:

I.Exploring Learners' Needs in the Context of Schools: EDFS 203, EDSC 207, 209.

Following completion of this first phase, students must submit their Initial Portfolio and their application to the Teacher Education Program. The Initial Portfolio documents learning, professional knowledge, colleagueship, advocacy and accountability. Provided the Initial Portfolio is assessed as satisfactory, the student has achieved passing scores on PRAXIS I, has a minimum 2.6 GPA overall, 2.6 in his or her major, and was successful in EDFS 203, EDSC 207 and 209 (3.0 or better), the student is accepted into Teacher Education and may begin work on the second phase of the program.

II.Designing and Adapting Instruction: EDSC 215, 216 and subject methods.

Subject methods for major: EDSC 225 (Social Studies), EDSC 227 (Science), EDSC 240 (English), EDSC 257 (Mathematics), or EDSC 259 (Foreign Languages).

During this phase of the program, prior to student teaching, students must have an overall GPA of 3.0 and a minimum GPA of 2.75 in their major. Following a successful faculty review of a student's records, he or she is nominated for a placement. Students must successfully complete the interview process with school personnel in order to be confirmed for student teaching. Students complete a semester of full-time student teaching as the third phase of the program.

III.Achieving Results in Schools: EDSC 226, 230.

As students complete their degree program, each licensure candidate must submit a portfolio which documents competence with program and state licensure requirements (ROPA). Recommendation for licensure is based on successful completion of student teaching, an overall grade-point average of 3.0, as well as submission of a satisfactory Licensure Portfolio, that meets state accreditation standards.

Student's Responsibility: Information about application and assignment procedures for the Secondary Education Program may be obtained from 405A Waterman Building. Students are responsible for obtaining information regarding the process and requirements, and for notifying the office as to changes in their status, address, or intentions for completion of their program.

Language Proficiency: A Language Proficiency Test is required for the Secondary Education Foreign Language majors.

Speech/Theatre: All students must demonstrate competence in communication by taking a speech or theatre course or by submitting evidence of competence (go to 405A Waterman for more information).

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall	Spr
EDSC 050-Exploring Education	3	–
Minor	3	–
Race & Culture	1	–
Major	3	6
General Education Courses	6	6
Physical Education Activity	–	1
EDSP 005	–	3

SOPHOMORE YEAR	Fall	Spr
Physical Education Activity	1	–
EDSC 011	3	–
Major	3	6
General Education Courses	9	3
Minor	–	6
Field based experience (advisor approved CESS elective)	–	3

JUNIOR YEAR	Fall	Spr
EDSC 207-Adoles. Development: Educational & Psychological Perspectives	3	–
EDSC 209-Practicum in Teaching	3	–
EDFS 203-Soc., Hist. &Phil. Found. of Ed.	3	–
Major	6	6
EDSC 215-Reading in Secondary Schools	–	3
EDSC 216-Curriculum, Instruction & Assessment for Sec Schl Teachers	–	3
Special Methods	–	3
Minor	–	3

SENIOR YEAR	Fall		Spr
EDSC 226-Teaching Internship	12	or	12
EDSC 230-Teaching for Results	3	or	3
Minor	6	or	6
Electives	4	or	4

Postbaccalaureate Teacher Preparation Program

The Postbaccalaureate Teacher Preparation Program is designed for individuals who have a bachelor's degree from an accredited four-year institution and who want to become licensed to teach in Vermont. The basic program fulfills the professional education requirements for state licensure. Areas and levels of licensure include:

- Birth-Grade 3: Early Childhood Education
- Grades PreK-12: Art, Music, Physical Education
- Grades K-6: Elementary
- Grades 5-9: Middle Level
- Grades 5-12: Family and Consumer Sciences
- Grades 7-12: Secondary [English, Foreign Language (French, German, Latin, Spanish), Mathematics, Science (Animal Sciences*, Biological Science, Chemistry, Earth Science, and Physics), Social Studies (Economics, Geography, History, and Political Science).

*Animal Sciences is an alternate route for Biology Endorsement.

Applicants to the Postbaccalaureate (Postbac) Teacher Preparation Program must meet the following entrance criteria:

1. Hold a bachelor's degree from an accredited institution of higher education.
2. Possess a general education background based on those studies known as liberal arts which embrace the broad areas of social and behavioral sciences, mathematics, biological and physical sciences, the humanities, and the arts.
3. Demonstrate a commitment to the teaching profession.
4. Have a minimum overall GPA of 2.5 in undergraduate course work.
5. For Art candidates: Previous couse work must include 36 credit hours of appropriate studio art and 9 hours of art history.
6. For elementary candidates: Previous coursework must include 30 semester hours in a single liberal arts discipline.
7. For middle level candidates: Previous coursework must include two approved areas of concentration, with 18 credits in each.
8. For secondary candidates: Previous coursework must include a minimum of 30 semester hours with a minimum GPA of 2.75 in one of the academic areas listed below to meet Vermont state licensure requirements for the major academic concentration.

Middle Level and Secondary Education also have a master's degree option offered jointly by the College of Education a nd Social Services and the Graduate College.

Secondary Majors: Biological Science, Chemistry, Earth Science, English, French, Geography, German, History, Latin, Mathematics, Physics, and Spanish.

Secondary Broad Field Majors: Biological Science, Economics, Geography, History, Physical Science, Political Science.

Middle level students are required to have at least 18 credit hours in each of two disciplines with at least one area being Highly Qualified Teacher (HQT) approved.

The Post-Baccalaureate curriculum includes both undergraduate and graduate courses. Nine graduate credits may apply toward the M.Ed. Degree at UVM, contingent on acceptance into the Graduate College.

The deadline for applications to the graduate licensure programs in Secondary Education and Middle-Level Education is March 15 for the next academic year. Course work begins during the summer or fall, depending upon the area of licensure. Applications are accepted and considered only once each year with updated informational materials and application forms available in January. Requests for further information about the Middle Level and Secondary Education PBTP Program and application forms may be obtained by contacting the PBTP Coordinator, Middle Level or Secondary Education Program, 405 Waterman Building, (802) 656-1411.

Request for further information about the Physical Education PBTP program and application forms may be obtained by contacting the Physical Education Program, 208 Patrick Gymnasium, (802) 656-4456. Applications for qualified applicants for the Elementary Education Postbaccalaureate Teacher Preparation Program are reviewed on an ongoing basis. Acceptance to begin in a given semester is based on availability of courses and placements at field sites. Requests for further information about the PBTP Elementary Education Certification Program and application forms may be obtained by contacting the Elementary Education PBTP Coordinator, Elementary Education Program, 533 Waterman Building, (802) 656-3356.

The Art Education PBTP application is available at the College Web site at: www.uvm.edu/~cess/.

Curriculum and Instruction: Licensure Master of Education Program for Secondary Education (M.Ed.) Accelerated Master's Degree Option (B.S./M.Ed.)

Within Curriculum and Instruction, the **Licensure Master of Education program for secondary teachers** is designed for those students who aspire to earn both a master's degree and a license to teach in public secondary schools. The program particularly welcomes students from UVM and northeastern colleges and universities majoring in arts and sciences, agriculture and natural resources who have completed majors in social sciences, science, mathematics, etc. Students will prepare for licensure to teach in grades seven through twelve in one academic year and two summers. With additional study, an **endorsement for the middle grades** may be earned.

Accelerated Licensure Master of Education. UVM Students who are in their third year of study for a Bachelor's degree may apply to the **Accelerated Licensure Master of Education Program.** These students, when accepted, may complete nine semester hours, six of which may be counted toward the minimum requirements for the Master's degree. Requests for further information and application forms may be obtained by contacting the Secondary Education Program Coordinator, 405A Waterman Building, (802) 656-1411. Qualified candidates would be studying in a major in an approved licensing area.

Inquiries regarding these programs should be addressed to the Secondary Education support person at (802) 656-1411.

Minor in Human Development and Family Studies

The minor in Human Development and Family Studies affords students a foundation in the processes of development across the life span, focusing on individual development, family relationships, and major influences on both.

This minor cannot be the sole minor for sociology or psychology majors but is acceptable as a second minor, especially for persons interested in careers involving work with families and youth. For other majors, it can be the sole minor.

Requirements: Eighteen hours including HDFS 5, 60, 65; three 100 or 200 level HDFS courses except 291, 296. This minor cannot be the sole minor for sociology or psychology majors but is acceptable as a second minor, especially for persons interested in careers involving work with families and youth.

Minor in Special Education

The minor in special education is for udergraduate students wishing to learn more about special education in their career path, as well as enhancing their skills teaching students with diverse needs. Students apply to the minor through contacting the Special Education Program in the Department of Education. A total of 18 hours (6 courses) of coursework is required, at least 9 hours of which must be at the 100 level or above.

Course offerings cover the areas of foundations of special education, assessment practices, and methods for supporting students with disabilities in general education classrooms.

A total of 18 hours of coursework is required, at least nine hours must be at the 100-level or above. Minor requirments include: EDSP 5; select two of the following courses EDSP 217, EDSP 224, EDSP 280, EDSP 290, EDSP 295; and complete three electives (nine hours) from the core courses above and the following electives EDSP 200, EDPE 260, CMSI 1, CMSI 2, CMSI 20, CMSI 94, CMSI 285, CMSI 299.

The College of Engineering and Mathematical Sciences

The College offers stimulating, professionally-oriented programs for students interested in careers in computer science, engineering, and mathematics. Computer science develops creative problem-solving ability, along with essential skills in current programming and computing environments. It offers the flexibility to gear studies toward business, science, engineering, mathematics, and the arts. Engineering education combines the study of mathematics and the physical, life, and engineering sciences with application to the analysis and design of equipment, processes, and complete systems. The breadth and flexibility of the engineering programs provide a sound background for engineering practice in public or private domains, for graduate study in engineering and science, and for further professional study in such fields as business, law, or medicine. Engineering management, offered in cooperation with the School of Business Administration, combines a basic education in an engineering discipline with the study of management concepts and techniques. Mathematics and statistics are designed to train students in critical thinking, problem solving, and sound reasoning, while developing a strong level of technical competence and a substantial breadth of exposure to other fields. Bachelor of Science degrees in each of these disciplines provide distinctive recognition based on challenging course work, valuable field experience, and intensive student-faculty interaction.

DEGREE PROGRAMS

The following degrees are offered in the College. Various options in each degree are described under the individual degree program.

Bachelor of Science in Civil Engineering
Bachelor of Science in Computer Science
Bachelor of Science in Electrical Engineering
Bachelor of Science in Engineering Management
Bachelor of Science in Environmental Engineering
Bachelor of Science in Mathematics
Bachelor of Science in Mechanical Engineering

The Bachelor of Science degree program may be completed with an approved major in one of the following fields:

Computer Science and Information Systems
Statistics

ACADEMIC STANDARDS

In order to continue as a major in the College of Engineering and Mathematical Sciences, a student must achieve a 2.0 cumulative grade-point average at the end of the semester in which 60 cumulative credit hours have been attempted. No more than three repeated course enrollments are allowed during this 60-credit period. In the case of transfer students, applicable transfer credits will be included in determining the 60 credit hours, but grades in these courses will not be included in the grade-point average.

Students who receive a cumulative or semester grade-point average of less than 2.0 will be placed on trial. Students who have failed half their course credits for any semester, or who have had two successive semester averages below 2.0, or three successive semesters in which their cumulative grade-point average falls below 2.0, are eligible for dismissal.

To receive a degree, students must have a minimum cumulative average of 2.0. Students must complete 30 of the last 45 hours of credit in residence at UVM as matriculated students in the College of Engineering and Mathematical Sciences. Additional degree requirements are specified for each major.

No more than three grades of D, D+, or D- in the courses normally taken as part of the junior and senior curriculum in the student's major program will be acceptable. Requirements in each department are specified by the respective program curriculum committees.

A course may not be taken for credit if it is a prerequisite to one for which credit has already been granted, except by permission of the student's advisor.

Only two credits of physical education will count toward the total credits needed.

Students must comply with the degree requirements as stated in a single catalogue edition in place during the time they are enrolled. The catalogue edition to be followed is the one in effect at the time the student enrolls at UVM, unless the student requests in writing to follow an edition that is published subsequently during his/her enrollment at UVM. Students may not mix requirements from different catalogues.

First year students: Student who receive a cumulative GPA less than 1.67 after the first year are in danger of not being able to complete a degree in the College of Engineering and Mathematical Sciences. These students will be required to reassess their academic direction with the aid of their advisor and the Academic Dean.

MINORS, HONORS THESIS AND CO-OP PROGRAMS

Minor in Computer Science A Computer Science Minor consists of 18 credits in computer science to include 100 or 103, 104, and three additional credits at the 100 level or above. Some Computer Science courses require additional prerequisites.

Minor in Electrical Engineering A minor in Electrical Engineering consists of at least 19 credit hours in Electrical Engineering courses distributed as follows: 3, 81, 4, 82, plus at least nine credit hours numbered above 101. Prerequisite courses for the minor are Math. 21, 22, 121, 271 (or 230) as well as Physics 31, 21, 42, and 22. Each student in the minor program will be assigned an Electrical and Computer Engineering faculty advisor who will assist the student in developing an individualized plan of study. The plan of study of the minor must be approved by the Electrical and Computer Engineering faculty advisor.

Minor in Mathematics

Pure Mathematics: Math 21 (or equivalent), 22, 52 or 121, and nine additional credits in Mathematics courses numbered 100 or above. Computer Science or Computer Engineering majors may substitute Math 54 for 52. The course plan for a mathematics minor must be approved by a mathematics faculty advisor.

Applied Mathematics: Fifteen hours of mathematics courses numbered 52 or higher, including one of 230, 237, 271.

Minor in Statistics A Statistics Minor consists of 15 credits of statistics courses, acquiring calculus knowledge equivalent to Math. 19 or 21, and gaining computer experi-

ence equivalent to Statistics 201 or a computer programming course (CS 16 or higher). Not more than seven credits of Statistics 11/51/111/140/141/143/211 or EC 170 may be counted. The course plan for the Statistics Minor must be approved by a Statistics faculty advisor. Contact the Statistics Program Director for complete guidelines.

Honors Thesis Program

The undergraduate thesis program, designed for the superior student with unusual initiative and intellectual curiosity, provides an opportunity to pursue a special program without the restrictions of classroom routine. The honors thesis program consists of reading, research, design, or creation in a curricular area of the student's choice, leading to a written thesis. At the time of graduation, the student's transcript and the graduation program will be appropriately denoted with "Honors Thesis" and the title of the thesis, provided that honor's level performance has been demonstrated.

The student must be matriculated in the College at the time of application for the thesis program and have a cumulative grade-point average of at least 3.0 for sophomore and junior work. The curriculum committee of the area offering the thesis course establishes the mechanics for thesis review and awarding of the grade. The thesis proposal must be approved by the College of Engineering and Mathematical Sciences Studies Committee prior to the Add/Drop deadline of the student's first semester or summer session of matriculation into the honor's thesis program. This should allow two semesters or a full summer and one semester of planned effort for the thesis research.

A thesis committee consists of at least three UVM faculty, at least two of whom are from the offering area. The chair of the committee, a permanent UVM faculty member, is also from the offering area. This committee serves to advise the student, approves of the thesis proposal before its submission to the Studies Committee, and approves of the oral defense of the thesis. The course grade is assigned by the committee chair based on consultation with the thesis committee. Six credits of effort are expected for the thesis, normally as three credits each in two semesters. Some programs within the College require senior projects as part of their prescribed curricula. Such projects can provide alternative opportunities to students interested in a design or research challenge.

Cooperative Education Program

A cooperative education (CO-OP) program is offered to students with cumulative grade-point averages placing them in the upper half of their class. Before acceptance, each candidate must be interviewed and approved by the program coordinator and the prospective employer. The program lets students apply their learning to a full-time, paid position in a business, industrial, or government setting.

Computer Science Curricula

Students may select either of three degree programs in Computer Science. ***The Bachelor of Science in Computer Science degree*** and the ***Bachelor of Science degree, with a major in Computer Science and Information Systems***, are offered through the College of Engineering and Mathematical Sciences and are described below. Additionally, a ***Bachelor of Arts degree, with a major in Computer Science***, is offered through the College of Arts and Sciences. A non-degree ***Certificate*** and an ***Accelerated Masters'*** program are also available.

Certificate in Computer Software: A non-degree certificate in Computer Software is offered jointly with the Division of Continuing Education. Requirements for the Certificate are 15 credits in approved computer software courses, to include CS21 with a grade of C or better in each.

***Bachelor of Arts, Computer Science Major*:** Requirements for this degree are described under the College of Arts and Sciences section of this catalogue.

Accelerated B.S./M.S. Program: A five-year combined Bachelor of Science plus Master of Science in Computer Science program is available. Consult the Graduate Catalogue for details.

Bachelor of Science in Computer Science: A minimum of 124 credits (122, if the student is exempt from PEAC) are required as follows:

- Computer Science (41 credits): 21, 26, 100, 101, 103, 104, 201, 224 or 243, 292, and 15 additional credits (5 courses) of 200-level courses (not more than 3 credits of which may be independent study);
- Mathematics (17 credits): 21, 22, 54, two of Math 121, Math 124, Math 173, Math 271
- Statistics (3 credits): Stat 153
- Science (13 credits): advisor-approved science electives in Astronomy, Anatomy & Neurobiology, Biology, Botany, Chemistry, Environmental Science, Geology, Microbiology & Molecular Genetics, Nutrition & Food Sciences, Physics, or Electrical Engineering 3 or 4, to include 1 laboratory science sequence selected from the following:
  - » Biology: 1 or 11, 2 or 12
  - » Chemistry: 31 or 35, 32 or 36
  - » Physics: 31 (with 21), 42 (with 22)
- Technical Electives (6 credits): Two courses in approved technical electives. See department for current list of approved courses.
- Writing (3 credits): English 1, 50, or 53.
- HSS (18 credits): 6 courses in Social Science, Humanities, and Fine Arts electives. At least 6 credits must be chosen from the *Social Science Group* and at least 6 credits must be chosen from the *Humanities & Fine arts Group*, as defined below.
  - » *Social Science Group:* ALANA, Anthropology, Economics, Geography, History, Political Science, Psychology, Sociology, Women's Studies, or other advisor-approved social science electives.
  - » *Humanities and Fine Arts Group:* Art, Classics, Drama, Film, Language, Literature, Music, Philosophy, Religion, Speech, or other advisor-approved humanities or fine arts electives.
  - » In addition, students must either complete a 1 credit *Race & Culture* course or ensure that at least one HSS elective also satisfies the *non-European Cultures* or *Race Relations & Ethnicity Requirements*, as specified under General Requirements in the College of Arts and Sciences section of this catalog.
- Non-CS electives (9 additional credits): advisor-approved electives (excluding CS and PEAC);
- Free Electives (12 additional credits): advisor-approved free electives (excluding PEAC);
- PEAC (2 credits): see Academic and General Information for exceptions; and
- Students must complete a University approved minor (excluding Computer Science); courses used to fulfill other requirements may be used to satisfy minor requirements.

A sample course sequence can be found through http://www.cs.uvm.edu/.

No more than three grades of D+, D, or D- in Computer Science courses numbered CS 103 and higher.

Bachelor of Science, Computer Science and Information Systems Major: A minimum of 125 credits (123, if the student is exempt from PEAC) are required as follows:

- Computer Science (35 credits): 14, 21, 26, 100, 101, 104, 148, 292, plus 3 additional credits (1 course) at the 100-level or above (CS 103 is recommended for students who wish to pursue graduate study in computer science), plus 9 additional credits (3 courses) at the 200-level; not more than 3 credits may be independent study;
- Business Administration (29 credits): 60, 61, 120, 132, 141, 143, 150, 173, 180;
- Economics (6 credits): 11, 12;
- Mathematics (9-11 credits): 19+20 or 21+ 22 (recommended), 54;
- Statistics (3 credits): Stat 153
- Science (8-10 credits): 1 laboratory science sequence, selected from the following 3 sequences:
  - » Biology: 1, 2;
  - » Chemistry: 31, 32;
  - » Physics: 31 (with 21), 42 (with 22)
- Writing (3 credits): English 1, 50, or 53
- HSS (18 credits): 6 courses in Social Science, Humanities, and Fine Arts electives. At least 6 credits must be chosen from the *Social Science Group* and at least 6 credits must be chosen from the *Humanities & Fine arts Group*, as defined below.
  - » *Social Science Group:* ALANA, Anthropology, Economics, Geography, History, Political Science, Psychology, Sociology, Women's Studies, or other advisor-approved social science electives.
  - » *Humanities and Fine Arts Group:* Art, Classics, Drama, Film, Language, Literature, Music, Philosophy, Religion, Speech, or other advisor-approved humanities or fine arts electives.
  - » In addition, students must either complete a 1 credit *Race & Culture* course or ensure that at least one HSS elective also satisfies the *non-European Cultures* or *Race Relations & Ethnicity Requirements*, as specified under General Requirements in the College of Arts and Sciences section of this catalog.
- Free electives (12 additional credits): advisor approved free electives (excluding PEAC);
- PEAC (2 credits): see Academic and General Information for exceptions;

A sample course sequence can be found through http://www.cs.uvm.edu/.

No more than three grades of D+, D, or D- in Computer Science courses numbered CS 103 and higher, and Business Administration courses numbered BSAD 160 and higher.

Engineering Curricula

The College of Engineering and Mathematical Sciences offers professional programs in Civil, Electrical, Environmental and Mechanical Engineering and an Interdisciplinary engineering program "Engineering Management" in cooperation with the School of Business Administration

Currently, the Bachelor of Science degrees in Civil, Environmental, Electrical and Mechanical Engineering are ABET (Accreditation Board for Engineering and Technology) accredited.

Engineering involves decision making and problem solving in order to analyze, design, and create devices or systems or processes to solve human problems. Engineering education at UVM provides a thorough grounding in the engineering sciences and engineering design.

Courses in the humanities and social sciences (HSS) are required in engineering programs to broaden the student's understanding of humankind and relationships in human society. HSS electives may not be taken on a pass/fail basis. Sixteen to 18 credit hours, depending upon the major, must be selected from the list presented here:

Approved Humanities Courses

Anthropology: all courses* except 200, 201, 290
Art: all Art History courses*
Botany: 6
Chinese: all courses*
Classics: all courses* (including Greek and Latin)
Community Devel & Applied Econ: 2, 61, 102, 156, 157, 171, 205, 208, 218
Economics: all courses* except 170, 270
English: all courses* except 1, 50, 117, 118, 119, and 120
Environmental Studies: 1, 2, 100, 178
French: all courses
World Literature: all courses
Geography: 1-2, 51-57, 60, 73, 151, 154, 155, 170-179
German: all courses*
Hebrew: all courses*
History: all courses*
Human Development & Family Studies: 5, 20, 60, 61, 65
Italian: all courses
Japanese: all courses*
Music 3, all History or Literature courses*
Natural Resources: 2, 6
Nursing: 15, 20, 140
Philosophy: all courses*
Political Science: all courses* except 181
Psychology 1, 15, 119, 130, 132, 152, 161, 163, 230, 231, 233, 234
Public Administration: 206
Recreational Mgmt.: 30
Religion: all courses*
Russian: all courses*
Social Work: 2, 47, 48, 165, 166, 167
Sociology: 1-57, 101-171, 202-272
Spanish: all courses
Theatre: 1, 41, 150, 151
Vermont Studies: 52, 64, 123, 160, 184
Women's Studies: all courses*
*Special topics, seminars, honors, reading and research, or internships are not normally considered appropriate HSS electives.

Students in **Civil Engineering, Engineering Management, Environmental Engineering, Electrical Engineering** and **Mechanical Engineering** must include a three-credit cultural diversity course as one of their required humanities and social sciences courses. A course must be selected from the list of cultural diversity courses presented here:

All ALANA Studies courses; Anthropology 21, 23, 24, 64, 128, 160, 161, 162, 163, 165, 166, 167, 169, 170, 172, 175, 179, 180, 187 (cross-listed with SOC 119); Art: 8, 146, 185, 187, 188, 192, 285, 295, "Working with Culturally Diverse Sources", 295 "Cultural Transformations"; Classics 145; Communication Sciences 160; Economics 153; English 57, 61, 166, 167, 168, 170, 172, 173; French 289; Geography 1, 51, 56, 60, 151, 154, 173; History 9, 10, 40, 41, 45, 50, 51, 62, 63, 68, 140, 141, 149, 150, 151, 161, 163, 164, 168, 169, 187, 188, 189, 240, 241, 250, 252; Music 15; Philosophy 3, 121, 122, 221; Political Science 29, 129, 157, 168, 170, 174, 175, 177, 179; Religion 20, 21, 80, 128, 130, 131, 132, 134, 141, 145, 230; Sociology 19, 31, 118, 119 (cross-listed with ANTH 187), 171, 213, 219, 272; World Literature 6, 116, 145.

It is possible for engineering students to extend their undergraduate curriculum beyond the typical four-year schedules outlined on the following pages. Those who would like to complete requirements over a longer time period must meet with their faculty advisor to plan how this can be done.

Engineering students can become affiliated with their respective national professional engineering societies: the American Society of Civil Engineers, the Institute of Electrical and Electronics Engineers, the American Society for Engineering Management, and the American Society of Mechanical

Engineers. Each of these organizations has an authorized student chapter at UVM. Engineering students demonstrating high scholarship attainment, combined with exemplary character, are recognized by membership in the Vermont Alpha Chapter of Tau Beta Pi, the national engineering honor society. In addition, all engineering students may become affiliated with the student chapter of the Society of Women Engineers. These student organizations present opportunities for students to conduct activities similar to those of the national societies.

Civil and Environmental Engineering

Two undergraduate degrees are offered; a B.S. in Civil Engineering (both general and environmental options available), and a B.S. in Environmental Engineering. The curricula provide a strong foundation in mathematics, and physical, natural and engineering sciences. Instruction in civil engineering disciplines includes structural engineering, soil mechanics, hydraulics, environmental engineering, and transportation engineering. Instruction in environmental engineering includes surface and groundwater hydrology, water and wastewater engineering, ecological engineering, and air pollution.

The B.S. in Civil Engineering, general option, requires a minimum of 131 credits.

The B.S. in Civil Engineering, environmental option, requires a minimum of 130 credits.

The B.S. in Environmental Engineering requires a minimum of 130 credits.

A civil or environmental engineering degree from the University of Vermont is excellent preparation for immediate employment in engineering. Additionally, many of our graduates continue their education in graduate engineering programs, or graduate programs in business, law, and medicine.

A systems approach to civil and environmental engineering problem solving is central to our curricula and involves integrating the short and long-term social, environmental and economic aspects and impacts into engineering solutions. As part of this approach, service-learning projects with local communities and nonprofit groups are incorporated in many of our core courses. Real-world engineering design culminates in a required major design experience in the senior year, which draws upon prior course work and focuses on technical and nontechnical issues and expectations of professional practice. Other activities that enhance the undergraduate education of students include opportunities for laboratory and research experience, an increased Information Technology (IT) content of courses, and a strong sense of community between students and the faculty.

No more than three grades of D, D+, or D- will be acceptable in all required courses in engineering and engineering science including design and professional electives as stated in the curricula below for the junior and senior years.

Civil Engineering

OPTION 1 – General Civil Engineering

FIRST YEAR	Fall	Spr
Math. 21, Calculus I	4	–
CE 3, Intro to Civil & Env. Engr.	2	–
Chemistry 31, Intro Chemistry	4	–
English I, Written Composition	3	–
Physical Education	1	–
HSS Elective[1]	3	6
Engr. 2, Graph. Comm.	–	2
Math 22, Calculus II	–	4
Phys. 31/21, Intro. Physics	–	5
	17	17

SOPHOMORE YEAR	Fall	Spr
Math. 121, Calculus III	4	–
Physics 42, Electromag. Modern Physics	4	–
CE 1, Statics	3	–
CE 10, Geomatics	4	–
Statistics 143, Statistics for Engineering	3	–
Math. 271, Applied Math/Engineers	–	3
ME 12, Dynamics	–	3
CE 130, Env/Trans Systems	–	3
CS 16 (CE 11) Matlab	–	4
HSS Elective[1]	–	3
	18	16

JUNIOR YEAR	Fall	Spr
CE 100, Mech. of Materials	3	–
CE 101, Materials Testing	1	–
CE 131, Dec Analysis in Env/Trans	3	–
CE 160, Hydraulics	4	–
Science Elective	4	–
CE 132, Modeling Env/Trans Systems	–	3
CE 151, Water/Wastewater	–	3
CE 170, Struct. Analysis I	–	4
ME 40/44, Thermo/Heat Transfer	–	4
CE 180, Goetechnical Principles	–	4
	15	18

SENIOR YEAR	Fall	Spr
EE 100, Electrical Engr. Concepts	4	–
CE 171, Struct. Analysis II	3	–
CE 172, Steel Design[5]	3	–
HSS Elective[1]	3	–
Professional Elective[4]	3	–
Physical Education	1	–
HSS Elective[1]	–	3
CE 173, Reinf. Concrete Design[5]	–	3
CE 175. Senior Design Project[6]	–	3
CE 176, Senior Design Seminar[6]	–	1
Design Elective[3]	–	3
	17	13

[1]Required Social Humanities: Student must select six from the approved Humanities courses listed in the catalog, one of which must also be from the approved Cultural Diversity courses listed in the College of Arts and Sciences section of the catalog. Students must also meet the 6/9 distribution rule.
[2]Science Elective must be a 4-credit course, with lab, i.e. Geology 1.
[3]Design Electives are CE 142, 161, 241, 251, 253, 255, 256, 260, 261, 265, 280, 281, 283. Env.Design: CE 161, 253, 255, 256, 260, 262, 265, 280, 281, 283.
[4]Professional Electives are all Design Electives plus CE 191, 192, any 200-level CE course.
[5]General Option students must take both CE 172 and CE 173.
[6]Both CE 175 - Senior Design Project, and CE 176 - Senior Design Seminar are required of all seniors.

OPTION 2 – Environmental Civil Engineering

FIRST YEAR	Fall	Spr
Chem 31, Intro Chem	4	–
Math 21, Calculus I	4	–
English 1, Written Expression	3	–
CE 3, Intro to Civil & Env. Engr.	2	–
Physical Education	1	–
HSS Electives[1]	3	6
Engr 2, Graph. Comm.	–	2
Math 22, Calculus II	–	4
Phys 31/21, Intro Physics	–	5
	17	17

SOPHOMORE YEAR	Fall	Spr
Math. 121, Calculus III	4	–

Physics 42, Electromag. & Modern Physics	4	–
CE 1, Statics	3	–
CE 10, Geomatics	4	–
Statistics 143, Statistics for Eng.	3	–
CS 16 (CE 11) MAT Lab	-	4
Math 271, Applied Math/Eng.	-	3
CE 130 Env/Trans Systems	-	3
ME 12, Dynamics	-	3
HSS Elective[1]	–	3
	18	16

JUNIOR YEAR	Fall	Spr
CE 100, Mech. of Materials	3	–
CE 101, Materials Testing	1	–
CE 131, Dec Analysis in Env/Trans	3	–
CE 160, Hydraulics	4	–
Science Elective - CHEM 32 or BIOL(1 or 2)	4	–
CE 132, Modeling Env/Trans Systems	–	3
CE 151, Water and Wastewater	–	3
CE 154, Environmental Analysis	–	2
CE 170, Struct Analysis I	–	4
CE 180, Geotechnical Principles	–	4
	15	16

SENIOR YEAR	Fall	Spr
EE 100, Electrical Engr. Concepts	4	–
HSS Elective[1]	3	–
Professional Elective[3]	3	–
Physical Education	1	–
Design Electives[2]	3	3
CE 172, Steel Design or CE 173, Reinforced Concrete	(3)	(3)
HSS Elective[1]	–	3
CE 175, Senior Design Project[4]	–	3
CE 176, Senior Design Seminar[4]	–	1
ME 40, Thermodynamics	–	3
ME 44, Heat Transfer[4]	–	1
	14-17	14-17

[1]Required Social Humanities: Student must select six from the approved Humanities courses listed in the catalog, one of which must also be from the approved Cultural Diversity courses listed in the College of Arts and Sciences section of the catalog. Students must also meet the 6/9 distribution rule.
[2]Design Electives are CE 142, 161, 241, 251, 253, 255, 256, 260, 261, 265, 280, 281, 283. Env.Design: CE 161, 253, 255, 256, 260, 262, 265, 280, 281, 283.
[3]Professional Electives are all Design Electives plus CE 191, 192, any 200-level CE course.
[4]Both CE 175 - Senior Design Project, and CE 176 - Senior Design Seminar are required of all seniors.

Environmental Engineering

FIRST YEAR	Fall	Spr
Math. 21, Calculus I	4	–
Chemistry 31, Intro Chemistry	4	–
English I, Written Expression	3	–
Physical Education	1	–
CE 3, intro to Civil & Env. Engr.	2	–
HSS Elective[1]	3	6
Math 22, Calculus II	–	4
Phys. 31/21, Intro. Physics	–	5
Engr. 2, Graph. Comm.	–	2
	17	17

SOPHOMORE YEAR	Fall	Spr
Math. 121, Calculus III	4	–
Physics 42 , Electromag. Modern Physics	4	–
CE 1, Statics	3	–
CE 10, Geomatics	4	–
STAT 143	3	–
Math. 271, Applied Math	–	3
CE 130, Env/Trans Systems	–	3
HSS Elective[1]	–	3
Biology 1 or 2	–	4
CS 16 (CE 11) MAT Lab	–	4
	18	17

JUNIOR YEAR	Fal	Spr
CE 100, Mech. of Materials	3	–
CE 101, Materials Testing	1	–
CE 131, Dec Analysis in Env/Trans	3	–
CE 160, Hydraulics	4	–
Earth Science Elective[2]	4	–
ME 40/44 Thermodynamics /Heat Transfer	–	4
CE 151, Water/Wastewater	–	3
CE 154, Environ. Analysis	–	2
CE 180 Geotechnical Principles	–	4
CE 132 Modeling Env/Trans Systems	–	3
	15	16

SENIOR YEAR	Fall	Spr
Env. Chemistry[3]	3	–
EE 100 Electrical Engr Concepts	4	–
Env. Professional Elective[4]	3	–
Physical Education Elective	1	–
Env. Design Elective[5]	3	3
HSS Elective[1]	3	3
Science Elective[6]	–	4
CE 175, Senior Design Project	–	3
CE 176, Senior Design Seminar	–	1
	17	14

[1]Required Social Humanities: Student must select six from the approved Humanities courses listed in the catalog, one of which must also be from the approved Cultural Diversity courses listed in the College of Arts and Sciences section of the catalog. Students must also meet the 6/9 distribution rule.
[2]Earth Science Elective for Environmental must be from approved list: Geol 1, 55, 101, 151, 172, 255, or PSS 161.
[3]Environmental Chemistry Elective from following list: CE 150, NR 270, CHEM 121, CHEM 141.
[4]Environmental Professional Electives from following list: All environmental design electives plus environmental sections of CE 191, 192, 193, 194, 195, ENSC 201, 202, GEOL 234, approved GEOL 295, NR 205, 206, 270, approved NR 285, PSS 269.
[5]Environmental Design Electives: Must select at least one course from List 1 (Fluids/Soils): CE 161, 260, 262, 265, 282, 283, and at least one course from List 2 (Process Engr): CE 248, 253, 255, 256.
[6]Science elective for B.S. Environmental must be 100-level science course or higher.

Electrical and Computer Engineering

The curriculum in Electrical Engineering leading to the degree of Bachelor of Science in Electrical Engineering offers instruction in electrical and electronic circuits, electromagnetics, semiconductor devices, signal and system analysis, communications, digital systems, well as in physical and life sciences, humanities, and social sciences.

There are four elective concentrations leading to an ABET accredited degree of Bachelor of Science in Electrical Engineering: General Electrical Engineering, Computer Engineering, Biomedical Engineering, and Premedical Engineering. The degree requires a minimum of 129 semester hours for Elective Concentration 1, 130 semester hours for Elective Concentration 2, 129 for Elective Concentration 3, and 129 credit hours for Elective Concentration 4. Two credits of required physical education activities are included.

All students must elect one course from the list of approved cultural diversity courses as one of their required humanities and social sciences courses.

Students may pursue a cross-college or departmental minor provided that they fulfill all Electrical Engineering degree requirements.

Engineering design is developed and integrated in each student's program and culminates in a required major design experience which draws upon prior course work and which focuses on the issues and expectations of professional practice.

An accelerated master's degree program leading to an M.S. in Materials Science is available. For specific program requirements refer to the Graduate College Catalogue.

No more than three grades of D, D+, or D– will be acceptable in all required courses in engineering, basic science, and computer science including all technical electives as stated in the catalogue for the junior and senior years.

Elective Concentration 1: General Electrical Engineering

FIRST YEAR	Fall	Spr
Chemistry 31, Intro Chemistry	4	–
HSS Electives[1]	3	–
ENG 1, Written Expression	3	–
ENGR 2, Graphical Communication	2	–
MATH 21, Calculus I	4	–
EE 1, First-Year Design Experience	–	2
HSS Electives[1]	–	6
MATH 22, Calculus II	–	4
PHYS 31/21, Intro Physics/Lab	–	5
	16	17

SOPHOMORE YEAR	Fall	Spr
EE 3, Linear Circuit Analysis I	3	–
EE 81, Linear Circuit Lab I	2	–
EE 131, Fund. of Digital Design	3	–
Math. 121, Calculus III	4	–
PHYS 42 and 22, Electromag Modern Physics	5	–
Math. 271, Applied Math/Engineers	–	3
HSS Elective[1]	–	3
EE 82, Linear Circuit Lab	–	2
EE 4, Linear Circuit Analysis II	–	3
CS 21 Computer Programming I	–	4
STAT 143/151 Statistics	–	3
	17	18

JUNIOR YEAR	Fall	Spr
EE 120, Electronics I	3	–
EE 163, Solid State Physical Electronics I	4	–
EE 171, Signals and Systems	4	–
EE 183, Electronics Laboratory I	2	–
HSS Elective[1]	3	–
EE 121, Electronics II	–	3
EE 164, Solid State Electronics II	–	3
EE 174, Intro. to Communication Systems[1]	–	3
EE 184, Electronics Laboratory II	–	2
PEAC, Physical Ed.	–	1
EE 134, Microprocessors[1]	–	4
	16	16

SENIOR YEAR	Fall	Spr
EE 141, Electromagnetic Field Theory	3	–
EE Senior Lab Elective[5]Elective[4]	2	–
EE 187 Professional Design Issues	2	–
Non-EE Eng. Sci. Elective[2]	3	–
EE Technical Elective[3]	6	3
HSS Elective[1]	–	3
Tech Elective[5]	–	3
EE 142 Electromag. Field Theory II	–	3
EE 188 Major Design Experience	–	2
Physical Educatio	–	1
	16	15

[1]HSS Electives: Students must select one course from the list of approved race & culture courses.
[2]Non-EE Engr. Science Electives: CE 1, 10, 125, 150; ME 12, 40, 114.
[3]EE Technical Elective: EE 113, and all 200-level, 3 credit EE courses.
[4]EE Senior Lab Electives: EE 185, 186 or 289.
[5]EE Technical Electives[3] or CS 26, 100, 101, 103, 104, 201, 222; PHYS 128; ME 14, 40, 114, 150; CE 125; CHEM 161; MATH 54, 124, 173; STAT 143, 151. All 200-level Math and Statistics courses except for practicum, seminar, and special topics.

Elective Concentration 2: Computer Engineering

FIRST-YEAR	Fall	Spr
HSS Elective[1]	3	–
CHEM 031, Introductory Chemistry	4	–
MATH 021, Calculus I	4	–
ENG 001, Written Expression	3	–
ENGR 002, Graphical Communication	2	–
EE 001, First-Year Design Experience	–	2
MATH 022, Calculus II	–	4
PHYS 031, Introductory Physics	–	4
PHYS 021, Introductory Lab I	–	1
HSS Elective[1]	–	4
CS 021, Computer Programming I	–	4
	16	18

SOPHOMORE YEAR	Fall	Spr
EE 003, Linear Circuit Analysis I	3	–
EE 081, Linear Circuits Laboratory I	2	–
MATH 121, Calculus III	4	–
PHYS 042, Electromagnetism & Modern	4	–
PHYS 022, Introductory Lab II	1	–
HSS Elective[1]	3	–
CS 026, Computer Programming II	–	3
EE 004, Linear Circuit Analysis II	–	3
EE 082, Linear Circuits Laboratory II	–	2
MATH 271, Appl. Math for Engr. & Scientists	–	3
STAT 143, Statistics for Engineering (or STAT 151)	–	3
HSS Elective[1]	–	3
	17	17

JUNIOR YEAR	Fall	Spr
EE 163 or EE 171 (See Senior Year)	4	–
EE 120, Electronics I	3	–
EE 131, Fund. of Digital Design	3	–
MATH 054, Fund. of Math of Computation	3	–
HSS Elective[1]	3	–
Approved CS Elective[2]	–	3
CS 104, Data Structures	–	3
EE 121, Electronics II	–	3
EE 134, Fund. of Microcomputer-Based Systems	–	4
HSS Elective[1]	–	3
	16	16

SENIOR YEAR	Fall	Spr
EE 171 or EE 163 (see Junior Year)	4	–
EE 141, Electromagnetic Field Theory I	3	–
EE 183, Electronics Laboratory I	2	–
EE 187, Professional Design Issues	2	–
EE/CS Technical Elective[3]	3	–
EE Design Elective[4]	3	–
Approved CS Elective[2]	–	3
EE 184, Electronics Laboratory II	–	2
EE 188, Major Design Experience	–	2
EE 174, Intro to Comm. Systems	–	3
Non-EE Engineering Science Elective[5]	–	3
Physical Education Activities	–	2
	17	15

[1]HSS Electives: Students must select one course from the list of approved race & culture courses.
[2]CS Elective: A 100-level or higher CS course (except CS 148) that must be preapproved by your advisor.
[3]EE Technical Electives: EE 113, 142, 164, and any 200-

level, 3 credit EE course.
[4]EE/CS Technical Electives: EE Technical Elective[3]; any 100-level or higher CS course (except CS 148; note: CS 195 and 295 must have advisor approval).
[5]Non-EE Engr. Science Electives: CE 1, 10, 125, 150; ME 12, 40, 114.

Elective Concentration 3: Biomedical Engineering

FIRST-YEAR	Fall	Spr
CHEM 031, Introductory Chemistry	4	–
HSS Elective[1]	3	–
MATH 021, Calculus I	4	–
ENG 001, Written Expression	3	–
ENGR 002, Graphical Communication	2	–
Physical Education Activities	1	–
EE 001, First-Year Design Experience	–	2
MATH 022, Calculus II	–	4
CHEM 042, Intro. Organic Chemistry	–	4
CS 021, Computer Programming I	–	4
HSS Elective[1]	–	3
	17	17

SOPHOMORE YEAR	Fall	Spr
EE 003, Linear Circuit Analysis I	3	–
EE 081, Linear Circuits Laboratory I	2	–
MATH 121, Calculus III	4	–
PHYS 031, Introductory Physics	4	–
PHYS 021, Introductory Lab I	1	–
HSS Elective[1]	3	–
EE 004, Linear Circuit Analysis II	–	3
EE 082, Linear Circuits Laboratory II	–	2
MATH 271, Appl. Math for Engr. & Scientists	–	3
PHYS 042, Electromagnetism and Modern Physics	–	4
PHYS 022, Introductory Lab II	–	1
HSS Elective[1]	–	3
	17	16

JUNIOR YEAR	Fall	Spr
ANPS 019, Anatomy & Physiology	4	–
EE 120, Electronics I	3	–
EE 163, Solid State Physical Electronics I	4	–
EE 183, Electronics Laboratory I	2	–
STAT 143/151	3	–
ANPS 020, Anatomy & Physiology	–	4
EE 121, Electronics II	–	3
EE 134 or EE 227 (See Senior Year)	–	4/3
EE 184, Electronics Laboratory II	–	2
ME 114, Intro. Engineering Mechanics	–	3
Physical Education Activities	–	1
	16	17/16

SENIOR YEAR	Fall	Spr
EE 141, Electromagnetic Field Theory I	3	–
EE 171, Signals and Systems	4	–
EE 187, Professional Design Issues	2	–
ME 207, Biomechanics I	3	–
HSS Elective[1]	3	3
EE 142, Electromagnetic Theory II	–	3
EE 174, Intro. to Communication Sys.	–	3
EE Senior Lab Elective[2]	–	2
EE 188, Interdisciplinary Design Project	–	2
EE 227 or EE 134 (See Junior Year)	–	3/4
	16	16/15

[1]Students must select one HSS course from the list of approved race & culture courses.
[2] Senior Lab Elective: EE 185, 186 or 289.

Elective Concentration 4: Premedical Engineering

FIRST-YEAR	Fall	Spr
ENG 001, Written Expression	3	–
CHEM 031, Introductory Chemistry	4	–
MATH 021, Calculus I	4	–
ENGR 002, Graphical Comm.	2	–
HSS Elective[1]	3	–
Physical Education Activities	1	–
EE 001, First-Year Design Experience	–	2
MATH 022, Calculus II	–	4
CHEM 032, Introductory Chemistry	–	4
CS 021, Computer Programming I	–	4
HSS Elective[1]	–	3
	17	17

SOPHOMORE YEAR	Fall	Spr
EE 003, Linear Circuit Analysis I	3	–
EE 081, Linear Circuits Laboratory I	2	–
MATH 121, Calculus III	4	–
PHYS 031, Introductory Physics	4	–
PHYS 021, Introductory Lab I	1	–
HSS Elective[1]	3	–
EE 004, Linear Circuit Analysis II	–	3
EE 082, Linear Circuits Laboratory II	–	2
MATH 271, Appl. Math for Engr. & Scientists	–	3
PHYS 042, Electromagnetism & Modern Physics	–	4
PHYS 022, Introductory Lab II	–	1
HSS Elective[1]	–	3
	17	16

JUNIOR YEAR	Fall	Spr
BIOL 001, Prin. of Biology	4	–
CHEM 141, Organic Chemistry	4	–
EE 141, Electromagnetic Field Theory I	3	–
STAT 143/151	3	–
HSS Elective[1]	3	–
BIOL 002, Principles of Biology	–	4
CHEM 142, Organic Chemistry	–	4
EE 134, Fund. of Microcomputer-Based Systems	–	4
HSS Elective[1]	–	3
Physical Education Activities	–	1
	17	16

SENIOR YEAR	Fall	Spr
EE 120, Electronics I	3	–
EE 163, Solid State Physical Electronics I	4	–
EE 171, Signals and Systems	4	–
EE 183, Electronics Laboratory I	2	–
EE 187, Professional Design Issues	2	–
EE 121, Electronics II	–	3
EE 174, Intro. Comm. Sys.	–	3
EE 184, Electronics Laboratory II	–	2
EE 188, Interdisciplinary Design Project	–	2
EE Technical Elective[2]	–	3
Non-EE Engineering Science Elective[3]	–	3
	15	16

[1]Students must select one HSS course from the list of approved race & culture courses.
[2]EE Technical Electives: EE 113, 142, 164, all 200-level, 3 credit EE courses.
[3]Non-EE Engineering Science Elective: CE 1, 10, 150; ME 12, 40, 114.

Engineering Management

A curriculum in Engineering Management leading to the degree of Bachelor of Science in Engineering Management is offered in cooperation with the School of Business Administration. Engineering management is a broad discipline concerned with the art and science of planning, organizing,

directing, and controlling activities that have a technical component. Designing, producing, selling, and servicing products in the marketplace require managers who possess both an ability to apply engineering principles and a skill in managing technical projects and people in technical jobs. The curriculum is designed to provide a basic education in an engineering discipline with the study of management concepts and techniques. The curriculum incorporates the equivalent of one-half year of study in the area of the humanities and social sciences. Candidates for this degree must earn a minimum of 128 semester hours, depending upon the engineering option selected, plus two credits of physical education activities. Engineering Management students are reminded that they must choose one HSS elective from the list of approved cultural diversity courses in the College of Arts and Sciences.

OPTION 1: Civil Engineering
(131-132 hours)

FIRST-YEAR	Fall	Spr
CHEM 31, Introductory Chemistry	4	–
ENG 1, Written Expression	3	–
ENGR 2, Graph. Comm.	2	–
MATH 21, 22, Cal. I&II	4	4
PEAC, Physical Ed.	1	1
EC 11 Macroeconomics	–	3
HSS Elective	3	3
PHYS 31/21, Physics & Lab	–	5
	17	16

SOPHOMORE YEAR	Fall	Spr
CE 1, Statics	3	–
MATH 121, Calculus III	4	–
CE 10/12, Surveying	4	–
BSAD 60, Financial Acctng.	4	–
EC 12, Microeconomics	3	–
MATH 271, Appl. Engr. Math	–	3
ME 12, Dynamics	–	3
ME 14, Mechanics of Solids	–	3
BSAD 61, Managerial Acctng.	–	4
CE 11, Computer Tools	–	4
	18	17

JUNIOR YEAR	Fall	Spr
CE 140, Transportation	3	–
CE 160, Hydraulics	4	–
PHYS 42/22, EM and Modern Physics	5	–
BSAD 120, Mgmt. & Organ. Behav.	3	–
CE 125, E. Economics	–	3
CE 170, Struct. Anal.	–	4
BSAD 141, Mgmt. Info. Systems	–	3
BSAD 173, Prod. & Oper. Analy.	–	3
STAT 143 or 211, Stat. for Engrs./Stat. Meth.	–	3
	15	16

SENIOR YEAR	Fall	Spr
EE 100, EE Concepts I	4	–
BSAD 178, Quality Control or STAT 224, Stats. for QP	3	–
EMGT 185, Senior Project	3	–
HSS Elective	3	3
Engr. Mgmt. Elective[2]	–	6
ME Elective[1]	–	3
ME 101, Engineering Materials I	3	–
BSAD 270, Quant. Anal. or 272, Discrete Simulation	–	3
BSAD 120, Mgmt. & Organ Behav.	3	–
	19	15

[1]ME electives: ME 200-level or higher
[2]Engineering Management electives: BSAD 143, 144, 145, 168, 170, 174, 177, 192; and Statistics 221, 224, 225, 229, 231, 233, 237, 253; EMGT 175.

OPTION 2: Electrical Engineering
(130-131 hours)

FIRST-YEAR	Fall	Spr
CHEM 31, Introductory Chemistry	4	–
ENG 1, Written Expression	3	–
ENGR 2, Graph. Comm.	2	–
MATH 21, Cal. I	4	–
MATH 22, Cal II	–	4
CS 21, Computer Prog.	4	–
EE 1, Design Experience	–	2
HSS Elective	–	3
HSS Elective	–	3
PHYS 31/21, Physics	–	5
	17	17

SOPHOMORE YEAR	Fall	Spr
EE 3, 4 Linear Circuit Anal. I, II	3	3
Math. 121, Calculus III	4	–
EE 81, 82 Sophomore Lab I, II	2	2
PHYS 42 with 22, EM & Mod. Physics	–	5
EC 11, Principles of Economics	3	–
MATH 271, Appl. Math	–	3
BSAD 60, Financial Acctng.	4	–
BSAD 61, Managerial Acctng.	–	4
PEAC	1	–
	17	17

JUNIOR YEAR	Fall	Spr
STAT 143, Engr. Statistics; or 211, Stat. Methods I	3	–
EE 131, Digital Design	3	–
EE 120, 121, Electronics I, II	3	3
EC 12, Principles of Economics	3	–
BSAD 141, Mgmt. Info. Systems	3	–
PEAC	1	–
CE 125, Engr. Economics	–	3
BSAD 173, Prod. & Oper. Analysis	–	3
HSS Elective	–	3
EE 134, Microcomputer-Based Systems	–	4
	16	16

SENIOR YEAR	Fall	Spr
BSAD 120, Mgmt. & Organ. Behav.	3	–
EE 163, Solid State Physics or EE 171, Signals and Systems	4	–
BSAD 178, Quality Control; or STAT 224, Stats. for Qual. & Prod.	3	–
EMGT 185, Senior Project	3	–
HSS Elective	3	–
EE Conc Elective[1]	–	3-4
BSAD 270, Quant. Analysis; or 272, Discrete Simulation	–	3
EE 231, Dgtl. Comp. Design	–	3
Eng. Mgmt. Elective[2]	–	6
	16	1-6

[1]EE Conc. Electives: EE 113, 141, 163 (if not used to fulfill another requirement), 164 (163 is prerequisite), 171 (if not used to fulfill another requirement), 174 (171 is prerequisite), EE 183-184 (both courses are needed to meet this requirement), 210, 228, 250, 251, and 295.
[2]Engineering Management Electives: BSAD 143, 144, 145, 168, 170, 174, 177, 192; and Statistics 221, 224, 225, 229, 231, 233, 237, 253; EMGT 175.

OPTION 3: Mechanical Engineering
(130-132 hours)

FIRST YEAR	Fall	Spr
CHEM 31, Intro. Chem 4	4	–
ENG 1, Written Exp.	3	–
ENGR 2 Graph. Comm.	2	–
MATH 21, Cal. I	4	4

MATH 22, Cal II	–	4
Physical Ed.	–	1
ME 1, Design Exp.	–	2
HSS Elective	3	3
PHYS 31/21, Physics Lab	–	5
	16	15

OPHOMORE YEAR	Fall	Spr
EC 11, Macroecomonics	3	–
MATH 121, Calculus III	4	–
ME 40, Thermodynamics	3	–
PHYS 42/22, Modern Physics	–	5
BSAD 60, Financial Acctng.	4	–
MATH 271, Applied Engr. Math.	–	3
ME 114, Intro. Mechanics	–	3
BSAD 61, Managerial Accounting	–	4
PEAC, Physical Ed.	1	–
ME 82, Mech. Engr. Lab I	–	3
	15	18

JUNIOR YEAR	Fall	Spr
ME 161, Manufacturing Engr. I	3	–
MATH 124, Linear Algebra	3	–
EC 12, Microeconomics	3	–
EE 100, EE Concepts I	4	–
BSAD 141, M.I.S.	3	–
CE 125, Engr. Econ.	–	3
ME 162, Manunfacturing Engr. II	–	3
ME 171, Design of Elem.	–	3
STAT 143, Engr. Stat or 211, Stat. Methods	–	3
BSAD 173, Prod. & Oper. Analy.	–	3
	16	15

SENIOR YEAR	Fall	Spr
CE 150, Environmental Engr.	3	–
EMGT 185, Senior Project	3	–
HSS Elective	3	–
BSAD 178, Quality Control or Stat 224, Statistics for Qual. & Prod.	3	–
BSAD 270, Quant. Analysis or BSAD 272, Discrete Simulation	3	–
HSS Elective	–	3
CE Conc. Elective[1]	–	3-4
Engr. Mgmt. Elective[2]	–	6
	15	15

[1]CE Concentration electives: CE 141, 151, 161, 171, 172, 175, 180, 260, 261, and ME 40 with 44.
[2]Engineering Management Electives: BSAD 143, 144, 145, 168, 170, 174, 177, 192; and Statistics 221, 224, 225, 229, 231, 233, 237, 253; EMGT 175.

Mechanical Engineering

The curriculum in Mechanical Engineering leading to a degree of Bachelor of Science in Mechanical Engineering offers instruction in design, solid and fluid mechanics, materials, manufacturing processes and systems, as well as in engineering, life and physical sciences, humanities, and social sciences.

There are three options leading to the degree of Bachelor of Science in Mechanical Engineering: (1) General Mechanical Engineering (128 semester hours); (2) Biomedical Engineering (130 semester hours); (3) Premedical Engineering (136 semester hours). All options include two credits of required physical education activities.

Engineering design is developed and integrated in each student's program and culminates in a required major design experience which draws upon prior course work and which focuses on the issues and expectations of professional practice.

No more than three grades of D, D+, or D– will be acceptable in all required courses in engineering, basic science, and computer science including all technical electives as stated in the Catalogue for the junior and senior years.

OPTION 1: Mechanical Engineering

FFIRST YEAR	Fall	Spr
CHEM 31, Intro. Chem. 4	4	–
ENG 1, Written Expression	3	–
ENGR 2, Graph Comm	2	–
MATH 21, CAL I	4	–
MATH 22, CAL II	–	4
Phys Ed.	1	1
HSS Elective1	3	3
ME 1, Des. Exp.	–	2
PHYS 31/31, Intro Physics	–	5
	17	15

SOPHOMORE YEAR	Fall	Spr
CE I, Statics	3	–
MATH 121, Calculus III	4	–
ME 40, Thermodynamics	3	–
PHYS 42/22, Electromag. Modern Physics	–	5
HSS Elective[1]	–	3
MATH 271, Appl. Engr. Math.	–	3
ME 12, Dynamics	–	3
ME 14, Mechanics of Solids	–	3
ME 42, Engr. Thermodynamics	–	3
ME 82, Mech. Engr. Lab I	–	3
	15	18

JUNIOR YEAR	Fall	Spr
ME 101, Materials	3	–
ME 111, System Dyn.	3	–
ME 143, Fluid Mech.	3	–
EE 100, 101, Concepts I, II	4	4
ME 123, 124, Lab II, III	2	2
MATH 124, Linear Algebra	3	–
ME 144, Heat Trans.	–	3
ME 171, Des.of Elem.	–	3
STAT 143, Engr. Stat.	–	3
	18	15

SENIOR YEAR	Fall	Spr
ME 161, Manufacturing Engr. I	3	–
ME 183, Mech. Eng. Lab IV	3	–
ME 185, Sr. Project	1	–
HSS Elective[1]	3	3
ME Elective[2]	3	3
Technical Elective[3]	3	3
ME Design Elective[4]	–	3
ME 186, Sr. Project	–	2
	16	14

[1]HSS Electives: Students must select one HSS course from the list of approved race & culture courses.
[2]ME Course 200-level or higher.
[3]Any 100-level or higher courses in EM and BSAD (except Stat. 111, and ME 114); or CS 14, CS 16, CS 21, or CS 26; or Natural Sciences with approval of advisor.
[4]ME 162, ME 172, or ME 265.

OPTION: Biomedical Engineering

FFIRST YEAR	Fall	Spr
ENG 1, Written Exp.	3	–
ENGR 2, Graph. Comm.	2	–
CHEM 31, Intro. Chem.	4	–
HSS Elective[1]	3	3
MATH 21,22, Cal. I & II	4	4
PEAC, Physical Ed.	1	1
ME 1, Design Exp.	–	2
PHYS 31/21, Physics	–	5
	17	15

SOPHOMORE YEAR	Fall	Spr
CE 1, Statics	3	–
MATH 121, Calculus III	4	–
HSS Elective[1]	3	–
ME 40, Thermodynamics	3	–
PHYS 42/22, Modern Physics	5	–
MATH 271, Appl. Engr. Math	–	3
ME 12, Dynamics	–	3
ME 14, Mechanics of Solids	–	3
ME 42, Engr. Thermodynamics	–	3
ME 82, Mech. Engr. Lab I	–	3
MATH 124, Linear Algebra	–	3
	18	18

UNIOR YEAR	Fall	Spr
ME 101, Materials	3	–
ME 143, Fluid Mech.	3	–
ME 123, 124, Lab II, III	2	2
MPBP 19 & 20, Human Anat. & Physiol.	4	4
EE 100, 101, Concepts I, II	4	4
ME 144, Heat Trans.	–	3
ME 171, Des. of Elem.	–	3
	16	16

SENIOR YEAR	Fall	Spr
ME 111, Systems Dynamics	3	–
ME 185, Sr. Project	3	–
ME 161, Manufacturing Engr. I	3	–
STAT 143, Engr. Stat.	3	–
ME 207, 20X[2], Biomechanics	3	3
ME 186, Sr. Project	–	3
HSS Electives[1]	–	6
ME Design Elective[3]	–	3
	15	15

[1]HSS Electives (15 credits): Students must select one HSS course from the list of approved race & culture courses.
[2]ME 208 or 209.
[3]ME 162, ME 172, or ME 265.

OPTION 3: Premedical Engineering

FFIRST YEAR	Fall	Spr
ENG 1, Written Exp.	3	–
ENGR 2, Graph. Comm.	2	–
PEAC, Physical Education	1	–
CHEM 31, 32, Intro. Chem. 4	4	4
MATH 21, 22, Cal. I & II	4	4
ME 1, Design Exp.	–	2
HSS Elective[1]	3	3
PHYS 31/21, Physics	–	5
	17	18

SOPHOMORE YEAR	Fall	Spr
CE 1, Statics	3	–
HSS Elective[1]	3	–
MATH 121, Calculus III	4	–
PHYS 42/22, Modern Physics	5	–
ME 40, Thermodynamics	3	–
MATH 124, Linear Algebra	–	3
MATH 271, Appl. Engr. Math	–	3
ME 12, Dynamics	–	3
ME 14, Mechanics of Solids	–	3
ME 82, Mech. Engr. Lab I	–	3
ME 42, Engr. Thermodynamics	–	3
	18	18

JUNIOR YEAR	Fall	Spr
ME 101, Materials	3	–
ME 143, Fluid Mech.	3	–
ME 123, 124, Lab II, III	2	2
CHEM 141, 142, Org. C.	4	4
BIOL 1A/2A, Prin. Biol.	4	4
ME 144, Heat Trans.	–	3
ME 171, Des. of Elem.	–	3
PEAC, Physical Educ.	–	1
	16	17

SENIOR YEAR	Fall	Spr
ME 111, System Dynamics	3	–
ME 161, Manufacturing Eng. I	3	–
STAT 143, Engr. Stat.	3	–
ME 185, 186, Sr. Project	3	3
EE 100, 101, Concepts I, II	4	4
HSS Electives[1]	–	6
ME Design Elective[2]	–	3
	16	16

[1]HSS Electives (15 credits): Students must select one HSS course from the list of approved race & culture courses.
[2]ME 162, ME 172, or ME 265.

Mathematics and Statistics Curricula

The College of Engineering and Mathematical Sciences offers programs in several areas of the mathematical sciences and their applications. The curriculum leads to the Bachelor of Science degree in Mathematics. The Applied and Interdisciplinary Mathematics option combines a major in applied mathematics with an approved concentration in an allied field that emphasizes the application of mathematics. The Statistics Program offers a major in Statistics within this degree.

Accelerated master's programs in Mathematics, Statistics, and Biostatistics are also offered. These programs allow students to earn both their B.S. and M.S. degrees in as little as five years. Details are given in the following sections for Mathematics and Statistics.

A Handbook for Mathematics and Statistics Majors, available from the Mathematics and Statistics department office or the Undergraduate Mathematics Student Organization, provides additional information on the mathematics and statistics degree programs, honors in mathematics and statistics, mathematics and statistics courses, advising and other support for students, extracurricular activities, career options, and other material of interest to potential majors. For further information see http://www.cems.uvm.edu/math/undergrad.

Basic Curriculum

Mathematics: Math. 21, 22, 121, 52, 124, 241, 251, and CS 21.

Statistics: Math. 21, 22, 121, 124; CS 21; and one of Stat. 141, 143 or 211, 151 or 251, 201, 221 or 227, 241 or 261, and 281 or 293.

Applied and Interdisciplinary Mathematics: Math. 21, 22, 121; CS 21; Math. 124, 230, and 237.

In addition to the Basic Curriculum above, candidates for the degree of Bachelor of Science in Mathematics must complete the following requirements A, B, C, and D.

A. Major Courses

Mathematics: A minimum of 21 additional hours in Mathematics, Statistics, or Computer Science courses numbered 100 or above. At least 12 hours must be in courses numbered 200 or above and no more than 12 hours may be chosen from Computer Science.

Statistics: An additional six credit hours of Statistics, so that the total credits earned in Statistics is at least 24 hours. A minimum of two additional hours in Mathematics, Statistics, or Computer Science courses numbered 100 or above, so that a total of at least 45 credits in the basic and major courses is earned. A total of 18 credit hours in the combined basic curriculum and major courses must be taken at the 200 level and no more than 12 hours can be taken in Computer Science.

Applied and Interdisciplinary Mathematics: A mini-

mum of 18 additional hours in Mathematics, Statistics, or Computer Science courses numbered 100 or above, of these 18 hours, 6 must be in Mathematics or Statistics, and 12 must be numbered 200 or above.

B. Allied Field Courses

Allied fields include the following:

Twenty-four hours selected from the following Allied Fields:

(1) Physical Sciences	(6) Agricultural Sciences
(2) Biological Sciences	(7) Business Administration
(3) Medical Sciences	(8) Psychology
(4) Engineering	(9) Economics
(5) Computer Science (26 or higher)	(10) Environmental Sciences/Studies
	(11) Natural Resources

Each student in consultation with his or her advisor must plan a sequence of Allied Field courses consistent with his or her professional and personal goals. A student interested in pursuing intensive studies in an area not specifically listed is encouraged to plan a program with his or her advisor and submit it to the appropriate departmental committee for review and approval. The requirements are as follows:

Mathematics: Twenty-four hours selected from the above list of Allied Fields. Of these 24 hours, at least six must be in courses numbered 100 or above, and at least six must be taken in fields (1) to (5). Courses used to satisfy requirement A above may not be used to satisfy this requirement.

Statistics: Twenty-four hours selected from the above list of Allied Fields, including at least one laboratory experience in science or engineering. Of these 24 hours, at least six must be in courses numbered 100 or above and at least six must be taken in fields (1) to (5). Courses used to satisfy requirement A above may not be used to satisfy this requirement.

Applied and Interdisciplinary Mathematics: At least seven courses with a concentrated focus in an allied field. The major courses in requirement A and the Allied Field courses in requirement B must form a coherent program that has the written approval of the student's faculty advisor in the Mathematics and Statistics Department. When appropriate, and with the written approval of the advisor, at most three courses can overlap requirements A and B.

C. Humanities and Social Science Courses

(Courses used to satisfy requirement B above may not be used to satisfy this requirement.)

English 1, and 21 hours of courses selected from categories I, II, and III listed below. These 21 hours must be distributed over at least two categories, and at least six hours must be taken in each of the two categories chosen. Statistics majors must include Speech 11.

I. ***Language and Literature***

Chinese	Greek
Classics	Hebrew
English	Italian
French	Linguistics
General Literature	Russian
German	Spanish
	World Literature

II. ***Fine Arts, Philosophy, and Religion***

Art	Religion
Film	Speech
Music	Theatre
Philosophy	

III. ***Social Sciences***

Alana U.S. Ethnic Studies	History
Anthropology	Political Science
Area and International Studies	Psychology
Communication Sciences	Sociology
Economics	Vermont Studies
Geography	Women's Studies

D. Total Hours

A minimum of 120 semester hours is required, plus two hours in physical education activities. First-year students must include the one-hour Race and Culture course, EDSS or another course approved by the College of Arts & Sciences as meeting the "Race Relations and Ethnic Diversity in the United States" requirement.

E. Grades

No more than three grades of D, D+, or D– in the 200/300 level Mathematics and Statistics courses used to satisfy the "Core Curriculum" and "Major Courses" requirements will be acceptable.

Mathematics

The mathematics curriculum is quite flexible. It is designed to provide a sound basic training in mathematics that allows a student to experience the broad sweep of mathematical ideas and techniques, to utilize the computer in mathematics, and to develop an area of special interest in the mathematical sciences.

In addition to the Bachelor of Science degree described here, the Department of Mathematics and Statistics also offers a Bachelor of Arts degree in the College of Arts and Sciences. A faculty advisor from Mathematics will assist students in determining which degree program best suits their individual needs and plans. Some of the career plans for which a well-designed major in mathematics can provide ideal preparation are highlighted below.

Recommendations for Major Courses

In consultation with their advisor, students should choose an area of interest within the mathematics major and plan a coherent program that addresses their interests in mathematics and its applications. This area might be one of those listed below, or it might be another area suggested by the student. As a guide, students interested in one of the areas would typically take at least three courses in that area, including all of the courses marked with an asterisk (*). In addition, students should take courses from at least two other areas. Because of its centrality in mathematics, students should make sure that they take at least one course listed under Classical Mathematics. In following these recommendations, a course listed in more than one area is meant to be counted only once.

1. ***Classical Mathematics.*** Classical mathematics encompasses those areas having their roots in the great traditions of mathematical thought, such as geometry and topology, mathematical analysis, algebra and number theory, and discrete mathematics. Courses in this area include the following: *Math. 141, 151, 173, 236, 240, 241*, 242, 251*, 252, 255, 257, 260, 264, 273, 331, 353.*
2. ***Applied Mathematics.*** Applied Mathematics involves the use of mathematical methods to investigate problems originating in the physical, biological, and social sciences, and engineering. Mathematical modeling, coupled with the development of mathematical and computational solution techniques, illuminates mechanisms which govern the problem and allows predictions to be made about the actual physical situation. Current research interests of the faculty include biomedical mathematics, fluid mechanics and hydrodynamic stability, asymptotics, and singular perturbation theory. Courses in this area include the following: *Math. 230*, 236, 237*, 238, 240, 272, 273, 274.*
3. ***Computational Mathematics.*** Computational mathematics involves both the development of new computa-

tional techniques and the innovative modification and application of existing computational strategies to new contexts where they have not been previously employed. Intensive computation is central to the solution of many problems in areas such as applied mathematics, number theory, engineering, and the physical, biological and natural sciences. Computational mathematics is often interdisciplinary in nature, with algorithm development and implementation forming a bridge between underlying mathematical results and solution of the physical problem of interest. Courses in this area include the following: *Math. 173, 230, 237*, 238, 274, Statistics 201.*

4. ***Theory of Computing.*** The mathematical theory of computing deals with the mathematical underpinnings allowing effective use of the computer as a tool in problem solving. Aspects of the theory of computing include: designing parallel computing strategies (graph theory), analyzing strengths and effectiveness of competing algorithms (analysis of algorithms), examining conditions which ensure that a problem can be solved by computational means (automata theory and computability), and rigorous analysis of run times (complexity theory). Courses in this area include the following: *Math. 173, 223, 224*, 243, 273, 325, Computer Science 346, 353.*
5. ***Mathematics of Management:*** Mathematics of Management involves the quantitative description and study of problems particularly concerned with the making of decisions in an organization. Problems are usually encountered in business, government, service industries, etc., and typically involve the allocation of resources, inventory control, product transportation, traffic control, assignment of personnel, and investment diversification. Courses in this area include the following: *Math. 173, 221*, 222, 230, 236, 273, Statistics 141 or 211, Statistics 151 or Math. 207, Statistics 224, 241, 253.*
6. ***Actuarial Mathematics:*** Actuaries use quantitative skills to address a variety of risk related problems within financial environments. A unique feature of the actuarial profession is that a considerable amount of the formal training is typically completed after graduation "on-the-job." The Society of Actuaries is an international organization that regulates education and advancement within the profession. Candidates may earn designation as an Associate of the Society of Actuaries (ASA) by satisfying three general requirements. These are: (1) *Preliminary Education Requirements*, PE; (2) *the Fundamentals of Acturial Practice Course*, FAP; and (3) the *Associateship Professionalism Course*, APC. The multiple component FAP is based on an e-learning format, and can be pursued independently. After completing the PE and at least one of the FAP components, candidates are eligible to register for the one-half day APC. The *Preliminary Education Requirements* consist of (1) pre-requisites (2) subjects to be validated by educational experience (VEE), and (3) four examinations. While at the university, students can satisfy the pre-requisites, the VEE courses, and the first two preliminary examinations. The following courses are recommended as preparation for the specific requirements.

   Pre-requisites. Calculus (Math 21, 222, and 121), Linear algebra (Math 124), Introductory accounting (BSAD 60, 61), Business law (BSAD 17, 18), and Mathematical statistics (STAT 261, 262). These are topics that will assist candidates in their exam progress and work life but will not be directly tested or validated.

   Subjects Validated by Educational Experience. Economics (EC 11, 12), Corporate Finance ((BSAD 180, 181), and Applied Statistical Methods (STAT 221, 253). Candidates will demonstrate proficiency in these subjects by submitting transcripts.

   Preliminary Examinations. Exam P - Probability (STAT 151, 251), Exam FM - Mathematics of Finance (BSAD 180, 181). Other applicable departmental courses include: Statistics for Business STAT 195, Statistical Analysis via Computers STAT 201, Applied Regression Analysis STAT 225, Survival Analysis STAT 229, Categorical Data Analysis STAT 235, Nonparametric methods STAT 237, Combinatorics MATH 173, and Operations Research (MATH 221, 222).
7. ***Probability and Statistical Theory.*** Probabilistic reasoning is often a critical component of practical mathematical analysis or risk analysis and can usefully extend classical deterministic analysis to provide stochastic models. It also provides a basis for statistical theory, which is concerned with how inference can be drawn from real data in any of the social or physical sciences. Courses in this area include the following: *Math. 222, 241, 242, (Statistics 151 or Math. 207)*, Statistics 241*, 252a, 252b, 261, 262, 270.*

Recommendations for Allied Field Courses

Students who select the Applied and Interdisciplinary Mathematics option are required to consult with their advisor in setting up their concentration in an Allied Field, as described under requirements B. Students who select the General Mathematics option should also discuss Allied Field courses with their advisor and choose ones which complement their mathematical interests. Students with certain mathematical interests are advised to emphasize an appropriate Allied Field as indicated below and take at least six hours in courses numbered 100 or above in that field.

Applied Mathematics: Allied Field (1), (2), (3), (4), (6), or (9).

Computational Mathematics: Allied Field (4) or (5)

Mathematics of Management: Allied Field (7). Students interested in Mathematics of Management are advised to include Economics 11 and 12 in their choice of Humanities and Social Sciences courses, and to include Business Administration 60 and 61 in their choice of Allied Field courses. Those wishing to minor in Business Administration should contact the School of Business Administration and also take Business Administration 173 and two other courses chosen from Business Administration 168, 170, 174, 177, 178, and 272.

Statistics

Students receiving the B.S. in Mathematics may elect Statistics as their major. In addition, students receiving a B.A. degree in Arts and Sciences may concentrate in Statistics as a part of their Mathematics major. Statistics is a mathematical science extensively used in a wide variety of fields. Indeed, every discipline which gathers and interprets data uses statistical concepts and procedures to understand the information implicit in their data base. Statisticians become involved in efforts to solve real world problems by designing surveys and experimental plans, constructing and interpreting descriptive statistics, developing and applying statistical inference procedures, and developing and investigating stochastic models or computer simulations. To investigate new statistical procedures requires a knowledge of mathematics and computing as well as statistical theory. To apply concepts and procedures effectively also calls for an understanding of the field of application.

The curriculum is designed for students who plan to enter business, industry, or government as statisticians; to become professional actuaries; or to continue on to graduate school in statistics/biostatistics or another field where a quantitative ability can prove valuable (business, operations research, medicine, public health, demography, psychology, etc.). Students are encouraged to undertake special projects to gain experience in data analysis, design, and statistical computing. Also, experience can be gained with local industry and other organizations for those interested in quality control, industrial statistics, survey and market research or forecasting, for example.

A Statistics Minor consists of 15 credits of statistics (STAT) courses, acquiring calculus knowledge equivalent to MATH 019 or 021, and gaining computer experience equivalent to STAT 201 or a computer programming course (CS 016 or higher or MATH 052). EC 170: Economic Methods can also be counted in place of STAT 111 or 141 as an introductory statistics course. Not more than two courses of introductory Statistics STAT 011/051/111/140/141/143/211 or EC 170 may be counted. The course plan for the Statistics Minor must be approved by a Statistics faculty advisor. See more complete guidelines at Statisics Minor Web site (www.cem.uvm.edu/math/grad/statistics.php). Note that Mathematics majors can minor in Statistics as well. In Arts and Sciences you must earn 12 of your 15 credits in statistics beyond any statistics courses counted in your major courses. In Engineering and Mathematical Sciences you must earn 15 credits in statistics beyond any statistics courses counted for your major.

Statistics majors may also minor in Mathematics by completing MATH 21, 22, 52 or 121, and 9 more credits in mathematics at the 100+ level. Since Statistics majors normally take MATH 21, 22, 121 and 124, they just need two more mathematics courses at the 100+ level.

Students may earn a double major in Mathematics and Statistics by meeting the requirements of the Statistics major and earning an additional 15 credits in Mathematics, to include MATH 52, and two of MATH 230, 237, 241, 251.

Further details on the Statistics major and minor curricula may be obtained from the Director of the Statistics Program. The Handbook for Mathematics and Statistics majors, available from the Mathematics and Statistics department office, also provides a wealth of useful information.

Premedical Concentration in Statistics. Each student electing the Premedical Concentration in Statistics will fulfill the general requirements for the Statistics major. Statistics 200 is recommended as an important elective for students interested in medicine or allied health. In addition, the premedical concentration should include as a minimum two years of chemistry with laboratory (Chemistry 31, 32, or 35, 36, 37, 38, and 141, 142), at least one year of physics with laboratory (Physics 21, 31, 22, 42 or 21, 31, 125), and at least one year of biology with laboratory (Biology 1, 2). Exposure to medical research problems may be provided through supervised experiences in the College of Medicine Biometry Facility.

Concentration in Quality. Students interested in methods of quality control and quality improvement are encouraged to develop a concentration in quality. Regularly offered courses include Statistics 224 and related courses in Business Administration such as 178 and others in the Production and Operations Management and Quantitative Method areas. Project experience in industrial quality control or in health care quality can be gained in Statistics 191 and 281, or 293-294.

Accelerated Master's Programs. A master's degree in Mathematics, in Statistics or in Biostatistics can be earned in a shortened time by careful planning during the junior and senior years at UVM. For example, the M.S. could be earned in just one additional year, because six credits of undergraduate courses can also be counted concurrently towards the M.S. degree requirements. A student must declare his/her wish to enter the Accelerated Masters Program in Mathematics in writing to the department chair before the end of their sophomore year, and before they have taken MATH 241. They would apply to the Graduate College for admission, noting their interest in the accelerated Master's program. They can receive concurrent undergraduate and graduate credit for one or two courses, once admitted. Please refer to Section 13 of the Handbook for Graduate Studies in Mathematics (www.cems.uvm.edu/math/undergrad/handbook.pdf) for detailed information. Students should discuss the possibility of an accelerated master's program in Statistics or in Biostatistics with the statistics program director as soon as they think they may be interested in this program.

The College of Nursing and Health Sciences

The College of Nursing and Health Sciences (CNHS) offers undergraduate and graduate programs in a variety of health care disciplines. The entry-level degree programs prepare the student for initial entry into clinical or laboratory practice and the pursuit of further education. The curricula include rigorous academic preparation and extensive field experience at selected facilities. The graduate programs prepare students for advanced practice in the health care disciplines and to assume leadership roles in practice, education, and research. The faculty of the CNHS is committed to excellence in teaching, the conduct of research that extends knowledge and contributes to the science of each discipline, and public service to improve the health care of citizens of state, national and global communities.

The following entry-level degree programs are offered: Bachelor of Science degree programs in Athletic Training, Exercise and Movement Science, Medical Laboratory Science; Nuclear Medicine Technology; Nursing; and Radiation Therapy. In Physical Therapy, an entry-level doctoral degree program is offered for post-baccalaureate applicants and for UVM undergraduate students in approved undergraduate majors. Nursing offers an entry level master's degree program for non-nurse college graduates. Graduates of the entry-level professional programs are eligible to sit for the appropriate licensure examination and enter practice or otherwise seek employment in the commercial/industrial sector. All of the professional programs needing accreditation and/or state approval for licensure eligibility have achieved and maintain such status. The Radiation Therapy program does not require accreditation and is not accredited at this time.

A non entry-level graduate program leading to a Master of Science degree is offered in Nursing (Advanced Practice Psychiatric-Mental Health, Clinical Systems Management, Advanced Community/Public Health Nursing, Primary Care Nursing, and an accelerated RN-BS-MS track). The Nursing graduate program is designed to enhance the clinical and/or academic background of licensed health care professionals and/or prepare them for advanced practice and research.

More information about the College, its mission and philosophy, faculty and programs can be found under the appropriate academic program headings on the UVM web site (http://www.uvm.edu/) and in the Graduate Catalogue.

ORGANIZATION

The College consists of three departments: Medical Laboratory and Radiation Sciences; Nursing; and Rehabilitation and Movement Science.

UNDERGRADUATE DEGREE PROGRAMS

Bachelor of Science degree programs:

Athletic Training Education
Exercise & Movement Science
Medical Laboratory Science
Nuclear Medicine Technology
Nursing
Nursing (for Registered Nurses)
Radiation Therapy

DEGREE REQUIREMENTS

Requirements for admission, retention and graduation are deRequirements for admission, retention and graduation are detailed below for each of the undergraduate degree programs. The College of Nursing and Health Sciences reserves the right to require the withdrawal of any student whose academic record, performance, or behavior in the professional programs is judged unsatisfactory. All candidates for admission and continuation must be able to perform the essential clinical as well as academic requirements of CNHS programs. These requirements include: the capacity to observe and communicate; sufficient motor ability to perform physical diagnostic examinations and basic laboratory and clinical procedures; emotional stability to exercise good judgment and to work effectively in stressful situations; and intellectual ability to synthesize data and solve problems. CNHS students must be able to meet these technical standards either with, or without, reasonable accommodations. Some professional licensing examiners, clinical affiliates and/or potential employers may require students and graduates to disclose personal health history, substance abuse history, and/or criminal convictions, which may, under certain conditions, impact eligibility for professional examinations, licensing, clinical affiliation, and/or employment. Some programs have additional clinical requirements such as CPR certification. Students who matriculate in the College of Nursing and Health Sciences are required to complete a Criminal Record Check (CRC) as a prerequisite for placement in many schools and clinical agencies with whom we have affiliation agreements. Evidence of a criminal record may prevent students from being eligible for clinical placement, and/or professional licensure.

RESPONSIBILITIES

There are some special responsibilities associated with clinical education. Students are responsible for their own transportation to and from clinical sites, and where relevant, the costs of housing for clinical experiences. All students must carry professional liability insurance during clinical rotations. The University is not responsible for medical costs resulting from injury during clinical rotation, or during any other curricular activity, unless this injury is due to negligence by the University. The Center for Health and Wellbeing, UVM Student Health, offers a student insurance plan for students who need health insurance.

Students who matriculate in the College of Nursing and Health Sciences are required to complete a Criminal Record Check (CRC) as a prerequisite for placement in many schools and clinical agencies with whom we have affiliation agreements. Evidence of a Criminal Record may prevent students from being eligible for clinical placement, and/or professional licensure. Applicants to the College's clinical programs must realize there is always an element of risk through exposure to infectious disease. Faculty and clinical staff make every effort to educate all students in appropriate modes of infection control in order to minimize these risks. Hepatitis B immunization series and a tetanus booster within the last 10 years are required prior to beginning the clinical experience. Additional immunization requirements for nursing students are listed in the Department of Nursing Undergraduate Student Handbook.

AREAS OF STUDY

Medical Laboratory and Radiation Sciences

Programs in the Department of Medical Laboratory and Radiation Sciences lead to Bachelor of Science degrees in Medical Laboratory Science, Nuclear Medicine Technology, and Radiation Therapy. A core curriculum of approximately 40 credit hours serves students in all three programs.

Graduates of all three programs are prepared for immediate employment, as well as to pursue post-baccalaureate education in the life sciences or professional education in medicine. Courses in the humanities and basic sciences are taken in the department and throughout the University, including the College of Medicine.

Requirements for admission are the same as the general University requirements, with the addition that applicants must have taken high school biology, mathematics through trigonometry, and chemistry; physics is highly recommended.

Bachelor of Science. A minimum of 128 semester credit hours including two credit hours of physical education, an overall grade-point average of 2.0, and a 2.0 GPA in professional courses are required for graduation in all four areas of study.

Departmental Honors. A student of at least junior standing whose minimum grade-point average is 3.5 is eligible for invitation by the faculty to participate in the departmental honors program. Students who accept the invitation will be required to complete one of the following options: (1) participation in at least two senior level specialty seminars with completion of an independent reading thesis; (2) completion of an independent research project. Excellent and committed work will be required for a student to be granted Departmental Honors.

MEDICAL LABORATORY SCIENCE:CLINICAL LABORATORY SCIENCE CONCENTRATION

The clinical laboratory scientist is involved in the development, performance, and evaluation of laboratory tests that lead to assessment of health status, diagnosis of disease, and monitoring of therapeutic treatment. The clinical laboratory experience is obtained at Fletcher Allen Health Care – Vermont's Academic Medical Center (FAHC) and the Vermont State Health Department Laboratories.

This four-year curriculum leading to the baccalaureate degree is accredited by the National Accrediting Agency for Clinical Laboratory Sciences. Upon consultation with an advisor, students may follow an individualized curriculum that can lead to certification in one of the clinical laboratory specialties (Microbiology, Chemistry, Hematology, or Immunology).

FIRST YEAR	Fall	Spr
CHEM 31 and 32	4	4
MLRS 1 First Year Seminar	1	–
MLRS 3 Medical Terminology	2	–
English	3	–
Math. (10 or 19 or higher)	3	–
EDSS 11, Race and Culture	1	–
Electives	3	6
Physical Education	–	1
Statistics 111 or 141	–	3
MLRS 34 Human Blood Cell Biology	–	3
	17	17

SOPHOMORE YEAR	Fall	Spr
MLRS 123 Instrumental Analysis	4	–
Physical Education	1	–
Anatomy & Physiology 19-20	4	4
Electives	6	3
MLRS 54 Principles of Microbiology	–	4
Chemistry 42 Organic Chemistry	–	4
	15	15

JUNIOR YEAR	Fall	Spr
MLRS 281 Applied Molecular Biology	4	–
MLRS 295 Education & Management	3	–
Pathology 101	3	–
Electives	6	3
MLS 231 Hematology	–	3
BIOC 212 Biochemistry of Human Disease	–	3
MLRS 242 Immunology Lecture	–	3
HLTH 120 Health Care Ethics	–	3
	16	15

SENIOR YEAR	Fall	Spr
MLS 255 Clinical Microbiology	4	–
MLS 262 Immunohematology	4	–
Electives	3	–
MLS 222 Clinical Chemistry	4	–
MLRS 244 Immunology Lab	1	–
MLS 220, 230, 250, 260 Clinical Practicum		12
MLS 292 Topics in MLS	–	3
MLRS 110-111 Phlebotomy	1	1
Total	17	16

TOTAL CREDITS: 128

MEDICAL LABORATORY SCIENCE:MOLECULAR DIAGNOSTICS CONCENTRATION

The area of Molecular Diagnostics applies molecular techniques and methodologies for diagnostic testing purposes. Practicing in this profession requires credentialing through the Clinical Laboratory Specialist in Molecular Biology (CLSp MB) exam offered by the National Credentialing Agency (NCA) or the Certification of Technologist in Molecular Pathology (MP) exam offered by the American Society for Clinical Pathology (ASCP).

FIRST YEAR	Fall	Spr
CHEM 31/32 Introductory Chemistry	4	4
MLRS 1 First Year Seminar	1	–
MLRS 3 Medical Terminology	2	–
English	3	–
Math. (10 or 19 or higher)	3	–
EDSS 11, Race and Culture	1	–
Electives	3	6
Physical Education	–	1
Statistics 111 or 141	–	3
MLRS 34 Human Blood Cell Biology	–	3
	17	17

SOPHOMORE YEAR	Fall	Spr
(CHEM 141/142 if Pre-Med)	*(4)*	*(4)*
MLRS 123 Instrumental Analysis	4	–
Physical Education	1	–
Anatomy & Physiology 19/20	4	4
Electives	6	3
MLRS 54 Principles of Microbiology	–	4
CHEM 42 Organic Chemistry	–	4
	15	15

JUNIOR YEAR	Fall	Spr
(PHYS 11/12 if Pre-Med)	*(4)*	*(4)*
MLRS 281 Applied Molecular Biology	4	–
MLRS 295 Education & Management	3	–
BCOR 101 Genetics	3	–
PATH 101 Pathology	3	–
Electives	3	3
MLS 231 Hematology	–	3
BIOC 212 Biochemistry of Human Disease	–	3
MLRS 242 Immunology Lecture	–	3
HLTH 120 Health Science Ethics	–	3
	16	15

SENIOR YEAR	Fall	Spr
MLS 222 Clinical Chemistry	4	–
MLS 255 Clinical Microbiology	4	–
MLS 295 Human Genetics	3	–
MLRS 110 Phlebotomy I	1	–
Electives	3	–
MLRS 244 Immunology Lab	1	–
MLS 272 MDS Practicum	–	16
MLRS 111 Phlebotomy II	–	1
	16	17

TOTAL CREDITS: 128

MEDICAL LABORATORY SCIENCE: PUBLIC HEALTH LABORATORY SCIENCE CONCENTRATION

Prepares students to work in public health laboratories at the state, federal and international level. The focus is on using microbiology, chemistry and molecular biology for public health (population-based) testing in support of epidemiology and to monitor health status and disease prevention strategies.

FIRST YEAR	Fall	Spr
CHEM 31/32 Introductory Chemistry	4	4
MLRS 1 First Year Seminar	1	–
MLRS 3 Medical Terminology	2	–
English 1 Written Expression	3	–
Math. (10 or 19 or higher)	3	–
EDSS 11, Race and Culture	1	–
Electives	3	6
CHEM 32 Introductory Chemistry	–	4
Physical Education	–	1
Statistics 141	–	3
MLRS 34 Human Blood Cell Biology	–	3
Total	17	17

SOPHOMORE YEAR	Fall	Spr
*(CHEM 141/142 if Pre-Med)**	*(4)*	*(4)*
MLRS 123 Instrumental Analysis	4	–
Physical Education	1	–
Anatomy & Physiology 19/20	4	4
Electives	6	3
MLRS 54 Principles of Microbiology	–	4
CHEM 42 Organic Chemistry	–	4
Total	15	15

JUNIOR YEAR	Fall	Spr
(PHYS 11/12 if Pre-Med)	*(4)*	*(4)*
MLRS 281 Applied Molecular Biology	4	–
MLRS 295 Education & Management	3	–
BCOR 101 Genetics Lecture	3	–
BIOS 200 Biostatistics	3	–
PATH 101 Pathology	3	–
Electives	–	3
HLTH 120 Health Science Ethics	–	3
MMG 220 Env. Micro OR		
PHRM 272 (Toxicology)	–	3
BIOC 212 Biochemistry of Human Disease	–	3
MLRS 242 Immunology Lecture	–	4
Total	16	16

SENIOR YEAR	Fall	Spr
MLS 222 Clinical Chemistry AND	4	–
NR 270 (Toxic Sub./Surface Water)	3	–
OR		
MLS 255 Clinical Microbiology AND	4	–
NFS 203 Food Micro	4	–
BIOL 254 Pop. Genetics	4	–
Electives	3	–
MLRS 244 Immunology lab	1	–
MLS 282 P.H. Practicum	–	17
Total	15-16	17

TOTAL CREDITS: 128

* - Chemistry track students will take CHEM 141 and 142

NUCLEAR MEDICINE TECHNOLOGY This four-year curriculum leading to the baccalaureate degree is accredited by the Joint Review Committee on Educational Programs in Nuclear Medicine Technology. Nuclear medicine technology is the medical specialty concerned with the use of small amounts of radioactive materials for diagnosis, therapy, and research. Nuclear medicine uniquely provides information about both the structure and function of virtually every major organ system.

Clinical education takes place at our clinical affiliations. The initial experience is obtained at the Fletcher Allen Health Care (FAHC). The internship will be at an affiliation outside Burlington which will require additional room, meals and transportation expenses.

Students who already have the associate in science degree in Nuclear Medicine Technology are encouraged to apply for transfer into the program on a space available basis.

FIRST YEAR	Fall	Spr
MLRS 1 First Year Seminar	1	–
MLRS 3 Medical Terminology	2	–
CHEM 23	4	–
Race and Culture	1	–
English (preferably ENG 1)	3	–
Math. (10 or 19)	3	–
Physical Education	1	1
MLRS 34 Human Blood Cell Biology	–	3
Electives	–	6
CHEM 26 or 42	–	4
Psychology 1	–	3
	15	17

SOPHOMORE YEAR	Fall	Spr
MLRS 140 Intro. Radiologic Science	3	–
Statistics 111 or 141	3	–
ANPS 19-20 Anatomy & Physiology	4	4
Electives	6	9
NMT 151 Principles of Nuclear Med. Technology	–	3
	16	16

JUNIOR YEAR	Fall	Spr
HLTH 120 Health Care Ethics	3	–
MLRS 295 Princ. of Educ. & Mgmt.	3	–
NMT 152 Radiopharmaceuticals	3	–
NMT 163 Nuclear Med. Clinical Practicum I	1	–
Pathology 101	3	–
NMT 175 Medical Imaging	3	–
MLRS 110 / 111 Phlebotomy	1	1
Electives	–	3
MLRS 242 Immunology	–	3
NMT 153 Nuclear Med. Clin. Proc. I	–	3
NMT 155 Instrumentation I	–	3
NMT 164 Nuclear Med. Clinical Practicum II	–	2
	17	15

SENIOR YEAR	Fall	Spr
MLRS 289 Research Writing & Design	3	–
NMT 154 Procedures II	3	–
NMT 156 Instrumentation II	3	–
NMT 263 (Clinical Practicum III)	3	–
Electives	3	–
NMT 264 Nuclear Medicine Internship	–	17
	15	17

Clinical education takes place at one of our clinical affiliations. The initial experience is obtained at the Fletcher Allen Health Care (FAHC). At least one experience will be at an affiliation outside Burlington, which will require additional room, meals and transportation expenses.

CLINICAL AFFILIATIONS

NUCLEAR MEDICINE TECHNOLOGY

Catholic Medical Center, Manchester, NH
Dartmouth-Hitchcock Medical Center, Hanover, NH
Fletcher Allen Health Care, Burlington, VT
Hartford Hospital, Hartford, CT
Maine Medical Center, Portland, ME
Massachusetts General Hospital, Boston, MA
Pharmalogic, LTD, Williston, VT

Note: The above list of clinical affiliations is subject to change.

RADIATION THERAPY

Radiation Therapy is the medical specialty that uses high energy radiations (x-rays, gamma rays, electron beams, etc.) in the treatment of disease. Radiation therapists are responsible for daily treatments, providing support for patients as they cope with their disease, and contributing as vital members of the medical team responsible for the patient's treatment plan.

FIRST YEAR	Fall	Spr
MLRS 1 First Year Seminar	1	–
MLRS 3 Medical Terminology	2	–
EDSS 11, Race and Culture or equivalent	1	–
English	3	–
Math. (10 or 19)	3	–
Chemistry 23 (or 31-32)	4	(4)
Physical Education	1	1
MLRS 34 Human Blood Cells	–	3
Psychology 1	–	3
Electives	–	5-9
	15	16

SOPHOMORE YEAR	Fall	Spr
MLRS 140 Radiation Science	3	–
Statistics 111 (or 141)	3	–
Nutrition 43	3	–
Electives	3	6
ANPS 19/20 Anatomy & Physiology	4	4
RADT 152 Principles of Radiation Ther.	–	3
Sociology	–	3
	16	16

JUNIOR YEAR	Fall	Spr
MLRS 295 Princ. Educ. & Mgmt.	3	–
RADT 173 Clinical Practicum I	3	–
Pathology 101	3	–
RADT 175 Medical Imaging	3	–
Physics 11 and 12	4	4
Electives	–	3
HLTH 120 Health Care Ethics	–	3
RADT 144 Seminar, Patient Issues	–	1
RADT 174 Clinical Practicum II	–	2
RADT 176 Clinical Rad. Oncology	–	3
	16	16

SENIOR YEAR	Fall	Spr
MLRS 289 Research Writing & Design	3	–
RADT 223 Clinical Practicum III	3	–
RADT 275 Dosimetry	3	–
RADT 277 Techniques	4	–
Electives	3	–
RADT 274 Clinical Internship	–	14
RADT 280 Treatment Plan	–	3
	16	17

Clinical education takes place at one of our clinical affiliations. The initial experience is obtained at the Fletcher Allen Health Care (FAHC). At least one experience will be an affiliation outside Burlington which will require additional room, meals, and transportation expenses.

CLINICAL AFFILIATIONS

RADIATION THERAPY

Dartmouth-Hitchcock Medical Center, Hanover, NH
Elliot Hospital, Manchester, NH
Fletcher Allen Health Care, Burlington, VT
Massachusetts General Hospital, Boston, MA

Note: The above list of clinical affiliations is subject to change.

Students who already have the Associate in Science degree in Radiation Therapy may apply for transfer into the baccalaureate program, on a space available basis. Requirements are a total of 128 credit hours for graduation including approved transfer credits from their Associate degree. Additional required courses for the baccalaureate degree are Chemistry 23 (or 31 and 32), Physics 11 and 12, Pathology 101, MLRS 120, 289, and 12 credit hours in the concentration areas of dosimetry, topographical anatomy, patient care, treatment planning, and quality assurance. These independent studies will be coordinated by the student's advisor.

Nursing

The Nursing department offers an undergraduate educational program to prepare qualified individuals for the practice of professional nursing and a graduate program for advanced nursing practice. The undergraduate program leads to the Bachelor of Science degree and is approved by the Vermont State Board of Nursing and the National League for Nursing Accrediting Commission (61 Broadway, 33rd Floor, New York, NY 10006; 800-664-1656, Ext. 153). Graduates of the program are eligible to apply for registered nurse licensure.

Progression Policy

- Students are expected to maintain a cumulative GPA of at least 2.5. If a student's GPA is below 2.5, the student will be placed "on trial" for one semester. The inability to raise the cumulative GPA to 2.5 during the "on trial" semester is grounds for dismissal.
- A grade of C or better is required in all non-elective courses.
- Failure to successfully complete a non-elective course twice is grounds for dismissal. This policy refers to either receiving a C-, D, F, or W in the same course twice or in two different courses.

Bachelor of Science: Applicants must meet the general admission requirements for the University. Financial Aid is available in the form of scholarships, loans, awards, and employment (see section on Financial Aid). A minimum of 128 approved semester hours is required for the Bachelor of Science degree. Full-time and part-time plans of studies are available. Students are encouraged to purchase a personal computer. Specifications for hardware and software requirements may be found at UVM's Division of Computing and Information Technology's web site www.uvm.edu/cit/mcsv.

The curriculum, conducted in four academic years, provides balance in general and professional education. Courses in the sciences - biological, physical, social, and humanities - serve as a foundation for the nursing courses.

A typical full-time program of studies follows:

FIRST YEAR	Fall	Spr
English 1	3	–
Psychology 1	3	–
Human Development 5	3	–
Chemistry 23, 26	4	4
Sociology 1[1]	–	3
Elective	–	3
Environmental Studies [2]	3/4	–

Abnormal Psychology 152	–	3
Philosophy or Religion or Ethics	–	3
Physical Education	–	1
PRNU 50 First Year Nursing Seminar	1	–
	17/18	17

[1]any sociology course under 100
[2]One of the following: ENVS 1, 2, or 7; ENSC 1 or 130; NR 2 or NR 107/NH 107.

SOPHOMORE YEAR	Fall	Spr
Elective	3	–
Microbiology 65	4	–
Anatomy & Physiology 19-20	4	4
Fundamentals of Nutrition 43	3	–
Statistics 111 or 141	3	–
Professional Nursing 110	–	3
Professional Nursing 111	–	3
Professional Nursing 113	–	4
PEAC	–	1
	17	15

JUNIOR YEAR	Fall	Spr
NURS 120 Pathophysiology	3	–
Professional Nursing 127	3	–
Professional Nursing 128	4	–
Professional Nursing 129	4	–
Professional Nursing 130	2	–
Professional Nursing 131	–	3
Professional Nursing 132 or 235	–	5
Professional Nursing 134	–	6
Elective	–	3
	16	17

SENIOR YEAR	Fall	Spr
Professional Nursing 231	3	–
Professional Nursing 234	6	–
Professional Nursing 235 or 132	5	–
Elective	3	–
Professional Nursing 240	–	3
Professional Nursing 241	–	6
PRNU 244 Senior Practicum	–	3
	17	12

The Bachelor of Science degree with a major in nursing is awarded upon completion of a minimum of 128 credit hours (126 if the student is over 25 years of age) in full or part-time study. The major components of the curriculum are: required non-nursing courses, elective courses, and major nursing courses. Students must successfully achieve:

• 64 credit hours of major nursing courses;

• 52 credit hours of required non-nursing courses (50 if excluding the physical education requirement; and

• 12 credit hours of elective courses.

A three-credit "Race and Culture" course is required prior to graduation.

BS Program for Registered Nurses: The program for registered nurses has been designed in light of changes in the health care delivery system and to better serve the registered nurse returning to school. In this program, the Bachelor of Science degree with a major in nursing is awarded upon completion of a minimum of 126 credit hours (124 if the student is over 25 years of age) in full or part-time study. The major components of the curriculum are: required non-nursing courses, elective courses, and major nursing courses. The curriculum plan may vary for each student depending on the type and number of credits transferred to UVM. The focus of the baccalaureate program component is on health and health promotion for individuals, families, groups, and communities; and the factors that influence delivery of health care services. The program is an RN-BS-MS accelerated program, with an option for students to "step out" after completion of the baccalaureate requirements with a B.S. degree. Separate application is required for the graduate program.

The baccalaureate nursing courses include:

	Hours
Professional Nursing 60	2
Professional Nursing 111	3
Professional Nursing 113	4
Professional Nursing 241	6
Professional Nursing 263	5
Graduate Nursing 301	3
Graduate Nursing 310	3
Graduate Nursing 315	3
Professional Nursing or NURS electives	6-7

The baccalaureate non-nursing courses include:

Quantitative Sciences	19
Environmental Studies Electives: ENVS 1, 2, 7 or ENSC 1 or 130 or NR 107/NH 107	3/4
Elements of Statistics 111 or 141	3
Human Development 5	3
Philosophy, Religion, or Ethics	3
English elective	3
Psychology elective	3
Sociology elective	3
General Education electives	18-19
Physical Education	2
Race and Culture course	3

Graduate Studies: Students interested in master's preparation in nursing may obtain information on admission and curricula in the Graduate Catalogue, available in the offices of the Graduate College.

Rehabilitation and Movement Science

Exercise is the key to the maintenance of health and the prevention of heart disease, osteoporosis, diabetes, obesity and associated degenerative diseases and chronic conditions.

The Department of Movement Science and Rehabilitation consolidates the closely related fields of athletic training, exercise and movement science, and physical therapy. Students in these fields will influence individuals across the lifespan by fostering wellness, preventing injuries and disease, facilitating high levels of skill, maintaining or restoring fitness, and rehabilitating individuals with injuries, diseases, chronic conditions, and disabilities.

Guaranteed Admission Program

Through a separate application process, a limited number of excellent high school graduates may be offered guaranteed admission to the Doctor of Physical Therapy (DPT) program following completion of their undergraduate degree requirements and physical therapy prerequisites. Students must first complete an undergraduate application then select and be admitted to an approved major. These students may follow an undergraduate-to-graduate program model of 4+3 or an accelerated 3+3 model. Students following the accelerated program are awarded the baccalaureate degree in their undergraduate major after the successful completion of their first year of study in physical therapy.

General Admission Program

It is possible to gain admission to The University of Vermont in the undergraduate program selected but not be offered guaranteed admission status. Students who do not receive, or choose not to apply for guaranteed status, may still pursue the

Doctor of Physical Therapy degree through the General Admission Option. This option generally requires application to the DPT program in the final year of undergraduate study, or sometime thereafter. Students in select undergraduate majors may follow an accelerated 3+3 model, completing their undergraduate degree requirements in three years and making application to the DPT program in their third year of undergraduate study. For students following a 4+3 model, the Graduate Record Exam is also required.

Post Baccalaureate Admission

Applicants who have already completed the baccalaureate, master or doctoral degree in other disciplines are encouraged to apply to the Doctor of Physical Therapy program. The total length of post baccalaureate study in the DPT program is three years.

Athletic Training Program

The purpose of the Athletic Training Education Program (ATEP) is to provide students the knowledge and practical skills to enter the profession of athletic training. Athletic Training is an academic major at UVM and provides students with an all-encompassing education fitting of a medical profession. The undergraduate program at the University of Vermont has been approved by the National Athletic Trainer's Association (NATA) since 1979 and is currently accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). It is designed to provide the undergraduate student with professional preparation and eligibility to sit for the National Athletic Trainer's Association Board of Certification (NATABOC) examination. Certified athletic trainers are highly trained medical professionals qualified to work in a number of settings to enhance the quality of health care for athletes and those engaged in physical activity. Working closely with physicians and other allied health professionals, their expertise includes the prevention, evaluation, management, and rehabilitation of injuries incurred by the physically active.

In addition to coursework, students are required to complete a minimum of 800 hours of clinical experience under the direct supervision of certified athletic trainers on campus and at local off-campus affiliate sites. The required 800 clinical experience hours is based upon three years in the program (second through fourth). First year students are required to participate in an introductory period of directed observation experience of 60 hours. During this time, the student becomes acquainted with the various daily duties and routines of the staff and athletic training students, the operations of the training room and basic athletic training skills. Once admitted to the ATEP, students are assigned to Approved Clinical Instructors. These assignments include team practice and game coverage, team travel, and sports therapy clinic coverage. Students also have the option of a number of other practical experiences during their final year including observing in surgery or emergency room, orthopedic research, emergency rescue squad runs, etc. Each student is evaluated at regular intervals and must demonstrate mastery of educational competencies to continue with the next assignment.

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall	Spr
MLRS 003 - Medical Terminology	1	–
ENGS 001 - Written Expression	3	–
MATH 009 or higher	3	–
PHYS 011 - Elementary Physics I	4	–
PHYS 021 - Introductory Lab	1	–
EDPE 023 - Amer Red Cross Emergency Response	3	–
PEAC 028 - Conditioning	1	–
AT 157 - Care and Prevention of Athletic Injuries	–	3
AT 158 - Directed Observation in Athletic Training	–	2
EDHE 046 - Personal Health	–	3
PHYS 012 - Elementary Physics II	–	4
PHYS 022 - Introductory Lab	–	1
NFC 043 - Fundamentals of Nutrition	–	3
Physical Education Elective	–	1
Total	16	17

SOPHOMORE YEAR	Fall	Spr
ANPS 019 - Anatomy and Physiology I	4	–
AT 159 - Practicum in Athletic Training I	2	–
AT 184 - Evaluation and Recognition of Athletic Injuries I	4	–
PSYC 001 - General Psychology	3	–
CHEM 023 - Outline of General Chemistry	4	–
ANPS 020 - Anatomy and Physiology II	–	4
AT 160 - Practicum in Athletic Training II	–	2
AT 185 - Evaluation and Recognition of Athletic Injuries II	–	4
EXMS 166 - Kinesiology	–	3
SOC 019 - Race Relation in the U.S	–	3
Total	17	16

JUNIOR YEAR	Fall	Spr
AT 161 - Practicum in Athletic Training III	2	–
AT 186 - Therapeutic Modalities	3	–
AT 195 - Special Topics in Athletic Training	3	–
EXMS 269 - Exercise Physiology	4	–
EXMS 168 - Test and Measurement in Exercise and Sport Science	3	–
AT 162 - Practicum in Athletic Training IV	–	2
AT 187 - Rehabilitation Techniques in Athletic Training	–	3
AT 188 - Administration in Athletic Training	–	2
NFS 163 - Sports Nutrition	–	3
EDPE 265 - Seminar in Exercise and Sport Science	–	3
Humanities Elective(PHIL, POLS, HIST)	–	3
Total	15	16

SENIOR YEAR	Fall	Spr
AT 190 - Internship in Athletic Training	6-12	–
MLRS 120 - Health Care Ethics	3	–
EDPE 197 - Readings and Research (required)	3	–
EXMS 242 - Exercise and Sport Psychology	3	–
AT 190 - Interntship in Athletic Training (or minimum 6 credits free electives)	–	6-12
Humanities Elective (PHIL, POLS, HIST)	–	3
EXMS 267 - Science of Training and Conditioning	3	3
Total	15-21	12-18

Exercise & Movement Science

The Exercise and Movement Science (EXMS) major comprises the in-depth study of the theory and applications of exercise and movement sciences in health, fitness and prevention in a variety of populations. Students following the EXMS major can select an academic minor to tailor their education to their individual objectives and goals, although a minor is not required. Graduates of the EXMS major may pursue careers in related areas of fitness and health, such as health promotion, adapted physical activity for special populations, pharmaceutical sales, recreation management and health and fitness business ventures. They may also pursue one of several clinical certifications, such as ACSM Exercise Specialist, Specialist in Gerontology, or NSCA / Personal Trainer. Finally, students graduating from this program will be qualified for graduate work in Exercise and Movement Sciences.

Applicants must meet the general admission requirements for the University of Vermont. In addition, students must have one year of biology, one year of chemistry, four years of math, including trigonometry. One year of physics is strongly recommended. Students are expected to achieve a semester GPA of no less than 2.5, and maintain a cumulative GPA no less than 2.5 for graduation. In addition, students may receive no more than one grade of D or below in their major courses. This curriculum, conducted in four academic years, provides balance in general and professional education.

A typical, but not all-inclusive, program outline follows:

FIRST YEAR	Fall	Spr
NFS 43 Fundametals of Nutrition	3	–
CHEM 23 Outline of General Chemistry	4	–
MATH 10 or higher	3	–
GEN ED	3	–
PEAC - Physical Education Activity Course	1	–
AT 157 – Care and Prevention of Athletic Injuries	–	3
CHEM 26 – Outline of Organic & Biochem	–	4
BIO 4 or higher	–	3-4
GEN ED	–	3
PEAC - Physical Education Activity Course	–	1
EDSS 11 - Race and Culture	–	1
Total	14	15-16

SOPHOMORE YEAR	Fall	Spr
ANPS 19 - Anatomy and Physiology I	4	–
EXMS 166 - Kinesiology and Biomechanics I	3	–
NFS 63 – Obesity, Weight Control & Fitness	3	–
GEN ED	3	–
Elective	3	–
ANPS 20 - Anatomy and Physiology II	–	4
EXMS 169 - Kinesiology and Biomechanics II	–	3
EXMS 168 – Measurement & Data Analysis in Exercise Science	–	3
GEN ED	–	3
Elective	–	3
Total	16	16

JUNIOR YEAR	Fall	Spr
EXMS 269 - Exercise Physiology	4	–
EDPE 220 – Sport in Society	3	–
EXMS 260 – Adapted Physical Activity Across the Lifespan	3	–
GEN ED	3	–
EXMS 271 – Practicum I	3	–
CNHS 150 – Ethics and Advocacy in Health Care	2	–
EXMS 265 - Research Methods in Exercise Science	–	3
EXMS 240 - Motor Learning and Performance	–	3
NFS 163 - Sports Nutrition	–	3
GEN ED	–	3
Elective	–	3
EDPE 261 - Physioilogic Changes and Performance with Aging	–	3
Total	18	18

SENIOR YEAR	Fall	Spr
EXMS 242 - Exercise and Sport Psychology	3	–
EXMS 266 - Exercise Prescription for Sport, Health & Fitness	3	–
Option A/B	3	–
Elective	3	–
EXMS 243 – Leadership in Exercise and Sport	3	–
EXMS 197 – Senior Research	–	3
EXMS 272 – Practicum II	–	3
Option A/B	–	3
Elective	–	3
CNHS 152 - Personal Health/Health Promotion & Health Behaviors	–	3
Total	15	15

Total Credits 128

The School of Business Administration

The School of Business Administration at The University of Vermont prepares students for careers in management in a dynamic global economy and fosters recognition of the importance of ethical, social, and environmental responsibility. The School cultivates and supports a Faculty that excels in management education, research, and practice. The School also commits itself to a special obligation to serve the citizens of Vermont. It strives to be the best business program of its size.

The School contributes to the mission of the University by pursuing seven objectives:

1. To become nationally known for excellence in undergraduate education that integrates forward-looking professional studies with rigorous studies in the liberal arts and sciences by graduating bachelors' candidates who:
   - know how to think critically, learn independently, and search for and integrate new information;
   - understand what managers do, how businesses operate, and how markets behave;
   - understand how knowledge is created;
   - use knowledge, creative abilities, and analytical skills to frame and solve management problems;
   - have strong communication skills;
   - use information technologies to improve individual and organizational performance;
   - have a sense of history, familiarity with the great world literature and an understanding of global economic, political and technological developments;
   - appreciate the diversity of cultures, values, and ideas.
2. To offer a high quality MBA degree that serves in-career, part-time students and their employers in the Vermont region as well as select full-time students. Graduate MBA candidates who are able to build on previous educational and professional experiences in developing knowledge to address significant management issues of the whole organization as well as the functional parts.
3. To provide students with an environment that fosters intellectual and professional development through academic and career advising.
4. To recruit, retain, reward and reinforce the continuing scholarly and professional development of a faculty and staff that achieves high standards of quality, innovation and productivity in teaching, research and service.
5. To engage in research and publication that enhance the scholarly reputation of the University and enrich the School's educational programs.
6. To conduct public service programs that increase the intellectual capital and leadership capabilities of Vermont's and the nation's business, public sector and not-for-profit organizations.
7. To develop and strengthen cooperative relationships and programs with other colleges, schools and departments at The University of Vermont, that capitalize on institutional strengths and resources to advance the mission of the University.

During their first two years, students build the conceptual and analytical base for studying the art and science of management. They partially complete general education requirements and learn required skills for upper level business courses. Students take business field courses and business discipline concentration courses in their junior and senior years.

The School of Business Administration cooperates with the College of Engineering and Mathematical Sciences in offering a B.S. in Engineering Management.

The undergraduate and graduate programs offered by the School are accredited by AACSB International: The International Association to Advance Collegiate Schools of Business.

The offices of the School of Business Administration are located in Kalkin Hall.

DEGREE PROGRAM

Bachelor of Science in Business Administration – with concentrations in:

Accounting	Management and the Environment
Entrepreneurship	Management Information Systems
Finance	Marketing
International Management	Production and Operations
Human Resource Management	Self-Designed

DEGREE REQUIREMENTS

Students must comply with the degree requirements as stated in a single catalogue edition in place during the time they are enrolled. The catalogue to be followed is the one in effect at the time a student enrolls at UVM, unless the student requests in writing to follow a catalogue that is published subsequently during their enrollment at UVM. Students who have a separation from the University of three years or more must meet the requirements of the current catalogue at the date of readmission.

A minimum of 122 approved semester hours is required for the degree of Bachelor of Science in Business Administration. A cumulative grade point average of 2.0 is required. At least 50% of course work must be taken in subjects that are not business or upper level economics. Students must complete 30 of the last 45 hours of credit in residence at UVM as a matriculated student.

The Business Field requirement courses and the Business Discipline Concentration courses must each be filled with at least 50 percent of business administration courses taken at UVM. Other UVM courses may be used towards these requirements if approved by the Undergraduate Studies Committee.

Students choosing an international management concentration may complete all Business Discipline Concentration credit hours at an approved abroad institution. However, they will be required to complete 75 percent of their Business Field credit hours in UVM business courses or in other UVM courses approved by the Undergraduate Studies Committee.

Additional grade requirements exist for basic business core, business field, and business discipline concentration courses.

Academic Standards

Students will be placed on trial if their semester or cumulative grade-point average is less than 2.0. Students will remain on trial until both semester and cumulative grade-point averages reach at least 2.0 or until they are dismissed. Students on trial will be given a target semester grade-point average to achieve by the end of the following semester.

Students shall be dismissed from the University in the following situations: (1) failure to achieve the target grade-point average while on trial; (2) failure of at least half their course credits in any semester while maintaining a cumulative grade-point average of less than 2.0. First year students who have just completed their first semester will be dismissed if they earn a grade-point average of 1.0 or less and fail at least half their course credits.

A student may appeal a dismissal in writing to the Undergraduate Studies Committee within the time frame stipulated in the dismissal letter if there are circumstances supporting an extension of trial status. Detailed information on the criteria for dismissal may be obtained from the School of Business Student Services Office.

BUSINESS COURSE REQUIREMENTS

Basic Business Core

(24-26) credit hours)
To be completed by the end of the sophomore year with a grade-point average of 2.0.

Math 19 and 20; or Math 21
Economics 11 and 12
Statistics 141
BSAD 40, 60, 61

Business Field Courses

(24 credit hours)

To be completed beginning junior year, with a grade-point average of at least 2.0.

Quantitative Methods, BSAD 120, 132, 141, 150, 173, 180, 191. Students must have junior status and have completed the Basic Business Core before taking Business Field courses.

The Quantitative Methods course is selected from among BSAD 170, 174, 177, 178, 266, 270, 272; EC 270, or Statistics 151, 195, 201, 221, 223, 224, 225, 231, 233, 237 or 253.

BSAD 191 is taken in the senior year.

Business Discipline Concentration

(at least 12 credits)
To be completed with a grade point average of at least 2.0

The student must complete at least 12 hours in Business Administration courses numbered 100 or above beyond those required for the Business Field courses. One approach is to concentrate these courses in one of the areas of Accounting, Entrepreneurship, Finance, Human Resource Management, Management and the Environment, Management Information Systems, Marketing, International Management, or Productions and Operations Management. Students may also complete a self-designed program.

The specific requirements for each Discipline Concentration are available from the Student Services Office in 101 Kalkin Hall. A faculty member teaching in the discipline of the concentation must approve any exception to these requirements.

GENERAL EDUCATION REQUIREMENTS

The General Education Requirement framework is based on six field blocks.
The Six Fields are:

1. **Arts and Humanities** – Art, Classics, Film, History, Music, Philosophy, Religion, Theatre.
2. **Writing and Speaking** – Speech, English (writing, literature and film courses).
3. **Social Sciences** – Anthropology, Environmental Studies, Geography, Political Science, Psychology, Sociology, Women's Studies.
4. **Natural Sciences, Mathematics, and Engineering** – Astronomy, Biology, Botany, Chemistry, Civil Engineering, Computer Science, Electrical Engineering, Environmental Science, Geology, Mathematics, Mechanical Engineering, Natural Resources, Physics, Statistics.
5. **Area and International Studies** – African Studies, Asian Studies, Canadian Studies, European Studies, Latin American Studies, Middle East Studies, Russian/East European Studies, Holocaust Studies.
6. **Language and Literature** – Chinese, Communication Sciences, French, German, Greek, Hebrew, Italian, Japanese, Latin, Literature Classes, Russian, Spanish, World Literature.

Basic General Education Core

(at least 19 credit hours)
Six courses. Each requirement must be filled with a course worth at least 3 credits. One from each of the following:

1. United States or Global History from History 9, 10, 11, 12, 19, 25, 26 or 68.
2. English course that emphasizes practice in writing from English 1, 50, 53, 120.
3. Social Science from any discipline in field 3 above.
4. Natural Science that includes a laboratory or field experience from Astronomy 5 and 23, 5 and 24; Biology 1, 2; Botany 4; Chemistry 20, 23, 31, 35; Geology 1, 4, 55; Natural Resources 1; Physics 11 and 21, 31 and 21.
5. Area and International Studies from any discipline in field 5 above.
6. Language or Literature from any discipline in field 6 above.

Cross-listed courses may count for only one Basic General Education Core requirement.

General Education Field Concentration

(at least 12 credit hours)

Students must complete at least 12 credits in any one of the six general fields listed above. They may take any combination of courses within the field. For example, in the Social Sciences field, two Political Science courses, a Sociology course and a Women's Studies course might make up the field concentration.

One course from the Basic General Education Core may be used as one of the General Education Field Concentration courses.

General Education Discipline Concentration

(at least 12 credit hours)
Students must accumulate 12 credits in a single discipline. The discipline may **not** be in the field chosen for the general education field concentration.

Disciplines are specific academic areas, not broad fields. For example, Religion is a discipline in field 1. If Religion is chosen, the student may not include Philosophy and Art classes, even though they are in the same field.

One course from the Basic General Education Core may be used as one of the General Education Discipline Concentration.

As a general rule, two discipline concentration courses must be numbered 100 or higher. Exceptions: (1) if a language is chosen, at least one course must be numbered 51 or higher; (2) if Mathematics or Computer Science is chosen, at least two courses must be numbered 21 or higher; (3) if a Natural Science or Engineering discipline is chosen, there is no restriction on course level.

Caution: In some disciplines, there may not be sufficient courses or space in courses for a discipline concentration to be an option. Currently these include, but may not be limited to, Speech, Studio Art, and American Sign Language. Check with the department if there are any questions.

Students may submit a petition to the Undergraduate Studies Committee to seek approval on an exception basis to pursue a self-designed General Education Discipline Concentration. The petition should provide a rationale for the combination of courses proposed. Submit petition in 101 Kalkin Hall.

Race Relations and Ethnic Diversity in the U.S.

(3 credit hours)
Students must complete one three-credit course that addresses the question of race relations and ethnic diversity in the U.S. Courses that fill this requirement are approved by the College of Arts and Sciences. The course selected to satisfy this requirement may also be used to fulfill another general education requirement. Otherwise, an elective course must be used to meet the requirement.

Physical Education (2 credit hours)

All students are required to complete two credits in Physical Education Activities Courses (PEAC). No more than two credits will count toward the 122 hours required for graduation. Students who enter the University at age 25 or older may waive the two credits of PEAC.

Electives

General Education Electives
Students will take additional courses in subjects so that at least half of their course work is outside of Business Administration and Upper-level (100 level or above) Economics.

Other Electives
Students take additional electives, either inside or outside of Business to achieve the total 122 credit hours required for their degree.

Restrictions on Electives

1. No credit will be granted for a course that is assumed prerequisite knowledge for a course previously completed.
2. No credit will be granted for a course that substantially duplicates material in courses offered in Business Administration or in other previously completed courses.
3. Only two credits of PEAC will count towards the required 122 credits.

COURSE OF STUDY

Here is *one* illustrative schedule for the program.
(Numbers shown are credit hours.)

	Fall	Spring
FIRST YEAR		
MATH 19, 20	3	3
EC 11, 12	3	3
BSAD 40	3	–
General Education Courses	6–7	9-10
	15-16	15-16
SOPHOMORE YEAR		
BSAD 60, 61	4	4
STAT 141	–	3
General Education Courses	12-13	9-10
	16-17	16-17
JUNIOR YEAR		
Business Field Courses	9	9
General Education or Electives	6	6
	15	15
SENIOR YEAR		
Business Field Courses	3	–
BSAD 191, Business Policy	–	3
Business Discipline Concentration Courses	6	6
General Education or Electives	6	6
	15	15

SPECIAL PROGRAMS

Professional Accounting Program

Students planning to sit for the CPA examination should complete the Professional Accounting Program: BSAD 17, 18, 161, 162, 164, 168, 266, 267. Completion of the Professional Accounting Program satisfies the Business Discipline Concentration requirement. BSAD 266 may be used to satisfy both the Quantitative Methods requirement and the Professional Accounting Program requirement.

Completion of the professional accounting program fulfills the academic requirements to sit for the CPA examination in the State of Vermont. The requirements to sit for the CPA examination vary among states, therefore students who plan to sit for the examination in a state other than Vermont are advised to contact the state's Board of Accountancy to obtain current requirements. See http://www.aicpa.org for addresses and additional information.

International Management

Students interested in International Management are expected to spend the spring semester of their junior year studying abroad.

The University participates in a number of exchange programs with institutions around the world.

It is also possible for students to spend a semester at other international universities. It is recommended that International Management students complete BSAD 120, 150, and 180 before going abroad.

Preprofessional Work Programs

Students are encouraged to participate in preprofessional work opportunities. These opportunities include internships and cooperative education (CO-OP) programs. For both of these programs students must first successfully complete the Basic Business Core.

Cooperative Education CO-OP opportunities are coordinated and supervised through Career Services. If a full-time CO-OP work experience is done during a regular semester, students will need to take classes in a summer session.

Internships Internships may involve part-time work during the academic year, or summer work. The time required of an internship and whether or not it is a paid experience depends on the employer.

Credit may be available for demonstrated academic learning in relation to a preprofessional work experience. To enroll for credit, students must have a minimum of junior standing, completion of Basic Business Core, a related Business Field Course with a grade of B, and a cumulative grade-point average of 3.0. Once the internship is approved, students must enroll in BSAD 194 to receive internship credit. Business students may not earn Business practicum or internship credit through other academic units.

MINORS

Students Majoring in Business

Students majoring in Business Administration are not required to have a minor to meet degree requirements; however, a business student may choose to have a minor outside of Business. The department issuing the minor sets the requirements and determines if the student is eligible to minor in their program. The student must contact the appropriate department to obtain more information.

Non-Business Students

Two different minors are available in the School of Business

Administration for non-business majors: Business or Accounting. An application is required and may be obtained at the Student Services Office, 101 Kalkin Hall. Acceptance into the minor program requires completion of the prerequisite courses with a GPA of 2.0 or better in these courses. Admission may be more restrictive if applications exceed the capacity of the program.

Prerequisites: Economics 11, Economics 12, Mathematics 19 or 21, Statistics 111 or 141. Students must have basic microcomputer literacy, including a working knowledge of word processing and spreadsheet software. Students lacking this basic knowledge are responsible for attaining it through course work, self study, tutorials, or workshops.Some business classes require that students bring a computer to each class. The copmuter must meet the Business School's current hardware and software requirements.

Business Administration Minor Requirements:

Accounting: BSAD 60 and 61 *or* BSAD 65. (A student may not receive credit for BSAD 65 after completion of BSAD 60 or BSAD 61.)

Other Business requirements: Three business field courses (numbered 100–299), at least one of which must be from the following list: BSAD 120, 132, 141, 150, 173, or 180. To be awarded a business administration minor, a student must earn a 2.0 cumulative grade point average in the minor courses.

One year MBA opportunity: A student minoring in Business Administration may complete an MBA at UVM in one year after earning a bachelor's degree if: (1) BSAD 60 and 61 are completed; (2) three of BSAD 120, 132, 150, 173, and 180 are selected to meet the minor requirement; (3) the other two courses on this list are taken as electives; and (4) the student applies and is admitted to the MBA program under regular criteria.

Accounting Minor Requirements:

Introductory Accounting: BSAD 60 and 61 *or* BSAD 65. Students must earn at least a 2.0 in *each* introductory accounting course taken to continue with an accounting minor. If a 2.0 is not achieved, a student may switch to a general Business Minor.

Upper Level Accounting Requirements: BSAD 161 and 162, plus two courses from BSAD 164, 168, 266, and 267. A student must earn a 2.0 average in these four courses to earn an accounting minor. For the Accounting Minor, at least three of the four 100-level business courses used to fulfill the minor must be taken at the University of Vermont.

TRANSFER TO BUSINESS ADMINISTRATION

Students planning to transfer to the School of Business Administration from another college or school on campus must comply with the Intercollege Transfer policy. Applications may be obtained in the Student Services Office at 101 Kalkin Hall.

The Rubenstein School of Environment and Natural Resources

In The Rubenstein School of Environment and Natural Resources (RSENR), excitement for discovery and a commitment to life-long learning are central. Our emphasis on the integration of natural science and cultural perspectives reflects the interdisciplinary context in which ecosystem management, resource planning, and environmental concerns must be addressed. We believe that there is a strong interplay between teaching and scholarship and that each is vital to the other.

The Rubenstein School of Environment and Natural Resources seeks to cultivate an appreciation and enhanced understanding of ecological and social processes and values aimed at maintaining the integrity of natural systems and achieving a sustainable human community. We pursue this goal by generating and broadly disseminating knowledge and by challenging students, colleagues, and citizens to acquire knowledge, skills, and values to become innovative, environmentally responsible, and accountable leaders.

We are actively committed to diversity-biodiversity in natural communities and cultural diversity in human communities. Individual and professional responsibility, as well as scholastic excellence, are emphasized within the School's supportive atmosphere. Faculty members are conscientious advisors, and students communicate frequently with them for guidance in clarifying educational, career, and personal goals. While these programs prepare students for a variety of positions in natural resources and the environment, graduates are also well prepared to pursue careers or advanced study in other professions.

The Office of the Dean of the School is located in the George D. Aiken Center for Natural Resources.

DEGREE PROGRAMS AND OPTIONS

The Bachelor of Science degree is awarded for the following programs:

Environmental Sciences
- Agriculture and the Environment
- Conservation Biology and Biodiversity
- Ecological Design
- Environmental Analysis and Assessment
- *Environmental Resources*
- *Water Resources*

Environmental Studies

Forestry

Natural Resources
- *Resource Planning*
- Resource Ecology
- *Integrated Natural Resources*

Recreation Management
- *Private Outdoor Recreation and Tourism*
- *Public Outdoor Recreation*

Wildlife and Fisheries Biology
- *Fisheries Biology*
- *Wildlife Biology*

Undecided: Students interested in studying the environment and natural resources, but who wish to postpone their decision on a specific major, enroll in Undecided-Environment and Natural Resources.

Aiken Scholars

High achieving, highly motivated first-year students have access to special academic enrichments during their first year at UVM. These enrichments include the Aiken Scholars Seminar in their first semester, priority status for Aiken Scholars housing and course registration for their first year at UVM, and honorary society membership.

Internships and Cooperative Education

Experiential learning is encouraged. The School offers students assistance in securing summer, part-time, and permanent employment in natural resources fields. Well-developed internship and cooperative education programs award academic credit for contracted work experiences. These opportunities to explore and confirm career interests, to develop professional contacts and exposure, give graduates a competitive edge when they enter the job market.

Travel Courses and Field Studies

The Rubenstein School of Environment and Natural Resources relies heavily on Vermont's natural landscapes –its mountains, lakes, fields, and forests - to provide students hands-on experience studying ecology and ecosystem processes. In addition, RSENR offers a variety of intensive field courses during vacation breaks and summer session that provide students special opportunities to study the wildlife of Florida or south Texas (WFB 176/177), environmental research in the Chesapeake Bay region (ENSC 185), ecotourism and environmental interpretation in Costa Rica or Sub-Saharan Africa (RM 188), regional examples of sustainable forest management and practices (FOR 185) and the aquatic ecology of large lakes (NR 255) from the deck of the Melosira, UVM's research vessel.

DEGREE REQUIREMENTS

Students must be matriculated in The Rubenstein School of Environment and Natural Resources and in residence at The University of Vermont during the period in which they earn 30 of the last 45 hours of academic credit applied toward the degree. Students must earn a cumulative grade-point average of 2.0 or above. Students must complete a program of study which includes:

1. RSENR core curriculum.
2. RSENR general education courses.
3. RSENR major requirements.
4. University requirement in Physical Education Activities (two credits).

RSENR CORE CURRICULUM

The Rubenstein School's core curriculum provides a common experience for all students. The innovative seven-course sequence creates an integrated foundation upon which the individual majors in the School are constructed. Core courses focus on the underlying fundamentals from which natural resources disciplines have evolved and the application of these fundamentals to problems or issues in the natural world and society. The core courses also promote development of thinking, communications, problem solving, and analytical

skills. Faculty from all undergraduate programs teach in the core. The RSENR core curriculum represents a body of knowledge, skills, and values that the faculty believe is central to the study of natural resources and the environment.

Seven courses are required:	Hours
Nat. Res. 1, Natural History and Field Ecology	4
Nat. Res. 2, Nature and Culture	3
Nat. Res. 103, Ecology, Ecosystems and Environment	3
Nat. Res. 104, Social Processes and the Environment	3
Nat. Res. 105, Environmental Problem Analysis	1
Nat. Res. 205, Ecosystem Management: Integrating Science, Society, and Policy	3
Nat. Res. 206, Environmental Problem Solving and Impact Assessment	4
	21

NR 1 and NR 2 provide an introduction to the study of natural resources and the environment from natural and social science standpoints, respectively. At the completion of these courses, students should (1) have a basic understanding of the School's integrated approach to natural resources and the environment, (2) be better prepared to make informed decisions about their academic majors, and (3) be prepared to advance to an intermediate level of study in natural resources. The intermediate courses in the sequence, NR 103 and NR 104, emphasize ecosystems and social systems, respectively. They are linked through a one-credit interdisciplinary problem analysis module, NR 105. The last two courses focus directly on integrated and holistic management. In NR 205, students integrate natural and social science to understand environmental management principles and policies. In NR 206, the capstone course taken senior year, students are challenged to synthesize and apply the interdisciplinary knowledge, skills, and values they have learned to contemporary natural resources and environmental issues.

GENERAL EDUCATION COURSES

RSENR general education requirements are designed to enhance a student's ability to assimilate and analyze information, think and communicate clearly, and respect multiple perspectives. These requirements are flexible in order to encourage creativity in meeting educational goals. Two sets of courses are stipulated:

Five courses in required areas:

1. Writing - English 1, 50, or 53
2. Speaking - Speech 11, Theatre 5, AGRI 183, or NR 185 (Speaking & Listening)
3. Race and Culture - NR 6 or EDSS 11
4. Mathematics - Math. 9 or higher (but not Math. 17)
   *Varies depending on major choice.
5. Statistics - NR 140, Statistics 111, 141, or 211
   *Varies depending on major choice.

Three courses in a self-design sequence:

Each student defines a personal learning objective and selects at least 9 credits from departments outside RSENR to meet that objective. This sequence of courses must be approved in advance*.

*Before completion of four semesters or 60 credit hours; time-frame may be extended for transfer students.

MAJOR REQUIREMENTS

Environmental Sciences

The Environmental Sciences major provides students with the fundamental knowledge and hands-on experience to identify, analyze, and solve "real world" environmental problems arising from human activities.

A total of 122 credits are required for the degree. Required courses: BCOR 11, 12; CHEM 31, 32; **CHEM 42; GEOL 55 or PSS 161; *MATH 19, 20; *NR 140 or STAT 141; ENSC 1, 101, 130, 185, 201, 202; 14-17 credits in one of the following Focus Tracks: Agriculture and the Environment, Conservation Biology and Biodiversity, Ecological Design, Environmental Analysis and Assessment, Environmental Biology, Environmental Chemistry, Environmental Geology, Environmental Resources, Water Resources. Up-to-date course requirements for each Focus Track are available from your advisor or the Dean's Office; students may elect to petition to develop a self-design track.

*Also fulfills RSENR general education requirement.
**Students interested in areas such as environmental analysis and assessment should consider taking more advanced courses, such as CHEM 141/142.

Environmental Studies

Environmental Studies is an interdisciplinary major which combines required core courses with a self-designed program of study chosen to meet individual learning goals. The Environmental Studies core courses include perspectives of the sciences, social sciences, and humanities in local, national, and global contexts.

A total of 122 credits are required for the degree.

Required courses: ENVS 1, 2, 151, 201, 202; and 30 hours of approved environmentally-related courses* at the 100 or 200 level, including three hours at the 200 level, with at least one course in each of four areas - natural sciences, humanities, social sciences, and international studies environmentally-related (may be fulfilled by a study abroad experience).

*These courses are in addition to the RSENR core and general education requirements.

Forestry

The Forestry major provides students with an education in ecologically responsible forestry, emphasizing the complex landscapes of the northeastern United States. Students develop their abilities to coordinate and manage all aspects of sustainable forestry through an education that combines a strong foundation in natural and social sciences with hands-on field-based classes, internships, research experiences, and forest management projects. The curriculum is integrative, technologically current, and science-based.

Students supplement a core of required Forestry and related courses with a student-proposed, faculty-approved area of concentration[1] such as forest ecosystem health, forest ecology, consulting forestry, public forest administration, or international development. The concentration represents at least 12 credit hours and may be self-designed[2], an appropriate University minor, or a natural resource oriented study abroad experience.

A total of 126 credits are required for the degree.

Required courses: BOT 4; CHEM 23; MATH 18[3]; NR 25, 140[3], 224; PSS 161; FOR 21, 73, 81[4], 121, 122[5], 158, 182, 223, 272; a course in forest health[6]; 12 additional credits in area of concentration.

[1]Must be endorsed by the student's advisor and approved by the Forestry faculty prior to the last four semesters of study.
[2]At least 9 credits are to be at the 100-level or higher.
[3]Also fulfills RSENR general education requirement.
[4]Transfer students with 45 or more credit hours are exempt from FOR 81.
[5]Field intensive course offered **only** during the summer session.

[6]Currently can be fulfilled with either FOR 234–Forest Pathology or PSS 107–Forest Entomology.

Natural Resources – *Resource Planning*

The Resource Planning curriculum explores interactions among individuals, communities, and society with nature, resources, and the environment. It allows students to select courses around specific individual interests such as natural resource planning and community, policy and economic dimensions of resource planning, and international dimensions of resource planning.

A total of 122 credits are required for the degree.

Required courses: PSYC 1, 104, 130, 161; CDAE 2 or ENVS 2; POLS 21 or 41; SOC 1 or 11; PHIL 4, ENVS 178 or CDAE 156; ANTH 21 or GEOG 1; EC 11 or 12 or CDAE 61. 27 additional credits in Option Electives to be chosen from approved list in consultation with student's academic advisor. Any course substitution request should be approved **prior to the end of the add/drop period** for the semester in which the student enrolls in the substitute course.

Natural Resources – *Resource Ecology*

The Resource Ecology curriculum explores the biology and ecology of plants and animals in both aquatic and terrestrial systems and allows students to select courses around specific individual interests.

A total of 122 credits are required for the degree.

Required courses: BIOL 1,2; GEOL 1 or PSS 161; *MATH 19; *NR 140; CHEM 23 or CHEM 31,32; CHEM 26 or CHEM 42 or CHEM 141,142; NR 25; NR 143 or FOR 146; 27 additional credits in Option Electives to be chosen from approved list in consultation with student's academic advisor. Any course substitution request should be approved **prior the end of the add/drop period** for the semester in which the student enrolls in the substitute course.

* Also fulfills RSENR general education requirement.

Natural Resources – *Integrated*

Integrated Natural Resources (INR) is a self-designed major. INR is the right choice for students who have strong interests in natural resources and the environment, clear academic direction, and the motivation to develop a well-focused, personally meaningful course of study. Working closely with a faculty advisor, the student builds on a solid foundation of natural resources courses to create an individualized program that combines course work from disciplines within and outside the School.

A total of 122 credits are required for the degree.

Required courses (minimum nine credits): Students elect from a list of approved courses at least one course in each of three areas - *biology/ecology; NR courses in social sciences and communications; and quantitative and analytical methods.* These courses are in addition to those taken to fulfill RSENR general education requirements.

Individualized Program of Study Option (minimum 39 credits); The student develops an individualized Program of Study composed primarily of intermediate-level, Rubenstein School of Environment and Natural Resource courses (ENVS, ENSC, FOR, NR, RM or WFB prefix). This may include no more than 15 credits outside the School and no more than 6 credits below the 100-level. With careful selection of courses, students develop concentrations such as **Environmental Education, Resource Management, Resource Conservation, International Resource Issues,** and **Spatial Analysis of Natural Resources.** All programs of study must be endorsed by the advisor, then approved by the faculty. If not approved, the student may not continue in the INR option and must seek another major. The program of study is to be completed by the end of the sophomore year (60 credits). Transfer students with more than 60 credits must have a program of study approved as part of the transfer application. It is expected that transfer students will be active in the program for at least two years (four semesters) after transferring into the INR option. Any course substitution request should be approved prior to the end of the add/drop period for the semester in which the student enrolls in the substitute course.

Recreation Management

The Recreation Management major integrates the study of environmentally based tourism and hands-on management of outdoor recreation resources. Students may major in ***Public Outdoor Recreation*** or ***Private Outdoor Recreation and Tourism.*** Public recreation resources include parks, forests, wilderness areas, and other outdoor recreation environments at the local, regional, state, and federal government levels. Private resources include ski areas, campgrounds, resorts, and other natural resource-based recreation facilities. The program permits specialization in several types of private recreation businesses, including ski resorts, entrepreneurship, and ecotourism.

A total of 126 credits are required for the degree.

Courses required for all Recreation Management majors:

- One course in humanities (History, Philosophy, Religion, Classics)
- One course in communications (Art, Music, Theater, Art History, Foreign Language, English Literature)
- One course in social sciences (Anthropology, Economics, Geography, Political Science, Psychology, Sociology)
- One laboratory course in natural sciences (Biology, Physics, Chemistry, Botany, Zoology, Geology)

Private Outdoor Recreation and Tourism option: Required courses: RM 1, 50, 157, 158, 191, 230, 258; three courses selected from RM 138, 153, 235, 240, 255; and nine additional credits of professional electives to be chosen in consultation with an advisor.

Public Outdoor Recreation option: Required courses: RM 1, 138, 153, 191, 235, 240, 255; three courses selected from RM 50, 157, 158, 230, 258; and nine additional credits of professional electives to be chosen in consultation with an advisor.

Wildlife and Fisheries Biology

The areas of wildlife biology and fisheries biology deal with the management and conservation of animal populations that range from species that are common enough to be hunted/fished to species that are endangered. Management strategies may include manipulation of populations directly or indirectly through alteration of habitat. Courses emphasize applied ecology and provide hands-on experience in labs and field trips. All Wildlife and Fisheries Biology majors complete the same core of courses during the first year. As sophomores, students elect either the Wildlife Biology or the Fisheries Biology option. Required courses in the major satisfy educational requirements of the U.S. Office of Personnel Management for entry-level positions in these fields.

A total of 122 credits are required for the degree.

Courses required for all majors: *MATH 19 or 21; *NR 140; BIOL 1, 2; CHEM 23; CHEM 26 or 42; NR 25; FOR 121; GEOL 1, PSS 161, or FOR 185; WFB 161, 174.

Wildlife Biology option: Required courses: FOR 21;

WFB 130, 131**, 150**; BOT 109; BIOL 217; three courses (one must have a lab) selected from NR 224; WFB 185, 271/272, 273/274, 275, or 279.

Fisheries Biology option: Required courses: PHYS 11/21 or 12/22 or PHYS 96, Green Mountain Physics; WFB 232; NR 250; NR 260/WFB 272; NR 270 or WFB 279; six additional hours selected from NR 270, NR 280, BIOL 264, BOT 234, WFB 271, WFB 279, WFB 286.

* Also fulfills RSENR general education requirement.

** Field intensive courses offered only during the summer session.

MINOR REQUIREMENTS

The Bachelor of Science degree in Natural Resources does not require completion of a minor. However, many students in The Rubenstein School of Environment and Natural Resources do complete minors, either within the School or in other departments across campus. Interested students should contact the chair of the minor program or department.

Environmental Studies: The minor requires 17 credit hours of Environmental Studies courses consisting of 1, 2, and nine hours at the 100-level or above, including three hours at the 200-level. Of the nine hours, one non-ENVS course at the appropriate level may be substituted with approval of the student's advisor and the Environmental Program.

Forestry: Applications for the minor must be filed no later than June 1 of the year preceding graduation. A minimum of 16 credit hours is required, with at least nine at the 100-level or higher.

Required courses: FOR 1* or 73; FOR 21; additional FOR courses to total 16 credits.

*Students in The Rubenstein School of Environment and Natural Resources may not count FOR 1 towards completion of a Forestry minor.

Recreation Management: The minor requires a planned course of study which will provide a substantive introduction into the field of recreation management. Interested students should contact the Program Chair. A total of 15 credit hours are required. A minimum of nine credits are to be selected from RM 1, 50, 138, 153, 157, 158. A minimum of six credits are to be selected from RM 230, 235, 240, 255, 258.

Wildlife Biology: Applications for the minor must be filed no later than June 1 of the year preceding graduation or of the completion of the requirements for the minor. A minimum of 15 credit hours is required in prescribed and elective courses. Required courses: WFB 130, WFB 174; WFB 271 or 273. Elective courses: WFB 131, 150, 176, 177, 185, 187, 271, 272, 273, 274, 275, 279, 285/286, 287/288.

The Honors College

The Honors College (HC) offers an intensely focused, academically challenging environment for some of the university's most outstanding undergraduate students. The Honors College involves a broad cross-section of the University community, existing not as a cloistered academic enclave but as a vital part of that larger community. The Honors College is above all a community of scholars—students and faculty—committed to the ideals of excellence in scholarship, academic rigor, and intellectual inquiry and engagement.

ADMISSION TO THE HONORS COLLEGE

Admission to the Honors College is based on prior academic performance and students are admitted in one of two ways. First year students are invited to the HC based on the strength of their application to the University; no additional application is required. Up to 100 first year students are admitted each year.

Because the College exists to recognize and encourage academic excellence, it also welcomes applications for sophomore admission from students who were not in the HC in the first year, and are among the top performers as first year students at UVM. Sophomore admission requires an application form, a 3.4 grade point average at the end of the first year, a letter of recommendation from UVM faculty member, and a brief essay. Up to 100 sophomores are admitted annually.

ACADEMIC STANDARDS

Students whose overall GPA falls below 3.2 will be given one semester to raise it back over this level. Failure to do so will make them subject to dismissal from the HC. The Dean will have discretion to take personal considerations into account prior to dismissal for low achievement. Students will be subject to dismissal from the HC if they receive grades below C- totaling more than 8 credits of coursework. Students with a serious academic offense, determined by standard University procedure, will be dismissed from the HC.

CURRICULUM

The Honors College curriculum is designed to supplement and enrich the offerings of the "home" schools and colleges with multidisciplinary courses and seminars that broaden intellectual horizons and stimulate discussion, debate, writing, research and reflection. Enrollment in Honors College seminars is limited to Honors College students. Students who complete all Honors College curricular requirements, in addition to the degree requirements of the home school or college, graduate as University Scholars. Honors College courses are taught by distinguished faculty drawn from the range of academic disciplines at UVM.

Beginning with the incoming class in Fall 2006, Honors College students in the College of Arts and Sciences who are pursuing a Bachelor of Arts degree must complete General Requirements and all seven categories of Bachelor of Arts Distribution Requirements.

THE FIRST YEAR SEMINAR

"Making Ethical Choices: Personal, Public, Professional" : This seminar provides a common experience (3 credits each semester) for all first year students in the Honors College. It is multidisciplinary and taught by a core faculty with additional lectures given by faculty drawn from across the University, including but not limited to: animal sciences, biomedical technologies, business administration, computer science, education, engineering, environmental studies, nursing, and women's studies. It is designed to incorporate classic works by philosophers such as Plato and Mill and the contemporary writings of distinguished philosophers like John Rawls and Peter Singer, and is taught in small seminars (about 20 students in each section) intended to promote intellectual discussion. The seminar is writing intensive, requiring multiple drafts of papers that encourage students to develop their reasoning and focus their writing and is designed to guide students in thinking rigorously about ethical problems in many applied contexts. The course is supplemented by plenary lectures (7-8 throughout the year) by University faculty and administrators. The entire University community is invited to this lectures.

SOPHOMORE SEMINAR

Sophomores take two three-credit special topics courses, one in the fall and one in the spring, selected from an extensive slate of offerings created for HC students by faculty in schools and colleges University-wide. Special topics vary from year to year.

JUNIOR AND SENIOR YEAR

In the junior year, students take one three-credit seminar in their home college or school that prepares them for their senior year honors project. Senior students complete a six-credit research thesis or senior project approved by their home school or college. Requirements for both years will vary slightly in different schools and colleges. Students should consult with an advisor in their home school or college.

RESIDENTIAL COMPONENT

The Honors College has recently moved to a new residential complex at University Heights. This beautiful new facility provides housing for HC students, as well as permanent office space for the HC administration and staff. In addition, the new complex includes classroom space, lounges, and meeting space for the Honors College. Students are strongly encouraged to live in the Honors College residency.

CO CURRICULARS

All UVM faculty and students and the general public are invited to participate in frequent Honors College-sponsored events such as lectures and symposia presented by faculty, students, and distinguished visiting scholars and artists.

Courses of Instruction

The University reserves the right to change course offerings at any time.

A student who lacks the stated prerequisites for a course may be permitted to enroll by the instructor. Such students must inform the instructor that they lack the prerequisites, and the instructor will make appropriate efforts to ascertain that they are properly qualified.

Courses are divided into three levels: introductory, intermediate, and advanced. Where appropriate, a department may limit enrollment in a particular course. Such limitations, other than class size, must be explicitly stated.

Courses numbered from 1-99 are introductory courses. Introductory courses emphasize basic concepts of the discipline. In general, they presuppose no previous college work in the subject. The only exceptions to this rule are those cases in which there is a two-semester introductory sequence. In such cases, the second semester course may have the first semester course as a prerequisite.

Courses numbered from 100-199 are intermediate courses. An intermediate course covers more advanced material than that treated in introductory courses. Students will be expected to be familiar with the basic concepts of the subject and the course will present more difficult ideas. Intermediate courses will generally be more specialized than introductory courses. An intermediate course will always have a minimum prerequisite of three hours prior study in the discipline or in another specified discipline.

Courses numbered from 200-299 are advanced courses. An advanced course presents concepts, results, or arguments which are only accessible to students who have taken courses in the discipline (or, occasionally, in a related discipline) at the introductory and intermediate levels. Prior acquaintance with the basic concepts of the subject and with some special areas of the subject will be assumed. An advanced course will always have a minimum prerequisite of three hours prior study at the intermediate level in the discipline, or in a related discipline, or some specified equivalent preparation.

AGRICULTURAL BIOCHEMISTRY (AGBI)

010 Introductory Biochemistry

191 Biochemistry of Nucleic Acids Structure, function, and properties of nucleic acids, nucleoproteins, and enzymes or proteins that act on nucleic acids. Emphasis on experimental approach. *Prerequisite:* 10 or equivalent or instructor's permission. Alternate years, 2000-01.

195 Special Topics *Prerequisite:* Instructor's permission.

197, 198 Undergraduate Research *Prerequisite:* Departmental permission.

201 General Biochemistry Broad coverage of biochemistry including principles of analytical biochemistry. *Prerequisite:* Chemistry 42 or 141. Three hours and lab (one hour) as AGBI 202.

202 General Biochemistry Lab Introduction to techniques and equipment used for the isolation and quantitative analysis of amino acids, proteins, carbohydrates and DNA enzymes in biological materials. *Prerequisite:* Credit for or concurrent enrollment in 201.

210 Quantitative Biochemistry Physical principles of biochemical methods and theory with strong emphasis on problem solving and data analyisis. *Prerequisite:* 201.

220 Molecular Biology Structure and biological function of nucleic acids, proteins, and enzymes. Emphasis on optical, electrophoretic, and ultracentrifigual methods. *Prerequisite:* 201 and 202 or instructor's permission.

221 Molecular Biology Lab Laboratory practice in protein characterization by disc electrophoresis and isoelectric focusing. DNA separation and characterization by agarose gel electrophoresis, restriction digests, polymerase chain reaction, and Southern blots. *Prerequisite:* Credit for or concurrent enrollment in 220.

230 Advanced Biochemistry Study of metabolic cycles emphasizing research methods involving radioisotopes and chromatography. *Prerequisite:* 201 and 202 or 220 and 221 or instructor's permission.

231 Advanced Biochemistry Lab Laboratory experimentation emphasizing chromatography. Introduction to modern GLC and HPLC techniques, protein secondary structures, and enzyme isolation, purification, and characterization. *Prerequisite:* Credit for or concurrent enrollment in 230.

250 Plant Biochemistry Study of specific biochemical principles unique to plants concentrating on the biochemistry of plant cell walls, photosynthesis, and secondary metabolites. *Prerequisite:* 201. Alternate years, 2001-02.

295 Special Topics *Prerequisite:* Instructor's permission.

AGRICULTURE (AGRI)

001 Foundations:Communication Meth Foundational course to acclimate CALS First-Year students to college life and develop individual and group public speaking skills through giving and critically analyzing presentations.

002 Foundation:Information Tech Foundational course to acclimate CALS First-Year students to college life and develop information technology skills through use of computer hardware and software and internet applications.

085 Computer Applications Use of computer operating systems programming languages, electronic communications, word processing, spreadsheet modeling and graphics, and internet software related to the agricultural and life sciences.

095 Introductory Special Topics

096 Special Topics

125 Teaching Assistant Development TA's develop skills in areas of leadership, group dynamics, interpersonal effectiveness, and assertiveness as group facilitators in Beginnings course. *Prerequisite:* Sophomore standing, permission.

183 Communication Methods Introduction to informational and persuasive public speaking. Developing individual and group oral communication skills through giving and critically analyzing presentations.

195, 196 Special Topics Appropriate for interdepartmental and interdisciplinary topics in Agriculture and Life Sciences. Permission of Dean's Office.

AREA & INTERNATIONAL STUDIES (AIS)

007, 008, 009, 010 Directed Language Study

091 Introduction to Area (A) Introduction to Canada: A team-taught introduction to Canada through interdisciplinary perspective. (B) Introduction to Russia and East Europe: An interdisciplinary overview from the perspectives of economics, fine arts, geography, history, political science, Russian language and literature, and sociology. (C) Introduction to Western Europe. Primarily designed for first-year students.

093 So Africa:Politic/Race&Culture An interdisciplinary introduction analyzing the forces that led to creation of that system of government known as Apartheid. Assessment of strategies and tactics of change.
095, 096 Introductory Special Topics See Schedule of Courses for specific titles.
191, 192 Internships Approved programs of learning outside the classroom. Internships must be undertaken directly in the field and involve activity in which substantive learning about the program area can take place.
195, 196 Intermediate Special Topics See Schedule of Courses for specific titles.
197, 198 Readings & Research
291 European Studies Seminar Multidisciplinary study of Europe as a geocultural area primarily for European Studies majors. Content will vary by instructor from departments including, for example, Classics, History, Political Science. *Prerequisite:* Permission of instructor.
295, 296 Advanced Special Topics See Schedule of Courses for specific titles. *Prerequisite:* Permission by Executive Committee of International Studies. Other area courses offered by individual academic departments.
297, 298 Advanced Readings & Research Independent study of a specific area subject or theme with an approved instructor. *Prerequisites:* Junior/senior standing, and permission of area Program Director.

ALANA U.S.ETHNIC STUDIES (ALAN)

051 Intr to ALANA US Ethnic Stdies Survey of the experience of ALANA peoples in the U.S. as well as a theoretical analysis of issues of race, culture, gender, and diverse traditions in the American multicultural setting.
055 Racism and American Culture Survey and analysis of racism in the development of American institutions and its effects upon ALANA groups and societies.
095, 096 Introductory Special Topics See Schedule of Courses for specific titles.
158 American Multicultrl Heritage History and culture of ALANA groups, their role in and contributions to the American cultural heritage. *Prerequisite:* 51 or 55 or having previously satisfied the College of Arts and Sciences Race and Ethnicity requirement.
159 Am Cultrl Images ALANA Peoples Comparative study of ALANA groups and the stereotypical and archetypal impressions projected on peoples of color in American society. *Prerequisite:* 51 or 55 or having previously satisfied the College of Arts and Sciences Race and Ethnicity requirement.
191, 192 Field Experience:Internship *Prerequisites:* Junior standing, six hours of 100-level courses in appropriate field and program permission (a contract must be obtained from and returned to the ALANA Studies program during preregistration).
195, 196 Intermediate Special Topics Intermediate courses or seminars beyond the scope of existing ALANA offerings. See Schedule of Courses for specific titles. *Prerequisite:* Sophomore standing.
197, 198 Readings and Research
269 Cross-Cultural Psyc:Clin Persp Introduction to issues posed for psychologists in their work with ALANA (African, Latino/a, Native and Asian American) and international populations. Critical appraisal of readings, research and case studies. *Prerequisites:* PSYC 1, 109. (Same as PSYC 269)
277 Sem in ALANA US Ethnic Studies Interdisciplinary examination of theories on the position of ALANA peoples in U.S. culture and society. Emphasis on relationship between race, class, gender, and ethnicity. *Prerequisites:*Six hours in ALANA U.S. Ethnic Studies; admission to ALANA U.S. Ethnic Studies minor program. Not offered for graduate credit.)
295, 296 Advanced Special Topics Advanced courses or seminars on topics beyond the scope of existing departments. See Schedule of Courses for specific titles. *Prerequisite:* Junior standing. (Not offered for graduate credit.)
297, 298 Independent Study Special topics in consultation with ALANA U.S. Ethnic Studies facutly. *Prerequisites:* Permission of program director; junior standing. (Not offered for graduate credit.)

ANATOMY & NEUROBIOLOGY (ANNB)

197, 198 Undergrad Research Individual laboratiory research under guidance of faculty member. *Prerequisite:* Departmental permission.
201 Human Gross Anatomy Lectures and detailed regional dissections emphasize functional anatomy of major systems (e.g. musculoskeletal, cardiovascular, nervous). *Prerequisite:* Permission.
261 Neurobiology Focus on molecular and cellular aspects of the nervous system. Electrical signaling, synaptic transmission, signal transduction, neural development, plasticity and diseases. *Prerequisites:* BIOL 103 or ANPS 19 & 20. (Same as BIOL 261).
295 Special Topics UG only.
296 Advanced Special Topics UG only.

ANATOMY/PHYSIOLOGY (ANPS)

019, 020 Ugr Hum Anatomy & Physiology Two-semester course with credit given only upon completion of both semesters. Structure and function of human body using cadaver prosections, histological material, and physiological experiments. Required of all PRNU, DIET, NFS, PE, ME, RADT, NMT, MLS, AT and BSCI students; others with instructor's permission. *Prerequisite:* 19 for 20.

ANTHROPOLOGY (ANTH)

021 Human Cultures Introduction to cultural anthropology focusing on the life ways of non-Western societies and how anthropologists study them.
023 Anthropology Third World Dev A survey of the role of applied anthropology in the understanding and analysis of development efforts to alleviate (mostly) third world problems.
024 Prehistoric Archaeology Examination of the origins and development of culture from the earliest human fossils through the appearance of civilization; the nature of archaeological data and interpretations.
026 Biological Anthropology Introduction to the study of the evolution and physical variation of humanity from a biocultural perspective.
028 Linguistic Anthropology Introduction to linguistic anthropology, focusing on language and communication as they pertain to human culture and human social interaction.
064 Native Americans of Vermont Vermont's native peoples from their earliest appearance in the region until today. Archaeological and ethnographic data reviewed in the broader perspective of aboriginal Northeastern cultural history. Alternate years.
095, 096 Introductory Special Topics See Schedule of Courses for specific titles.
140 Primates and Anthropology A survey of behavior and anatomy of nonhuman primates (monkeys, apes and prosimians) from an anthropological perspective. *Pre/Co-requisites:* Anth 21 or Anth 26.
151 Anth of East Europe Survey of cultures of Central and Eastern Europe during the socialist and post-socialist periods with an emphasis on social, cultural and economic transformation since 1985. *Pre/Co-requisites:* ANTH 21 or a 100-level Russia/East European Studies course.
152 Cultures of East Asia Introduction to the cultures of East Asian societies with a focus on issues of cultural

representation, sociocultural diversity, social change, historical interactions, and cultural comparison. *Prerequisite:* Anth 21

160 North American Indians Ethnographic survey of major native American cultures of Mesoamerica and the U.S. against background of aboriginal culture history, and problems of contact with European cultures. *Prerequisite:* 21. Alternate years.

161 Cultures of South America Ethnographic survey of major native American cultures south of Mesoamerica against background of aboriginal culture history, and their relation to present day culture spheres. *Prerequisite:* 21. Alternate years.

162 Cultures of Africa Ethnographic survey of representative native societies of sub-Saharan Africa and major colonial/immigrant minorities emphasizing changes resulting from olonialism, independence, and modernization. *Prerequisite:* 21. Alternate years.

163 South Pacific Cultures Survey of major cultural areas of the South Pacific including problems of prehistory, contact with Western colonialism, and contemporary life. *Prerequisite:* 21. Alternate years.

165 Peoples of South Asia Culture and social organization of peoples of Pakistan, India, Bangladesh, and Sri Lanka. Theoretical issues in anthropological analysis of these societies discussed. *Prerequisite:* 21. Alternate years.

166 Peoples of the Middle East Culture and social organization of peoples living in lands from Morocco to Afghanistan, including a consideration of Islam. *Prerequisite:* 21. Alternate years.

167 Native Peoples of Canada Traditional life-ways of the native peoples of Canada, Indian, and Inuit; contemporary issues in native life in Canada. *Prerequisites:* 21 or Geography 52 or History 65 or 66. Alternate years.

169 Latinos in the United States Survey of peoples of Latino/Hispanic descent living in the U.S. Course examines their similarities and differences in history, ethnic identification and cultural practices. *Prerequisite:* 21.

172 Gender, Sex and Culture Cross-cultural study of gender, sex and sexuality, including exploring the cultural construction of categories and cultural practices related to gender, sex and sexuality. Pre/co-requisite: ANTH 21.

174 Culture, Health and Healing Introduction to medical anthropology. Social and cultural perspectives on health and illness experiences, doctor-patient interactions, healing practices, and access to health and health care. *Pre/Co-requisites:* ANTH 21 or 3 credits of SOC. Cross-listings: SOC 155

176 Topics in Linguistic Anthropol Intermediate level special topics in linguistic anthropology. *Pre/Co-requisites:* ANTH 28 or CMSI 80.

178 Sociolinguistics Exploration of language and nonverbal interactions as cultural activities. Focus on rules and patterns people display appropriate to communication and social interaction. *Prerequisite:* 28.

179 Environmental Anthropology Introduction to how culture mediates humanenvironmental interactions. Topics include cultural, spiritual, and political ecology; forms of resource management; environmentalism; sustainable development; and environmental justice. *Pre/Co-requisites:* ANTH 21, 23, 24 or instructor permission.

180 Psychological Anthropology Cross-cultural study of the individual in a sociocultural context examining cognition and culture, symbols, alternative states of consciousness, human sexuality, deviance and madness, and ethnotherapy. *Prerequisite:* 21. Alternate years.

181 Law, War and Disorder Introduction to the anthropology of law and conflict management emphasizing the cultural fora and social organization of disputes and efforts to deal with conflict. *Prerequisite:* 21.

187 Race and Ethnicity (Same as Sociology 119.) Description and analysis of ethnic, racial, and religious groups in the U.S. Examination of social/cultural patterns in the larger society and in these groups themselves. *Prerequisite:* 21.

188 Historical Archaeology Survey of field, lab, and archival research methods; specialized studies of material culture; selected topics on ethnicity in the Americas, gender and status. *Prerequisites:* 24. Alternate years.

189 Aging in Cross-Cultural Persp Aging from an anthropological perspective. Topics include the biology of aging; aging in hunting, pastoral, fishing, and horticultural societies; aging in contemporary ethnic America. *Prerequisites:* 21 or Sociology 20. Alternate years.

190 ISSP Thesis Independent study for students enrolled in Integrated Social Sciences Program; final product is thesis. *Prerequisite:* Enrollment in ISSP courses.

195, 196 Intermediate Special Topics See Schedule of Courses for specific titles.

197, 198 Readings & Research

200 Field Work in Archaeology Methods and techniques of archaeological investigation in field situations and the laboratory analysis of data. *Prerequisites:* 24, one 100-level course in anthropology or history, instructor's permission. Summers only.

201 Practicum & Internship Supervised service or research integrating theoretical and practical anthropological issues. *Prerequisite:* Nine hours of anthropology. UG only.

210 Archaeological Theory Development of archaeology from the 19th century to the present including concepts of form, space and time, intellectual attitudes, current systems theory, and research strategies. *Prerequisites:* 24, one 100-level anthropology course; or Historic Preservation 201; or graduate standing in Historic Preservation Program, or History 121, 122, or 149. Alternate years.

220 Develop&Applied Anthropology Seminar examines the application of anthropological knowledge and methodologies to alleviate social problems around the world, with a pecial focus on the cultural politics of expertise. *Prerequisites:* Anth 23, three 100-level courses, or instructor's permission. Alternate years.

225 Anthropological Theory Schools of anthropological thought examined in relation to data on non-Western societies and the historical and social context in which the nthropologist works. *Prerequisites:* 21, one 100-level course.

228 Social Organization Examination of the basic anthropological concepts and theories used in the cross-cultural analysis of kinship and marriage. *Prerequisites:* 21, one 100-level course.

250 Museum Anthropology The cultural context of selected archaeological and ethnographic collections at Fleming Museum; cataloguing, conservation, research, and interpretation of objects; exhibition design and ethical issues. *Prerequisites:* Junior standing; Anthropology, Art History, Studio Art majors and minors. Alternate years.

276 Adv Topics in Linguistics Advanced special topics in linguistics, sociolinguistics and linguistic anthropology. *Pre/Co-requisites:* ANTH 28 and one 100-level ANTH course or permission of instructor.

283 Colonialism The concepts, ideologies, and practice(s) of colonialism within a sociocultural and historical context emphasizing the cultures of the colonizer and the colonized and the interaction thereof. *Prerequisites:* 21, one 100-level course, or 21, six hours in the social sciences. Alternate years.

284 Linguistic Anthropology Mthds Exploration of key methodologies in linguistic anthropology, including theories and practice of eliciting linguistic data, conducting interviews, transcribing audio- and video-taped interactions, and analyzing conversations. *Pre/Co-requisites:* ANTH 28 or CMSI 80 and 1 Anthropology course at the 100 level or above.

290 Meth of Ethnographic Field Wrk Examination of theoretical and ethical premises of field work methodology with practical experience in participant observation, interviewing, the genealogical method, and the recording of data. *Prerequisite:* Twelve hours of anthropology. Alternate years.

295, 296 Advanced Special Topics See Schedule of Courses for specific titles. *Prerequisites:* 21, one 100-level course.

297, 298 Advanced Readings & Research *Prerequisite:* Junior or senior standing.

ART HISTORY (ARTH)

005 Western Art:Ancient - Medieval Introduction to the visual arts, primarily painting, sculpture, and architecture in the Western world from prehistoric through Gothic.

006 Western Art:Renaissance-Modern Introduction to the visual arts, primarily painting, sculpture, and architecture in the Western World from Renaissance to present. *Prerequisite:* It is recommended that ARTH 5 be taken before 6.

008 Asian Art Introduction to the artistic tradition and major architectural monuments of India, China, Japan and Southeast Asia.

096 Introduction to Special Topics Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

140 Hist of Optical Media as Art Theory and development of the art of "optical media:" photography, film, and video. Emphasis on discovery and explication of technical, aesthetic, and expressive properties. *Prerequisite:* one of the following: ARTH 6, FTS 5, FTS 6.

146 Egypt & the Ancient Near East The development of sculpture, painting, and architecture in Mesopotamia and Egypt 3000-300 B.C.. *Prerequisite:* 5.

148 Greek Art Development of painting, sculpture, achitecture, and related arts in Greek lands 3000-30 B.C. *Prerequisite:* 5.

149 Roman Art Examination of the artistic experiments made by Roman painters, sculptors, and architects from 3rd century B.C. to 5th century A.D. Prerequisite 5.

155 Topics in Medieval Art Selected aspects of European art from the end of the Roman Empire through the Gothic period. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. *Prerequisite:* 5.

158 Northern European 1400-1600 Netherlandish and German art of the period. Special attention to Jan van Eyck, Rogier van der Weyden, Hugo van der Goes, Durer, Bosch, and Bruegel. *Prerequisite:* 5.

161 Italian Renaissance Painting Painting in Italy from Gothic innovations of Giotto and Duccio through establishment of 15th-century Renaissance style to the High Renaissance works of Leonardo da Vinci, Raphael, Michelangelo and Titian. The development of Venetian painting. *Prerequisite:* 5.

164 Italian Renaissance Sculpture Sculpture in Italy from its Gothic sources through the Renaissance. Special attention to Ghiberti, Donatello, and Michelangelo. *Prerequisite:* 5.

165 Topics European Art 1600-1800 Selected aspects of the painting, sculpture, and architecture of the Baroque, Rococo, and/or Neo-Classical periods. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. *Prerequisite:* 6.

170 Topics in Modern Art Selected aspects of the painting, sculpture, and architecture of Europe and North America during the 19th and 20th centuries. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. *Prerequisite:* 6.

172 19th Century European Painting Examination of major movements in European painting from Neo-Classicism and Romanticism through Post-Impressionism. *Prerequisite:* 6.

174 20th-Century Art A survey of movements and new media in European and American painting, sculpture, mixed media, performance, and the influences of film and photography on traditional media. *Prerequisites:* three hours of art history and preferably 172 or 181. Alternate years.

177 19th & 20th Cent Arch & Design The theory and practice of building and design from the early 19th century to the recent past. *Prerequisites:* 6 or a course in Historic Preservation.

179 Issues in Contempory Art A study of selected examples of recent and current art and/or architecture. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. *Prerequisite:* three hours of Art History.

180 N American Art 1600-1900 Painting, sculpture, and architecture in the U.S. and Canada from Colonial beginnings (Hispanic, Franco, Angelo) to WWI. Emphasis on the development of nationlist sensibilities as they emerge from European sources. *Prerequisites:* 6 or International Studies 91 (Canada).

185 Japanese Art Architecture, sculpture, painting, prints and decorative arts and their relationships to Japanese culture. Prerequisities: three hours in art history or one of the Asian Studies courses: Geography 58, History 151, Religion 21, 132, 141. Alternate years.

187 Chinese Painting History of Chinese painting, emphasizing the landscape painting of the 11th to 17th centuries. *Prerequisite:* Six hours of art history, three at the 100 level or instructor's permission. Alternate years.

188 Indian Painting Mural, manuscript, and miniature painting from India from the 5th and 19th centuries. Topics to include: courtly and religious patronage and regional styles. *Prerequisites:* Three hours of art history or instructor's permission.

189 Topics in Non-Western Art Selected aspects of the arts of an area not covered in our regular European, American, and Asian courses. Material and emphasis vary with instructor. May be repeated for credit with instructor's permissions. *Prerequisite:* three hours in Art History.

190 Internship: Art History *Prerequisites:* junior standing, six hours of 100-level course work in appropriate field, departmental permission (a contract must be obtained from and returned to the Department of Art during preregistration).

192 Inter Spec Topics in Asian Art See schedule of Course for specifi titles. *Prerequisite:* three hours in Art History or Asian Studies.

196 Intermediate Special Topics Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

198 Readings & Research *Prerequisite:* departmental permission.

199 Topics:Gender,Race,Ethn in Art Study of selected aspects of gender, "race," or ethnicity in art, and/or of the contributions of women or ethnically diverse people to the visual arts. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. *Prerequisite:* three hours in Art History.

201 Arch, Landscape & History (See Historic Preservation 201.) *Prerequisites:* six hours advanced studies in art and architecture, permission. UG only.

282 Seminar in Western Art Selected topics in Western Art. See Schedule of Courses for specific offerings each semester. *Prerequisites:* Six hours of 100-level Art History, including three hours in the area of the seminar; junior or senior standing. UG only

285 Seminar in Asian Art *Prerequisites:* One of the following: ARTH 8, 185, 187, 188, or 196 (Asian; three additional hours of 100-level course either in art history or Asian Studies.

296 Adv Special Topics:Art History See Schedule of Courses for specific titles.

ART STUDIO (ARTS)

001 Drawing Introductory study of visual experience through drawing and its transformation of the three-dimensional visual world onto a two-dimensional surface. Emphasis varies with instructor.

002 Two-Dimensional Studies A studio course exploring through classroom projects how we perceive space and how we work with materials and concepts to organize two-dimensional surfaces.

003 Three-Dimensional Studies Introductory study of the manipulation of actual space in diverse media. Emphasis varies with instructor.

004 Intro to Film/Video Production Introductory study of the principles and properties of four-dimensional media, including the mechanical and electronic phenomena behind the creation of a moving image.

011 Introduction to Fine Metals Emphasizes design in the third dimension. Basic metal fabrication techniques, soldering, forming, forging, fusing, and casting. Drawing required. Fall semester only.

095 Introduction to Special Topics See Schedule of Courses for specific titles.

111 Fine Metals Continuation of three-dimensional fabrication with work in chasing, repousse, casting, stone setting and more complex methods of construction. Design and drawing required. *Prerequisite:* 11. Fall semester only.

113 Clay: Hand Building Investigation of surfaces and three-dimensional forms. Focus on variety of construction methods, surface treatment, and firing techniques. Related clay and glaze technology. *Prerequisites:* 1 or 2, and 3.

114 Clay: Wheel Throwing Development of throwing skills and the capacity to create a range of forms. Investigation of surface treatment techniques such as slip painting and glazing. Low-fire and stoneware firing. Related clay and glaze technology. *Prerequisites:* 1 or 2, and 3.

115 Intermediate Drawing Intense investigation of drawing and elements related to the discipline. The figure used to introduce drawing exercises dealing with contour, gesture, color, and compositional geometry. *Prerequisite:* 1 and 2.

116 Drawing From the Figure Drawing from the model, emphasizing in-depth studies in different media. *Prerequisite:* 1 and 2.

121 Painting Painting as an investigation of color, space and visual perception using traditional motifs and exploring individually developed directions. *Prerequisites:* 1 and 2.

131 Printmaking: Etching Basic procedures in zinc plate printing, stressing design and technical control of aquatint, etching, drypoint and embossment. *Prerequisites:* 1 and 2. Offered alternate semesters.

132 Printmaking: Silkscreen Basic procedures in stencil printing, stressing design and technical control of stencil cutting, glue and tusche resist and photo-silkscreening. *Prerequisites:* 1 and 2. Offered alternate semesters.

133 Printmaking: Lithography Basic procedures in planographic printing from stone, stressing design and technical competence. Intensity of investigation varies with individual student. *Prerequisites:* 1 and 2.

137 Photography Photographic processes as methods of seeing, emphasizing visual discovery through informed manipulation of materials. Students explore light, camera, photosensitive materials relating to photographic realities. *Prerequisite:* one of the following: 1,2,4.

138 Color Photography Exploration of color films, cameras, and color printing processes as a means for recording, enhancing and expressing students' subjective experiences. *Prerequisite:* one of the following: 1,2,4.

139 Animation Techniques of single frame filmmaking, including drawing on film, producing a flipbook, animating a repetitive form, a two-dimensional sequence, and a three-dimensional sequence. *Prerequisite:* any two of the following: 1,2,3,4.

141 Sculpture Exploration of manipulative materials. *Prerequisite:* 3.

142 Art from Scraps Students explore in a series of projects how discarded objects and material from everyday life, the "found object" tradition, can become materials for sculpture. *Prerequisite:* 2 and 3.

143 Intermed Film/Video Production Exploration of the priciples and properties of sound and moving image through projects in synchronous sound mediamaking and live studio production. *Prerequisite:* 4 and either 1,2, or 3, or instructor permission.

144 Digital Art Exploration of the computer as an artistic medium, focusing on a variety of approaches for creating and displaying imagery. *Prerequisite:* 2.

145 Graphic Design The application of graphic design principles to practical problems, including the impact of popular design on society, and the exploration of visual elements in contemporary printing processes. *Prerequisite:* 1 or 2.

147 Visual Environment Exploration of public spaces, structures, architectural detail, landscaping, roadways, lighting, etc. Field trips; meeting with planners and architects; projects. *Prerequisites:* 1,2, or 3.

191 Internship: Field Experience *Prerequisites:* junior standing, six hours of 100 level courses in appropriate field, departmental permission (a contract must be obtained from and returned to the Department of Art during preregistration).

195 Intermediate Special Topics Intermediate course or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

197 Rdgs&Rsch: Tutorial in Studio Independent/individual research in studio art. *Prerequisites:* junior standing, six hours of studio art courses at 100 level, departmental permission (a contract must be obtained from and returned to the Department of Art during preregistration).

213 Advanced Ceramics Advanced investigations of methods exploring content, form, surface, and color of ceramics and elements related to the discipline. *Prerequisite:* 113 or 114.

215 Advanced Drawing Intense investigations of drawing and elements that relate to that discipline. Emphasis on conceptual method, contemporary techniques, and both objective and non-objective source material. *Prerequisite:* 115 or 116.

221 Advanced Painting Advanced explorations of painting emphasizing issues of scale, materials, and techniques both traditional and contemporary, and their relationship to both the discipline and current issues. *Prerequisites:* 121.

237 Advanced Photography Continuation of 137, further exploring the implications of photography and encouraging students to use the medium to better understand their relationship to the world. *Prerequisites:* 137 or 138.

241 Advanced Sculpture Advanced investigation of sculpture. Students work on individual projects under supervision of instructor. Periodic group discussion and analyses of work in progess. *Prerequisite:* 141

244 Advanced Digital Art Advanced exploration of the computer as an artistic medium for creating imagery. Focus on using the computer to animate images and integrate sound. Emphasis on conceptual issues in digital art. *Prerequisite:* 144.

281 Advanced Studies in Studio Art Work in close consultation with faculty sponsor on a specific and advanced project. Prerequisited: senior standing, major or qualified minor in studio art, departmental permission (a contact must be obtained from and returned to the Department of Art during preregistration), six hours of 100-level courses in topic of contract.

283 Advanced Seminar in Studio Art Advanced seminar for senior studio art majors covering a range of topics. *Prerequisites:* senior standing, major in studio art, instructor's perission. (Not offered for graduate credit.)

295 Special Topics in Studio Art Advanced work in existing departmental offerings. *Prerequisite:* instructor's permission only. UG only.

A&S INTERDISCIPLINARY (AS)

095 Focus:First Year Seminar

ANIMAL SCIENCE (ASCI)

001 Introductory Animal Sciences An overview of the genetics, nutrition, reproduction, and management of livestock and recreation species; introduction to animal behav-

ior, animal disease, and biotechnology.

004 Dairy Cattle Judging Principles of dairy cattle judging demonstrated and practiced using live animals.

006 Companion Animal Care & Mgmt Scientific principles of nutrition, breeding, and selection, health, management practices, pet therapy, and animal bonding. Primary emphasis on cat and dog.

043 Fundamentals of Nutrition Comprehensive study of specific nutrients in terms of their availability, function, and utilization in mammalian species. *Prerequisites:* High school chemistry and biology.

110 Animal Nutrit, Metab & Feeding Principles of meeting the nutrient requirements of animals, especially as they relate to the practical problems of formulation and production systems. *Prerequisite:* ASCI 043.

115 Introduction to Equine Studies Overview of the scientific and practical application of equine management and selection principles. Housing, nutrition, herd health, reproduction, and career opportunities.

117 Horse Health and Disease Discusses the basic anatomy and physiology of the horse, common equine diseases and problems, their diagnoses, prevention, and treatment. *Prerequisites:* ASCI 001, a biology course or instructor permission.

118 Appl Animal Health A study of small and large domestic animal diseases. Natural response to disease, methods of diagnosis, control, and treatment. Prerequisites ASCI 001, a biology course or instructor permission.

119 Equine Training Techniques Behavior modification and training of the young horse under saddle and in the cart. Introduction to interdisciplinary directions open to the equine athlete and to conditioning programs associated with these options.

121 Equus A hands-on equine management experience. Students perform horse duties, recordkeeping, and make financial and management decisions on a horse boarding operation. *Prerequisites:* Sophomore standing; instructor permission.

122 Animals in Soc/Animal Welfare Designed to heighten awareness and understanding of human-animal relationships in society, agriculture, and science. *Prerequisite:* Sophomore standing.

125 Equine Instructing Techniques Examines philosophies, concepts and teaching-learning strategies needed for the development of sound equine instructing skills. *Prerequisites:* ASCI 115 or Instructor's Permission.

134, 135 CREAM A two-semester course in which students perform the work and make the financial and management decisions associated with the CREAM dairy herd. Prerequisite preferred: Sophomore/junior standing, instructor permission.

141 Anat&Physiol Domestic Animals A comprehensive review of the structure and function of domestic animals, emphasizing those of economic importance. Differences between mammalian and avian species are discussed. *Prerequisites:* Biology 1, a chemistry course or instructor permission.

143 Forage Crop Management (See Plant and Soil Science 143.) Alternate years.

154 Dog Training and Behavior Canine behavior is thoroughly examined and applied to the training and behavior modifications of dogs. *Prerequisites:* ASCI Major or Instructor Permission.

155 FARMS Junior Planning Seminar The course objective is to introduce students to: 1) on-campus research and learning resources, and 2) Vermont's dairy industry through field trips, and discussion of business' strengths and weaknesses. *Prerequisite:* FARMS student

156 FARMS Senior Planning Seminar The course provides opportunity for students to develop and present an oral and written formal research project proposal for their Senior research project (ASCI 252). *Prerequisite:* Enrollment in FARMS program.

161 Lab Animal Health & Disease An introduction to laboratory animal science and welfare covering animal care and management, the correct performance of experimental procedures, and the regulatory and legislative framework governing it. *Prerequisite:* ASCI 001, a biology course or instructor permission.

171 Zoos, Exotics & Endang Species From gorillas to golden lion tamarinds, how human attitudes, activities, utilization, and management strategies impact wild and captive animal populations. *Prerequisite:* ASCI 001 or instructor permission.

195, 196 Field Experience Professionally-oriented field experience under joint supervision by faculty and business or community representative. *Prerequisite:* Department chair's permission. Total credits towards graduation cannot exceed 15 hours.

197, 198 Undergraduate Research Research activity under direction of qualified staff member. Must have faculty member approval. Written proposal and report required. *Prerequisites:* Junior standing, Departmental Chair's permission.

205 Equine Reproduction&Management In-depth investigation of equine reproduction and physiology, mare and stallion endocrinology, breeding techniques, processing semen, embryo transfer parturition, neonatal foal care, and marketing in the equine industry. *Prerequisites:* ASCI 001, ASCI 115 or instructor permission.

211 Summer Farm Management A work-study program on the modern practices associated with farm management. Taught at Miner Institute, Chazy, NY. For students with a strong interest in farm management. *Prerequisites:* Junior, senior, or graduate standing. Not offered for graduate credit.

212 Animal Genetics & Breeding The discussion of genetic principles and their application in the improvement of farm animals. Student teams develop a bredding plan in a semester project. *Prerequisites:* A course in statistics (141 preferred), Biology 1, or permission. Not offered for graduate credit.

213 Dairy Herd Management Organization and management of the dairy herd. Practical application of feeding, reproduction, milking, and general management principles. *Prerequisites:* Junior standing or instructor permission. Not offered for graduate credit.

214 Dairy Herd Management Organization and management of the dairy herd. Practical application of feeding, reproduction, milking, and general management principles. *Prerequisites:* Junior standing or instructor permission. Not offered for graduate credit.

215 Physiology of Reproduction Fundamental principles of the physiology of reproduction with emphasis on, but not limited to, farm animals. *Prerequisite:* ASCI 141 or instructor permission.

216 Endocrinology Physiology of endocrine and autocrine/paracrine systems and growth factors. *Prerequisite:* Course in both biology and physiology; one course in anatomy desirable. Alternate years.

220 Lactation Physiology Physiological mechanisms that control and affect lactation in domestic and laboratory animals with emphasis on dairy cattle. Includes mammary anatomy, development and health, and milk synthesis. *Prerequisites:* One chemistry course and one course in anatomy and physiology, or instructor's permission.

230 Agricultural Policy & Ethics Examines American agriculture and policies from various perspectives - historical, political, ecological, technological, social, economic, and ethical. Emphasis on contemporary issues, policy options, future developments. *Prerequisite:* Junior standing or permission.

231 Adv Ruminant Nutr&Dairy Feed Integration of microbial growth and fermentation with metabolism to define nutrient requirements in ruminant animals and application to current feeding practices in dairy production systems. *Prerequisite:* 110. (Not offered for graduate credit.)

233 Dairy Cattle Breeding Setting breeding goals, making selection and mating decisions; balancing opposing forces to maximize genetic progress, and understanding the underlying genetic principles. *Prerequisites:* A genetics course, a

statistics course, and permission. (Not offered for graduate credit.)
234 Advanced Dairy Management An intensive, residential program at the Miner Institute providing an in-depth experiential program in the management of the dairy herd. *Prerequisites:* ASCI 110, 134 or 135 or equivalents. Fifteen hours. (Not offered for graduate credit.)
252 FARMS Senior Project The students will conduct independent research focused on a project proposal that was developed and approved in previous course work (ASCI 156). *Prerequisites:* FARMS Program enrollment, ASCI 156.
263 Clin Top:Companion Animal Med The use of case studies in companion animal medicine to develop clinical, analytical, and diagnostic skills. *Prerequisites:* ASCI 118, 141, junior standing.
264 Clin Topics:Livestock Medicine An advanced study of diseases in cattle, sheep, goats, and pigs, emphasizing disease detection, pathobiology, treatment and prevention. *Prerequisites:* ASCI 118, 141, junior standing.
272 Adv Top:Zoo,Exotic,Endang Spec An exploration of modern zoo philosophy and ethics and the extent of human intervention necessary for the preservation of endangered species. *Prerequisites:* ASCI 171 and instructor permission.
281 Animal Sciences Career Seminar Discussion and workshop activities exploring careers in animal and food sciences. Includes resume preparation and interview training. *Prerequisite:* Sophomore standing ASCI major. Not offered for graduate credit.
297 Spec Topics in Animal Science Written courses, seminars or topics beyond the scope of existing offerings. See Schedule of Courses for specifics. *Prerequisite:* Department chair's permission. May enroll more than once for maximum of 15 hours.
298 Spec Topics in Animal Science Written courses, seminars or topics beyond the scope of existing offerings. See Schedule of Courses for specifics. *Prerequisite:* Department chair's permission. May enroll more than once for maximum of 15 hours.

ASTRONOMY (ASTR)

005 Exploring the Cosmos Survey of ancient astronomy, planets and moons, stars and their evolution, galaxies and quasars, and Big-Bang cosmology. Includes night sky observations.
023 Astr Lab I:Measuring the Sky Measurements of the properties of the planets, stars, and galaxies using graphical analysis, computer simulations and photographs. *Prerequisites:* Concurrent enrollment or credit in ASTR 5.
024 Astronomy Lab II:Imaging Sky Sky observations using binoculars, optical and radio telescopes. Observations are recorded with drawings, photographic film, and digital imaging devices. Some dark room work. *Prerequisites:* Concurrent enrollment or credit in ASTR 5.
051 The Birth & Death of Stars A survey of stellar astronomy and evolution in our Milky Way galaxy. Stellar populations and the interstellar medium. The local group of galaxies. *Prerequisites:* ASTR 5 or other introductory science course.
053 Moons & Planets Celestial mechanics, formation of the stars, and planetary materials. Planets, satellites, asteroids, meteors, and comets. Planetary surfaces, interiors, and atmospheres. Origin of life. *Prerequisites:* ASTR 5 or other introductory science course.
055 The Big Bang Ancient cosmologies, beginning of time, origin of matter, cosmic background radiation, antimatter and dark matter, the expanding universe and origin of structure. *Prerequisites:* ASTR 5 or other introductory science course.
057 Hist/Pract Ancient Astronomy A cross-cultural survey of astronomical practices of ancient peoples. Sky watching, time reckoning and calendar making. Constellations, astrological practices, and planetary theories. *Prerequisites:* ASTR 5 or other introductory science course.
257 Modern Astrophysics (Same as Physics 257) *Prerequisite:* One 100-level course in physical science or engineering.

ATHLETIC TRAINING (AT)

157 Care & Prevention Athletic Inj An introduction to athletic training. Course focuses on prevention, recognition, and care of injuries incurred by the physically active.
158 Directed Obsv in Athletic Trng A laboratory sequence offered for those students seeking admission into the Athletic Training Education Program. Course includes development of clinical skills and 60 clinical experience hours. *Pre/Co-requisites:* 158 must be taken concurrently with 157.
159 Practicum in Athletic Trng I Course one in a series of practicum courses that sequentially develop clinical skills in a laboratory learning environment. Students are provided clinical assignments. *Pre/Co-requisites:* Acceptance into the Athletic Training Education Program.
160 Practicum in Athletic Trng II Course two in a series of practicum courses that sequentially develop clinical skills in a laboratory learning environment. Students are provided clinical assignments. *Pre/Co-requisites:* Acceptance into the Athletic Training Education Program.
161 Practicum in Athletic Trng III Course three in a series of practicum courses that sequentially develop clinical skills in a laboratory learning environment. Students are provided clinical assignments. *Pre/Co-requisites:* Acceptance into the Athletic Training Education Program.
162 Practicum in Athletic Trng IV Course four in a series of practicum courses that sequentially develop clinical skills in a laboratory learning environment. Students are provided clinical assignments. *Pre/Co-requisites:* Acceptance into the Athletic Training Education Program.
184 Injury Eval & Recognition I Evaluation and recognition of injuries to lower extremeties and spine. Areas covered include injury mechanisms, etioloty, pathology, and clinical signs and symptoms. *Pre/Co-requisites:* 157 and 158.
185 Injury Eval & Recognition II Evaluation and recognition of injuries to head, neck, and upper extremities. Areas covered include injury mechanisms, etiology, pathology, and clinical signs and symptoms. *Pre/Co-requisites:* AT 184.
186 Therapeutic Modalities Scientific basis and physiological effects of various therapeutic modalities utilized in the treatment and rehabilitation of musculoskeletal injuries. Emphasis on application of modalities within the framework of the healing process. *Pre/Co-requisites:* AT 157, 158
187 Rehabilitation Techniques Post-injury and post-operative rehabilitation and conditioning techniques involved in returning an active individual to normal and athletic activity. *Pre/Co-requisites:* AT 157, 158, 184
188 Administration in Athl Trng An examination of topics related to administration, budget management, health insurance issues, and policies/procedures in the profession of athletic training. *Prerequisites:* AT 157, 158.
190 Internship in Athletic Trng Supervised field work in off-campus experiences in settings including: high-school, college/university, clinic, and professional sports. May be retaken for credit. *Pre/Co-requisites:* Senior standing and completion of 800 clinical experience hours.
195 Special Topics in Athl Trng Contemporary issues in the field of Athletic Training. Topics include: pharmacology, general medical conditions and disabilities, male & female health issues, and psychology in sport. *Pre/Co-requisites:* Junior standing and Athletic Training major.

BIOCORE (BCOR)

011, 012 Exploring Biology Exploring biology from cells to organisms. Topics include origins of life; ancestral organ-

isms; uni- and multi-cellular energetics; evolution of respiration and metabolism ; and the genetic code. Credit not given for both BCOR 011 and BIOL 001. *Pre/Co-requisites:* Concurrent enrollment or credit in Chemistry 31 or 32.

101 Genetics The basis of inheritance, covering topics from classical genetics to modern molecular studies. Analysis of genetic data emphasized, from prokaryotic, animal, and plant systems. *Pre/Co-requisites:* Biol 1,2 or BCOR 11,12, Chemistry 31,32, organic chemistry recommended.

102 Ecology and Evolution Ecosystem and community structure; population growth; species interactions and niche dynamics; population and chromosomal genetics; speciation in fossil records; ecology of animal behavior; applied ecology. *Pre/Co-requisites:* Biol 1,2 or BCOR 11,12, Math 19 or 21.

103 Molecular and Cell Biology Explores the fundamental processes of life. Topics include cellular metabolism; structure and function of organelles; cell cycle; signal transduction; biology of cancer. *Pre/Co-requisites:* Biol 1,2 or BCOR 11,12, Chemistry 31, 32 (Chemistry 141, BCOR 101 recommended).

BIOCHEMISTRY (BIOC)

191, 192 Undergraduate Research Participation in a research program currently being pursued by a faculty member of department. Written report due at end of each semester. *Prerequisites:* Chemistry 31, 32 or 35, 36. Some programs may require additional courses in chemistry. Credit as arranged, up to four hours per semester.

196 Intermediate Special Topics

205 Biochemistry I Introduction to chemistry and structure of biological macromolecules; examination of mechanisms of chemical processes in biological systems including enzyme catalysis, biosynthesis, regulation, and information transfer. *Prerequisites:* CHEM 142 or 144. Crosslisted with CHEM 205 and MMG 205. UG only.

206 Biochemistry II Continuation of Biochemistry I. Biochemistry of nucleic acids; nucleic acid based processes, such as replication and transcription; cellular information transfer, genomics, and proteomics. UG only. *Prerequisite:* 205. Crosslisted with CHEM 206 and MMG 206.

207 Biochemistry Lab Introduction to biochemical tools, including spectrometry, chromatography, and electrophoresis; natural and recombinant enzyme isolation; assays of DNA-modifying enzymes; computer-based structure/function exercises. Corequisites: 205 or 206. Crosslisted with CHEM 207 and MMG 207. UG only.

212 Biochemistry of Human Disease Molecular approach to genetic, metabolic, and infectious diseases; recombinant DNA technology and medicine; molecular biology of cancer. *Prerequisites:* Chemistry 42 or 141.

240 Macromol Struct Prot&Nucl Acid Introduction to structural biology and macromolecular structure with an emphasis on protein-protein and protein-nucleic acids interactions. *Prerequisites:* Biology 1,2; Organic Chemistry; Junior standing recommended; (Crosslisted with MMG 240) Alternate years; not approved for graduate credit.

BIOLOGY (BIOL)

001 Principles of Biology Principles of cellular biochemistry, cell biology, genetics and evolution. Topics presented: biochemistry; metabolism, cell structure and function; respiration; photosynthesis; molecular, Mendelian and population genetics; microevolution. Credit not given for both 1 and BCOR 11.

002 Principles of Biology Principles of organismal biology; nature of scientific inquiry, plant form and function, pollination ecology, animal phylogeny illustrated by comparative anatomy and physiology; animal behavior. Credit not given for both 2 and BCOR 12.

003 Human Biology For nonscience majors. Selected biological topics relevant to humans, such as cancer, human genetics, environmental toxicants; biological concepts necessary for understanding these problems.

004 The Human Body Introduction to basic human anatomy and organ system physiology emphasizing normal homeostatic mechanisms and the changes that accompany common disorders and diseases. For nonscience majors.

006 Evolutionary Biology For nonscience majors. The process of biological evolution; evidence for evolution; mechanisms of evolutionary change; origin of adaptations; evolution of behavior; social and reproductive behavior.

009 Science As a Way of Knowing History of scientific method and its application to generation of knowledge. How science seeks to understand the origin and diversity of life. Lab research project.

011 See BCOR 011

012 See BCOR 012

095, 096 Special Topics See Schedule of Courses for specific titles.

101 See BCOR 101

102 See BCOR 102

103 Cell Function & Structure Molecules, structures, and physiology of cell membranes; energy transformations; nuclear and cytoplasmic events; extracellular matrix; cell signaling; and cell types and fates. *Prerequisites:* Biol 1, 2 (or BCOR 11,12); Chem. 31, 32; (Chem 141, Biol 101 recommended).

104 Comparative Animal Physiology Physiology of organs and organ systems in animals emphasizing basic principles of physiology common to all forms. *Prerequisites:* Biol 1,2 or 11,12; 103 recommended.

106 Cell Structure and Function Molecules, structures, and physiology of cell membranes; energy transformations; nuclear and cytoplasmic events; extracellular matrix; cell signaling; and cell types and fates. *Prerequisites:* Biol 1, 2 (or BCOR 11,12); Chem 141, 142 recommended

191, 192 Research Apprenticeship Participation in a faculty research project. Suitable for students in first through junior years. Students must follow all departmental guidelines. *Prerequisite:* Departmental permission.

193, 194 Internship in Biology Professional experience, containing a substantial academic component, with an off-campus organization or campus unit other than Biology Department. Students must follow all departmental guidelines. *Prerequisite:* Departmental permission.

195, 196 Special Topics See Schedule of Courses for specific titles.

197, 198 Undergraduate Research Individual laboratory research under faculty guidance. Students must follow departmental guidelines or be disenrolled. Six credits given only with presentation in department Research Day or approved venue. *Prerequisite:* Junior or senior standing, departmental permission.

202 Quantitative Biology Mathematical concepts applied to biological problems such as growth, metabolism, temperature effects, kinetics, and graphic interpretation of data. Statistics not treated. *Prerequisite:* At least one intermediate level course in biology, Math. 9, or instructor's permission.

203 Population Ecology Analysis of growth, regulation, and interrelations of biological populations in theoretical, laboratory, and natural systems. *Prerequisite:* BCOR 102.

204, 205 Adv Genetics Laboratory Discussions and Laboratories to provide experience with modern genetic techniques. Bench work and data analysis emphasized. May be repeated for credit. *Prerequisites:* BCOR 101

206 Immature Insects Evolution, morphology, taxonomy, and natural history of immature insects. Laboratory covers some morphology, but is predominantly identification. *Prerequisites:* Junior standing; major or minor in Biology.

UG only.

208 Morphology&Evolution Insects Interrelationships, fossil history, comparative anatomy of major insect groups. Morphology and way of life of representatives of important insect orders and classes of arthropods. *Prerequisite:* BCOR 102 or 104.

209 Field Zoology Collection, identification of invertebrates; September field work. Half of student's collection is general, identified to family; half is one or two groups identified to species. *Prerequisite:* BCOR 102 or 104.

212 Comparative Histology Anatomy of tissues, chiefly vertebrate. Tissue similarities and specializations of organs among the various groups of animals in relation to function. *Prerequisite:* 104.

217 Mammalogy Classification, identification, morphology, evolution, and distribution of mammals. *Prerequisite:* BCOR 102.

219 Compar/Func Vertebrate Anatomy (2-4) Structure, function, and phylogeny; survey of evolutionary and functional trends; investigation of the structure of all chordate groups. *Prerequisite:* 104 or BIOL 255. Alternate years, 2000-01.

223 Developmental Biology An analysis of the cellular, subcellular, molecular, and genetic mechanisms that operate during oogenesis and embryogenesis in invertebrate and vertebrate organisms. *Prerequisites:* BCOR 101, 103.

225 Physiological Ecology Processes by which animals cope with moderate, changing, and extreme environments. *Prerequisites:* BCOR 102, 104.

238 Winter Ecology Natural history and winter adaptation of plants and animals of western Maine. Field work during winter break; oral and written report completed during spring semester. *Prerequisite:* Permission of instructor.

246 Ecological Parasitology Parasite-host interactions examined with evolutionary perspective. Topics include the origin of parasites, evolution of virulence, and ecological consequences of parasitism. Laboratory includes original experiments. *Prerequisite:* BCOR 102.

254 Population Genetics Methods of detecting and investigating genetic variation, as well as its causes and consequences.Applications from medicine, forensics, and environmental biology are empasized. *Pre/Co-requisites:* BCOR 101

255 Comparative Physiology Physiology at the organ, systems, and organismal levels. Capstone course to consolidate biological concepts. *Pre/Co-requisites:* Bio 101, 102, 103.

261 Neurobiology Focus on molecular and cellular aspects of the nervous system. Electrical signaling, synaptic transmission, signal transduction, neural development, plasticity and disease. *Prerequisite:* BCOR 103. Cross-listing: ANNB 26.

262 Neurobiology Techniques Extensive study of laboratory methods used in modern research on the function of the nervous system. Techniques from electrophysiology, cell biology, biochemistry and genetics. *Pre/Co-requisites:* BCOR 103, 261

263 Genetics Cell Cycle Regulation Molecular events during the cell cycle; mutants defective in cell cycling; comparison of normal and transformed (cancer) cell cycling. *Prerequisite:* BCOR 01 or instructor's permission. Alternate years. 1999-00.

264 Community Ecology Theoretical and empirical analyses of community structure. Topics include population growth, metapopulation dynamics, competition, predation, species diversity, niches, disturbance succession, island biogeography, and conservation biology. *Prerequisites:* BCOR 102; at least junior standing.

265 Developmntl Molecular Genetics Current topics in developmental genetics explored through lectures and discussions of current literature; emphasis on molecular approaches. *Prerequisites:* BCOR 101. Alternate years.

267 Molecular Endocrinology Study of hormone action at the cellular and molecular level. *Prerequisite:* BCOR 101.

268 Medical Entomology Examines the arthropod vectors of temperate and tropical diseases that affect human health, using an ecological and a systematics approach. *Prerequisites:* 102 or instructor permission. UG only.

269 Plant-Animal Interactions Ecological and evolutionary interactions among plants and animals. Topics include herbivory, pollination, seed predation, biocontrol, and effects of global climate change. *Prerequisites:* Biology 1,2 or BCOR 11,12; BCOR 102 recommended. UG only.

270 Speciation and Phylogeny Contributions of modern research in such fields as genetics, systematics, distribution, and serology to problems of evolutionary change. *Prerequisite:* BCOR 101 (102 recommended). Alternate years. 1999-00.

271 Evolution Basic concepts in evolution will be covered, including the causes of evolutionary change, speciation, phylogenetics, and the history of life. *Pre/Co-requisites:* BCOR 102 or permission of Instructor

276 Behavioral Ecology Adaptive significance of behavior in natural environments. Evolutionary theory applied to behavior and tested with field data. *Prerequisites:* 102 or instructor permission. UG only.

281 Biology Seminar Review and discussion of current zoological research. Attendance required of Biology graduate students. Seniors in zoological research programs may enroll for 0 credits. Credits 0-1.

282 Eco Lunch Review and discussion of current research. Attendance required of Biology graduate students. Seniors in research programs may enroll for 0 credits.

283 Ecology-Evolution Journal Club Review and discussion of current research. Attendance required of Biology graduate students. Seniors in zoological research programs may enroll for 0 credits. Credits 0-1.

284 Cell Lunch Review and discussion of current research. Attendance required of Biology graduate students. Seniors in research programs may enroll for 0 credits.

285 John Dewey Honors Crs:Biology Advanced Biology course for John Dewey Honors Students with Biology/Zoology/Environmental Sciences Majors. Requires enrollment in approved 200-level course and includes additional assignments. *Prerequisites:* Departmental permission. UG only.

288 Seminar in Forensic Biology Capstone course in seminar format for undergraduates concentrating in Forensic Biology in the Biology major; discussions, readings, guest speakers. Pre/corequisites: Chem 141, 142; BCOR 101.

295 Special Topics See Schedule of Courses for specific titles.

296 Advanced Special Topics See Schedule of Courses for specific titles.

297 Advanced Undergraduate Rsrch Research under faculty guidance. Enroll following departmental guidelines and with departmental permission. Up to six credits; six received only with presentation in an approved venue. *Pre/Co-requisites:* Junior or Senior Standing.

298 Advanced Undergraduate Rsrch Research under faculty guidance. Enroll following departmental guidelines and with departmental permission. Up to six credits; six received only with presentation in an approved venue. *Pre/Co-requisites:* Junior or Senior Standing.

299 Advanced Special Topics See Schedule of Courses for specific titles. UG only.

BIOSTATISTICS (BIOS)

200 Med Biostatistics&Epidemiology Introductory design and analysis of medical studies. Epidemiological concepts, case-control and cohort studies. Clinical trials. Students evaluate statistical aspects of published health science studies. Prerequiste: Statistics 141 or 143 or 211. Three hours. Cross-listing: Statistics 200.

211 Statistical Methods I See Statistics 211, 221.

235 Categorical Data Analysis See Statistics 235.

241 Statistical Inference Introduction to statistical theory; related probability fundamentals, derivation of statis-

tical principles, and methodology for parameter estimation and hypothesis testing. *Pre/Co-requisites:* 151 or 153 or 251; 141 or equivalent; Math 121. Cross-listed: STAT 241

261 Statistical Theory 1 Point and interval estimation, hypothesis testing, and decision theory. Application of general statistical principles to areas such as nonparametric tests, sequential analysis, and linear models. *Pre/Co-requisites:* STAT 251 or either STAT 151 or STAT 153 with instructor permission. Cross-listed: STAT 261

BIOMEDICAL TECHNOLOGY (BMED)

282 Research Methods Laboratory focused course covering methods of eukaryotic cell culture, viability studies, and protein isolation and analysis.

287 Research I Independent research project - fall semester.

288 Research II Independent research project-spring semester.

293 Research Concepts Discussion of research methodology including analysis of primary scientific literature. Spring.

297 Undergraduate Research Research projects sponsored by faculty. *Prerequisite:* Instructor permission. Spring, fall.

298 Undergraduate Research Seminar Current literature related to student research project will be presented and discussed. Students will be required to present a seminar on their research project. *Prerequisites:* 284, 285, 286 or 297, advanced standing. Spring.

BOTANY (BOT)

004 Intro to Botany Structure, function, and reproduction of plants. Fundamental aspects of plant science with implications of botanical knowledge needed for applied plant sciences. Credit not given for both Botany 4 and Biology 1.

006 The Green World Evaluation of the impact of plants on the aesthetic, cultural, social, medical, and religious lives of peoples of the world. Botany and Biological Science majors will not receive credit for Botany 6 as part of program distribution requirements.

095, 096 Special Topics

104 Plant Physiology Study of the plant as a whole, growth and development, water and mineral relations, environmental factors, and regulatory processes. *Prerequisites:* One year of plant or biological science, and one year of chemistry, or instructor's permission.

108 Morph & Evol Vasc Pl Evolutionary relationships of vascular plants as inferred from plant structure, ecology, geography, and reproductive biology. Synthesis includes both fossil and extant groups. *Prerequisite:* 4 or Biology 1, 2.Alternate years.

109 Systematics & Phylogeny Classification; evolution of flowering plants; characterization and recognition of major families; species and generic concepts; biosystematics; taxonomic keys; preparation of herbarium specimens. *Prerequisite:* 4 or Biology 1, 2.

132 See BCOR 101 Introduction to transmission and molecular genetics with reference to prokaryotic, animal, and plant systems. *Prerequisites:* Biology 1, 2; Chemistry 31, 32.

151 Plant Anatomy

160 See BCOR 102 Interactions among plants and their environment. Topics covered include individuals, populations, communities, and ecosystems. Field methods and experimental design covered; ecological applications. *Prerequisite:* Botany 4 or Biology 1, 2; Math 19 or 21 recommended. Four Hours.

193, 194 College Honors (For Arts and Sciences seniors.)

195 Special Topics

197, 198 Undergrad Research Individual projects under direction of a faculty member. Project may involve original research, readings, or apprenticeships. *Prerequisites:* Junior or senior standing, departmental permission. One to six hours.

205 Mineral Nutrition of Plants Role of essential elements for plant growth including classical and modern approaches to the study of ion availability and transport. *Prerequisite:* 104.

209 Biology of Ferns Evolutionary biology; a survey of New England ferns and discussion of their phylogenic relationships; current research emphasizing morphological, biogeographical, genetic, and phytochemical aspects of speciation. *Prerequisite:* 108; 101 or 132 recommended. Alternate years.

213 Plant Communities Plant sociology; structure and organization of the plant community; sampling methods and analysis of data; climatic and edaphic factors; field work. *Prerequisite:* 109 or departmental permission.

223 Fundamentals of Field Science Pattern and process in natural systems. Weekly discussion of unifying questions in science. Field labs teach sampling and analysis of vegetation, soils, and animals. *Prerequisite:* Graduate standing or several university courses in earth sciences, life sciences, and chemistry.

226 Environmental Problem Solving Students negotiate a contract, work as a team, and map and inventory forested natural areas as they apply problem solving skills to Vermont environmental project. Prerequistes: Instructor permission. One to three hours.

229 Water Relations of Plants See Forestry 299.

232 Botany Field Trip Trips to selected environments outside Vermont, led by faculty members representing different fields of botany. Overall, integrated approach to ecology, structure, and function.

234 Ecology of Freshwater Algae Community, population and physiological ecology of algae. Topics include taxonomy; diversity; distribution and seasonal succession; productivity and grazing; growth kinetics; and competitive and synergistic reactions. *Prerequisites:* Botany 160 or Natural Resources 103 or Biology 102. Alternate years.

241 Tropical Plant Systematics Principles and methods of angiosperm phylogeny. Recent systematic and evolutionary research on flowering plants; survey of tropical flowering plant families. Student presentations on recent research. *Prerequisite:* 109. Alternate years.

251 Principles of Light Microscopy Introduction to the optics, construction, and care of the light microscope. Theory of phase and interference contrast, fluorescense, and video methods. *Prerequisite:* One year of physics or permission.

256 Adv Plant Genetics Review of major topics in higher plant genetics and cytogenetics. Designed to be applied to the systematics, breeding, and gene engineering of higher plants. *Prerequisite:* 132 or Biology 101.

260 Plant Population Biology Study of how environmental and life-history characteristics of plants determine the dynamics and evolution of populations. *Prerequisites:* Biology 102 or Botany 160 or instructor permission. UG only.

261 Plant Growth & Development Concepts in plant structure and development. Biophysics of plant structure and pattern-formation. Introduction to methods of plant microscopy and microtechnique. *Prerequisites:* 104, 108, Intro. Physics or permission.

262 Nature of Sensing and Response Examination of signal transduction pathways in widely divergent organisms, the evolutionary conservation of these pathways, and how these systems are perturbed by mutation and disease. *Prerequisites:* BCOR 101, and either concurrent or past BCOR 103 or BOT 104, or permission. Cross-listed with MMG 262.

281 Botany Seminar Presentations of personal research by faculty, graduate students, and outside guest speakers. Attendance required of botany graduate students and seniors in botanical research programs. Without credit.

282 Botany Seminar See Botany 281.

295 Special Topics For advanced students within areas of expertise of faculty. Aspects of ecology, physiology, genetics, cytology, bryology, pteridology, paleobotany, photobiol-

ogy, membrane physiology, and cell biology. *Prerequisite:* Departmental permission.

296 Special Topics Special Topics. UG only.

BUSINESS ADMINISTRATION (BSAD)

017, 018 Business Law Concepts of law as related to business, including law of contracts, sales, bailments, and negotiable instruments, business and laws of agency, partnerships, and corporations. *Prerequisite:* Sophomore standing.

040 Information Technology & Mgmt Introduction to use of technology and computers in decision-making functions of management. Includes coverage of information technology, computer software applications, and programming. Credit cannot be received for Computer Science 2 or Computer Science 3 after completion of BSAD 40.

060 Financial Accounting Introduction to generally accepted accounting principles and techniques regarding corporations, partnerships, and proprietorships as they apply to income determination and financial position presentation. *Prerequisite:* Sophomore standing. Credit will be granted for only one of BSAD 60 or BSAD 65.

061 Managerial Accounting Introduction to use of accounting for planning, cost behavior and control, and decision making. *Prerequisite:* BSAD 60 or 65.

065 Fundamentals of Accounting Overview of the financial accounting model and basic managerial accounting concepts, including accounting for service, merchandising and manufacturing companies, financial Statement components (assets, liabilities and equity), cost analysis, and budgeting. *Prerequisite:* Sophomore standing. Credit will be granted for only one of BSAD 60 or BSAD 65.

095, 096 Special Topics

120 Prin Mgmt & Org Behavior Fundamentals of management, organization theory, behavior, and interpersonal communication in a transnational context. *Prerequisite:* Junior standing.

121 ST in Organizational Behavior Focuses on ways in which individuals and work groups within organizations can be better utilized as organizational resources. *Prerequisite:* BSAD 120.

123 Collective Barg & Conflict Res Focuses on union-employer relations and on developing the student's negotiation skills. Topics include the union contract, the causes of strikes, and the techniques for resolving conflict. A bargaining simulation is incorporated. *Prerequisite:* BSAD 120.

127 International Management Reviews special problems in the management of human resources in a global economy. Focuses on cultural differences, a comparison of labor-management systems in a number of countries, the role of multinational corporations, and the impact of foreign enterprises on employment practices in host countries. *Prerequisites:* BSAD 120; senior standing.

132 Legal & Political Envir of Bus Interaction of business and society. Emphasis on business roles in the complex and dynamic, legal, political, and social environment. *Prerequisites:* Economics 11, 12; junior standing.

137 Entrepreneurship Understanding of the business challenges that confront entrepreneurs and their approaches to opportunities. Emphasizes real-world information gathering and integrated approaches needed for entrepreneurial success. *Prerequisite:* Junior standing and strong personal motivation.

138 New Venture Creation I Students develop business plans for their own new business deas. Evaluate market and financial feasibility and develop strategy and business objectives for the new venture. *Prerequisite:* BSAD 137 or permission of the instructor plus strong personal motivation.

139 New Venture Creation II Continuation of BSAD 138. Students develop detailed and integrated operational business plans to support the business concept, strategy and objectives developed in BSAD 138. *Prerequisite:* BSAD 138.

141 Mgmt Information Systems Integrates computer hardware and software concepts with a classical methodology for developing business information systems. Presents the relevant factors in the development of information systems. Discusses the problems of analyzing, designing, and implementing such systems. Business majors may not earn credit for CS 42. *Prerequisites:* BSAD 61, BSAD 40 or Computer Science major, junior standing.

142 Structured Business Prgmming Fundamental principles of business computer programming. Topics include: the constructs of structured programming, modular development, sequential and nonsequential access techniques. Exercises include data editing, reporting, file updating. An on-line program development mode is used. Credit cannot be received for both CS 14 and BSAD 142. *Prerequisite:* BSAD 141.

143 Struc Anyl & Dsgn Business Sys In-depth study of business information system development cycle emphasizing analysis and design phases. Structured analysis and design techniques used to develop models of business information systems. Case studies such as payroll, inventory, accounts receivables, order entry, billing. *Prerequisite:* BSAD 141.

144 Data Base Development & Admin Data base system development cycle from analysis to design, implementation, and administration. Central focus on complex data structure modeling, data base implementation and administration. A project involving analysis, design, and implementation required. *Prerequisites:* BSAD 141, BSAD 143 or instructor's permission.

145 Managing Info System Resource Theory and practice of managing resources of an organization's information system. Responsibilities and interactions of upper level, function area, and information system managers emphasized. Topics include project selection and control, staffing, organizing, planning, and managing the information system function. *Prerequisites:* BSAD 120, BSAD 143, concurrent enrollment in BSAD 144, or instructor's permission. Variable 3-4 hours.

146 Business Data Communications The course covers basic concepts of data communications, networking, and network management and security. Focus is on local area networking (LAN) technologies and protocols. Includes various hands on lab-based exercises. *Pre/Co-requisites:* BSAD mjrs only; junior standing; BSAD 141.

150 Marketing Management The place of marketing in our economy. Analysis of the market structure by function, institutions, and commodities. Consumer and organizational activities reviewed. Credit can not be received for CDAE 168 after completion of BSAD 150. *Prerequisites:* Statistics 141 or 111, Economics 11, 12; junior standing.

152 Business to Business Marketing Exploration and analysis of the marketing of goods and services to organizations. Topics include organizational buying, market segmentation, positioning, pricing, communication, physical distribution and customer service, and sales management. *Prerequisite:* BSAD 150.

153 Consumer Behavior Exploration and analysis of research evidence from marketing and behavioral science relevant to a theory of consumer behavior. Emphasis also given to research methodologies. Credit can not be received for both CDAE 127 and BSAD 153. *Prerequisite:* BSAD 150.

155 Marketing Communications Emphasizes the coordination of advertising and sales promotion into cohesive, single-minded promotional programs. Stresses the need to integrate promotional activity into the overall marketing strategy. Credit can not be received for both CDAE 128 and BSAD 155. *Prerequisite:* BSAD 150.

170 Business Forecasting Methods Looks inside the crystal ball at major forecasting methods (Smoothing, Regression, Econometric, Box-Jenkins, Combined), and analyzes elements of good forecasting practice in an organization. Extensive use of PC forecasting packages. *Prerequisites:* Statistics 141, Economics 11, 12, junior standing.

173 Production&Operations Analysis Study of methods used in planning, analysis, and control of production and service processes. Topics include forecasting, scheduling, production and inventory control, sequencing, line balancing, learning curves, and networks. *Prerequisites:* Math 20 or 21, Statistics 141, junior standing.

174 Manufacturing Planning&Control Study of systems to plan and control flows of materials through manufacturing. Topics include production, materials, and capacity planning; master scheduling; shop-floor control, and just-in-time production. *Prerequisite:* BSAD 173 or senior standing in Engineering or Mathematics.

175 Management of Technology (Cross-listed with Engineering Management 175.)

177 Decision Analysis Thinking through difficult decisions. Course utilizes case studies and professional software to analyze decision making, design decision models and perform risk analyses. *Prerequisites:* Statistics 141; junior standing.

178 Quality Control Analysis and design of systems for obtaining quality in operations. Statistical process control (SPC) emphasized, along with current management philosophies and concepts. *Prerequisites:* Math 20 or 21, Statistics 141 or equivalent; junior standing.

180 Managerial Finance The financial function in the corporation. Techniques for evaluating current use of resources and proposed resource acquisitions or dispositions. Credit can not be received for CDAE 167 after completion of BSAD 180. *Prerequisites:* BSAD 61 or 65, Economics 12, Statistics 141 or 111, junior standing.

181 Intermediate Financial Mgmt Examines key areas of financial decision making. With cases and problems, issues such as capital budgeting, leasing, mergers, and acquisitions examined. *Prerequisite:* BSAD 180.

183 International Finance Mgmt Theories and practices of international financial management examined. Topics investigated include: systems of international exchange, spot and forward markets, and expropriation and exchange risk. *Prerequisite:* BSAD 180.

184 Financial Institutions&Markets Study of level and structure of interest rates and characteristics of financial institutions and markets. Topics include market vs. natural rate of interest, interest rate structure, behavior of interest rates. *Prerequisite:* BSAD 180.

191 Business Policy Processes of total enterprise strategy formation, implementation, and performance measurement. Uses and limits of techniques for strategy analysis. Strategic change and the job of the general manager. *Prerequisite:* Senior standing.

192 Business Process Improvement Familiarizes students with the basic conceptual issues of continuously improving business processes to compete more effectively on quality, time, and cost. *Prerequisite:* Junior standing.

194 Internship Independent research under faculty supervision, in connection with a preprofessional work experience. Written requirements include a substantive analysis of an aspect of the internship, linking it with the academic curriculum. *Prerequisites:* Completion of the Basic Business Core courses; at least one Business Field Course, cumulative GPA of at least a 3.0; permission of the School of Business Administration.

195, 196 Special Topics Specialized or experimental courses offered as resources permit.

197, 198 Independent Study Independent investigation designed by the student as a means of applying prior course work to a specialized problem. Well suited for senior projects. *Prerequisite:* Permission of BSAD Undergraduate Studies Committee.

222 Human Resource Management Critical examination of contemporary problems in human resource management; including job analysis, recruitment, training and employee development, health and safety, compensation, performance appraisal, and related topics. *Prerequisite:* BSAD 120, senior standing.

226 Current Iss in Mgmt & Org Thry Subjects may include training and development, selection and recruitment, and affirmative action. *Prerequisite:* BSAD 120.

251 Marketing Research The role of research in a marketing information framework. Emphasis on survey research, data collection, and analysis. Experimental designs also examined. *Prerequisites:* BSAD 150.

252 Marketing Research Practicum Market research field project. Students design survey instruments, collect and analyze data, and present results to clients in a business environment. *Prerequisite:* BSAD 251.

258 International Market Analysis Examines the cultural, economic, historic, and political factors that affect the analysis of foreign markets. Specific attention is given to the processes by which market entry decisions are developed and implemented. *Prerequisites:* Senior or graduate standing; BSAD 150 or permission of instructor.

260 Financial Statement Analysis A study of the concepts and techniques underlying corporate financial statement analysis, emphasizing business equity valuation. *Prerequisites:* BSAD 180 or 308.

261 Intermediate Accounting Principles, concepts, techniques and issues involved in accounting for the assets, liabilities, and owners equity and their related effect on income determination of an enterprise. *Prerequisites:* BSAD 60, Junior standing.

262 Intermediate Accounting Principles, concepts, techniques, and issues involved in accounting for the assets, liabilities, and owners equity and their related effect on income determination of an enterprise. *Prerequisites:* BSAD 261, Jr. standing

263 Accounting & the Environment An examination of the critical role of accounting in implementing and assessing the firm's environmental strategy. A variety of accounting issues are addressed through readings and case studies. *Prerequisites:* Junior standing, BSAD 61 or 65 or concurrent enrollment in BSAD 308.

264 Intro to Federal Taxation Examination of the Internal Revenue Code primarily regarding individuals and property transactions. Tax research methodology, and the taxation of corporate and partnership income, are introduced. *Prerequisites:* BSAD 60 or 65, junior standing.

266 Advanced Accounting Accounting for partnerships, special sales contracts, parent-subsidiary relationships, fiduciary relationships, and governmental units.*Prerequisite:* BSAD 262.

267 Auditing Independent and internal auditing. Topics include standards, ethics and legal responsibilities of the profession, financial statements, audit concepts, and techniques, and the audit option. *Prerequisite:* BSAD 262.

268 Cost Accounting Accounting for inventory valuation and income determination, nonroutine decisions, policy making and long-range planning. *Prerequisites:* BSAD 61, junior standing.

270 Quant Anyl for Managerial Dec Application of management science methods to managerial decision making, emphasizing modeling and use of solution results. Topics include mathematical programming, waiting-line analysis, and computer simulation. *Prerequisites:* Math 20 or 21, Statistics 141.

282 Security Val & Portfolio Mgmt Examination of theories and evidence on the investment decision process including operations of equity securities markets, market efficiency, financial asset prices, and portfolio management. Prerequisites or Corequisites: BSAD 180.

285 Options and Futures Financial derivatives - options, futures and swaps. Topics include: structures of the markets for exchange traded and over-the counter derivatives; identification and exploitation of arbitrage opportunities; use and misuse of derivatives to hedge risk in both financial and product markets. Prerequisites or Corequisites: BSAD 180.

293 Integrated Product Development (Cross-listed with Mechanical Engineering 265, Statistics 265.) Project-based course focusing on the entire product life cycle. Team dynamics, process and product design, quality, materials, management, and environmentally-conscious manufacturing. *Prerequisite:* Senior standing.
295 Special Topics Advanced courses on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles and prerequisites. *Prerequisite:* Senior standing.
298 Business Admin Honors Project Honors project dealing with business administration and management topics. *Pre/Co-requisites:* By application only; see BSAD honors faculty advisor
299 Business Admin Honors Thesis Honors thesis dealing with business administration topics. *Pre/Co-requisites:* By application only; see BSAD honors faculty advisor

BIOLOGICAL SCIENCES (BSCI)

195, 196 Biological Sciences Seminar Presentations and discussion of selected topics by students, staff, and invited guests. Suggested attendance for all first-year and transfer students in Biological Science for one semester.
197, 198 Undergrad Research Special study and research activity under direction of qualified staff member. Requires written proposal and final project report. *Prerequisites:* Research advisor and program chairperson approval. Credit as approved with maximum of six hours for undergraduate program.

COMMUNITY DEVELOPMENT & APPLIED ECONOMICS (CDAE)

001 Drafting and Design Drawing Basic drafting methods and procedures of architectural, three-view, oblique, isometric, and perspective drawings. Creating freehand pictorial presentation drawings.
002 World Food,Population&Develop Agricultural development emphasizing natural and economic phenomena and the effect of food supplies on population trends and policies.
006 Energy Alternatives Concepts of energy, work, and power. Energy conversion, utilization, and conservation. Alternatives to fossil fuels including solar, wind, biomass, etc. Energy systems for rural areas.
014 Design Strategies Lab Lab component for CDAE 15 Design Strategies (Introduction and analysis of aesthetics and function of design in the context of communication and marketing, the built environment and community development). Pre/co-Requisite: CDAE 15
015 Design Strategies Introduction and analysis of aesthetics and function of design in the context of communications and marketing, the built environment and community development.
016 Digital Illustration Digital illustration introduces methods of conceptualizing and executing illustrations to solve communication problems, using a range of techniques within vector and raster-based software applications. *Prerequisite:* CDAE 15 or equiv.
030 Des Studio Skills:Woodworking Common methods, processes, materials, and equipment employed in transforming wood into useful products.
035 Des Stdy Sklls:Weldng/Metl Fab Skills, tools, and processes to cut, shape, and join metallic materials intended for artisans, designers, and craftpersons. Emphasis on welding, machining, and metal fabrication.
061 Prin A&R&Community Develpmt Ec Introduction to principles of microeconomics and their application to food and agricultural markets, resource management, and community development.
091 Introductory Special Topics
101 Computer Aided Drafting&Design Using a computer to create, manipulate, and record drafting and design concepts, symbols, and conventions to prepare technical and/or presentation drawings. *Prerequisite:* 1 or instruc-tor's permission.
102 Sustainable Community Dev Introduction to perspectives and methods used to develop healthy communities that are economically, socially, and environmentally sustainable with rural and urban, U.S. and international examples. *Prerequisites:* CDAE 61 or equivalent, and by permission.
110 Entrepreneurial Indust Prodctn Principles, concepts, methods employed in organizing capital, labor, tools, machines for producing products. Students function as labor source and mass produce and market a product. *Prerequisites:* 30 or 35 or 166, or instructor's permission.
117 History of Costume (See Theatre 41.) *Prerequisite:* Art 6 or Theatre 1. Fall
127 Consumer,Markets&Public Policy Analysis of consumer choices through the examination of consumer behavior theories, current marketplace issues and public policy. *Prerequisites:* Sophomore standing.
128 The Consumer & Advertising Examination of advertising strategy and how it impacts consumers and the economy. Extensive application of critical analysis to actual advertising campaigns from development through evaluation. *Prerequisite:* Junior standing. Fall.
129 Communication Law Legal aspects of the mass media, including: freedom of speech; libel; privacy; obscenity; copyright and trademark; advertising. *Pre/Co-requisites:* Sophomore standing.
131 Light Frame Buildings Site planning, building planning, material selection. Functional and structural considerations including heating, ventilating, and insulation. Consideration of environmental relationships. *Prerequisite:* 6 or Math. 9 or 10.
156 Law, Ethics & Responsibility The roles of law and ethics in guiding the actions of individuals and organizations, and the impact of those actions on others, including consumers, employees, communities, and developing countries. *Prerequisite:* Sophomore standing. Spring.
157 Consumer Law and Policy Law as an expression of public policy to protect consumers in the marketplace. Emphasis on laws prohibiting deceptive advertising and marketing practices. *Prerequisites:* Sophomore standing.
158 Personal and Family Finance An examination of personal and family financial management concepts and topics within various income levels and stages in the life cycle. *Prerequisites:* Economics 11 or equivalent. Fall.
159 Consumer Assistance Program Jointly sponsored by UVM and Vermont Attorney General. Under supervision of an attorney, students respond to phone and mail requests for consumer information and handle consumer complaints. *Prerequisite:* Sophmore standing. Three to six hours.
166 Intro A&R Entrepreneurship Introduction to the theory and practice of organizing and operating an agricultural or resource-based business. Emphasis on business development, operation, financing, marketing, and social responsibility. *Prerequisite:* Sophomore standing.
167 Fin Mgmt: A&R Entrepreneurship Financial management concepts for agricultural and resource-based businesses, with emphasis on interactions between business and personal financial decisions faced by entrepreneurs. *Prerequisites:* BSAD 65, CDAE 166 or permission.
168 Marketing:A&R Entrepreneurship Marketing concepts and methods and their applications in agricultural and resource businesses. Focus on development of marketing plan and its use in guiding business operations. *Prerequisites:* CDAE 61, 166.

169 Small Business Computer Appl Using the microcomputer to accomplish tasks specific to small businesses. One credit modules may include spreadsheets, databases, presentations, mapping markets, WWW, project management and local area networks. *Prerequisites:* 85 or equivalent. One to six hours.

170 Solar Strategies Bldg Constrct Passive, active, and hybrid heating; photovoltaic electric systems. Physical principles, site evaluation, component and system analysis, materials selection, and design of low-cost systems. *Prerequisite:* Math 10 or permission.

171 Community&Int'l Econ Transform Models of economic development, including constraints to economic transformation and policy approaches and strategies for promoting social welfare and sustainable development. *Prerequisites:* 2,61 or equivalent.

175 Farm Credit Fellowshp Prac/Sem Acquaints students who have a strong interest in farm management and farm finance with financial intermediaries serving agriculture. *Prerequisites:* 167.

180 Real Estate Appraisal Basic concepts and methods of measuring real estate values. *Prerequisites:* 61 or equivalent, or instructor's permission.

191 Special Problems Independent projects under direction of a faculty member. Includes undergraduate teaching assistance. 291 number for juniors and seniors only. *Prerequisites:* Permission. One to six hours (maximum).

195 Special Topics Lectures or readings on contemporary issues in Community Development and Applied Economics. Enrollment may be more than once, up to 12 hours.

196 Field Experience/Practicum Professionally-oriented field experience under joint supervision by faculty and business or community representative. Total credit toward graduation in 196 and 296 cannot exceed 15 hours. *Prerequisites:* Permission. One to 15 hours.

205 Rural Comm in Modern Society The changing structure and dynamics of rural social organization in context of modernization and urbanization. Emphasis on rural communities in the U.S. *Prerequisite:* Six hours of sociology.

207 Markets, Food & Consumers Learn how producers, processors, wholesalers, cooperatives, retailers, consumers, and governments affect the movement of food and fiber products through the production-marketing chain. *Prerequisite:* 61 or equivalent.

208 Agricultural Policy and Ethics An examination of American agriculture and policies from various perspectives - historical, political, ecological, technological, social, economic, and ethical. Emphasis on contemporary issues, policy options, and future development. *Prerequisites:* 61 or equivalent, permission. Fall.

210 Small Bus Mktg & Entrepreneur Students learn through participation in a series of guest lectures and field trips, the challenges, opportunities, and strategies faced and employed by small business entrepreneurs in the area of marketing. *Prerequisite:* 168 or 207. Spring. (Not offered for graduate credit.)

218 Community Ldrshp,Org&Inst Dev Role of civic engagement, leadership, and social and political institutions in a community development context. Special attention given to problems of formulation and implementation of alternative change strategies. *Prerequisites:* Jr standing, CDAE 102, or permission.

231 Applied Computer Graphics Directed research, planning, design, technical experimentation, production and evaluation for computer-generated design application. *Prerequisite:* 15 or permission.(Not offered for graduate credit.)

237 Economics of Sustainability Economic analysis that integrates natural resource and community planning for sustainable development at local, national and international levels. Examples include land use, sustainable agriculture and green business. *Prerequisites:* 61 or equivalent, or permission.

250 Applied Research Methods Methods used in the collection and analysis of qualitative and quantitative data. Critical review of literature, and data collection, analysis, and interpretation for descriptive, inferential, and evaluation research. *Prerequisites:* Statistics 141 or permission. UG only.

251 Contemp Policy Iss:Comm Devel In-depth study of contemporary community development policy issues such as affordable housing, land use and sprawl, alternative energy, environmental sustainability, effective community planning, social and environmentally responsible business. *Prerequisites:* CDAE 102 or permission. UG only.

253 Macroeconomics for Appl Econ Explore macroeconomic principles and concepts as they affect individuals and businesses in local, regional, national, and global economics. *Prerequisites:* Economics 11, and CDAE 61 or equivalent.

254 Microeconomics for Appl Econ The study of economic choices of individuals and firms, and the analysis of competitive and noncompetitive markets. Emphasis on application of intermediate microeconomic theory *Prerequisites:* 61 or equivalent. Math 19, or permission.

255 Applied Consumption Economics Analysis and application of micro-economic principles as they relate to consumers, including consumption and saving, investments in human capital, market work, household production, and leisure choices. *Prerequisites:* ECON 172. UG only.

258 Consumer Policy:Iss & Analysis Examination and analysis of contemporary issues underlying a variety of consumer policies such as health care, income inequality, and consumer protection.*Prerequisites:* 254 or permission, Political Science 21 or similar course. Spring. (Not offered for graduate credit.)

264 Risk Anyl&Forecast Procedures Analytical concepts and skills and their applications in risk analysis related to agricultural and resource markets focusing on decision making processes. *Prerequisites:* STAT 141, CDAE 61, MATH 19, or instructor's permission.

266 Dec Making:A&R Entrepreneurshp Quantitative decision-making methods and applications in agricultural and resource businesses. Major topics include linear programming, risk and uncertainty, inventory decisions, and e-commerce. *Prerequisites:* CDAE 166, Math 19, and AGRI 85 or CS 2.

267 Strat Plan:A&R Entrepreneurshp Applications of marketing, finance, and management strategies. Drafting a simulated business plan for rural entrepreneurs and economic development. *Prerequisites:* ARE majors or minors, or with instructor's permission; senior standing.

272 Int'l Economic Development International trade, finance, investment and development theories and policies for community development. *Prerequisites:* Jr standing, CDAE 102 or instructor's permission. with 273.

273 Project Development & Planning National, community and private sector project development. Focus on planning methods and policy instruments, sectoral linkages, and contributions to the economy as a whole. *Prerequisites:* 171 or instructor's permission.

287 Spatial Analysis

291 Special Problems Independent projects under the direction of a faculty member. Includes undergraduate teaching assistance. *Prerequisite:* Departmental permission. Students may enroll more than once for a maximum of 12 hours. One to six hours.

292 Seminar Reports, discussions, and investigations in selected fields. May enroll more than once up to six hours. One to three hours.

295 Special Topics Lectures or readings on contemporary issues in Community Development and Applied Economics. Enrollment may be more than once, up to 12 hours.

296 Field Experience/Practicum Professionally-oriented field experience under joint supervision by faculty and business or community representative. Total credit toward graduation in 196 and 296 cannot exceed 15 credits. UG only.

297 Undergraduate Research Work on a research

problem under direction of a staff member. Findings submitted in written form as prescribed by the department. *Prerequisites:* Senior standing.

298 Undergraduate Research Work on a research problem under direction of a staff member. Findings submitted in written form as prescribed by the department. *Prerequisites:* Senior standing.

CIVIL & ENVIRONMENTAL ENGINEERING (CE)

001 Statics Fundamentals of statics; composition and resolution of forces; the analysis of force systems in two and three dimensions; and centroids and moments of inertia. *Prerequisite:* Math. 22.

002 CE Graphic Design Computer-aided and hand generation of: geometric shapes; dimensioning; pipe drafting; foundations and structures; survey plots; graphs and charts; topography; and highway geometry.

003 Intro to Civil & Envir Engr Introduces Civil and Environmental Engineering through hands-on-design, group projects, inquiry-based learning, systems thinking, critical thinking, and computational exercises.

010 Geomatics An introduction to surveying including distance and angle measurements, leveling, traverse surveys, error propagation, topographical mapping, global positioning systems (GPS), and geographic information systems (GIS). *Pre/Co-requisites:* CEE Sophomore standing, or permission of instructor.

011 MATLAB for Solving Engr Prblms Engineering problem solving, computer programming, standard numeric computation, visualization tools, and systems thinking using MATLAB. *Prerequisites:* Concurrent enrollment in Math 20 or 22.

012 Geomatics Lab Laboratory exercises in surveying applications: distance, angle, elevation, traverse, topography, global positioning systems (GPS), and geographic information systems (GIS). *Pre/Co-requisites:* CE 10.

015 Pollution & Solutions Introduction to environmental issues and potential solutions. Emphasis on problem solving: description, decomposition, research, analysis, and performance evaluation.

095 Special Topics

100 Mechanics of Materials (Same as Mechanical Engineering 14.) Stress, strain,temperature relationships, torsion, bending stresses, and deflections. Columns, joints, thin-walled cylinders. Combined stresses and Mohr's circle. *Prerequisites:* CE 1, MATH 121

101 Materials Testing Experimental stress analysis methods; fundamental properties of metals, plastics, and wood; effects of size, shape, method, speed of loading, and strain history on these properties. Pre-*Co-requisites:* Concurrent with CE 100.

125 Eng Econ & Decision Analyses Comparing engineering alternatives; economic evaluations including costs, returns, taxes, and depreciation; project optimization with linear/non-linear models; scheduling; risk and reliability analyses by simulation. *Prerequisites:* Math 21.

132 Environmnt & Transport Systms Introduction to systems thinking and the systems approach; ecological and transportation systems components, interactions, and relationships; feedback and emergent properties; systems modeling, management and economic evaluations. *Pre/Co-requisites:* MATH 22, STAT 143 or concurrent.

133 Decision Anlys in Envr & Trans Environmental and Transportation System modeling; decision analysis and optimization; multi-objective problems; application to transportation planning, environmental impacts, grondwater remediation and highway location. *Prerequisite:* CE 130; Co-requisite; CE 10.

134 Modeling Environ & Transp Sys Applied numerical methods with applications to groundwater and traffic flow modeling, stochastic modeling with applications to watershed and infrastructure management; transportation and environmental systems simulation. *Pre/Co-requisites:* CE 131, CS 16; co-requisite CE 10

140 Transportation Analysis of transportation systems; technological characteristics; the transportation planning process and techniques of travel modeling and forecasting for both urban and rural areas. *Prerequisite:* 10, junior standing in CE, or instructor's permission.

142 Structural Roadway Design Properties of construction materials; design of mixes; analyses of pavement performance; structural design of pavements; highway earthwork, drainage, and construction techniques. *Prerequisites:* 141, 180.

150 Environmental Engineering Basic phenomena and theoretical principles underlying water supply, air and water pollution control, and industrial hygiene. *Prerequisites:* Chemistry 31 or 25, Math. 22.

151 Water & Wastewater Engineering Design of treatment systems for water supply, groundwater remediation, domestic and hazardous wastewater, sewer design; semester-long design projects; ethics; environmental health impacts; governmental regulations. *Prerequisites:* CE 150, 160.

154 Environmental Anyl Practice Analytical procedures used in measuring environmental parameters (includes BOD, COD, Alkalinity, Coliform). Fundamental methods applied to actual waste samples and subsequent data analysis. *Prerequisites:* 150; Chemistry 31.

160 Hydraulics Mechanics of incompressible fluids; flow meters; flow in closed conduits and open channels; elements of hydraulic machinery; laboratory studies of flow and hydraulic machinery. *Prerequisite:* ME 12.

161 Water Resource Engineer Design Formulation of water resource projects; development of design methods for: surface water, risk, storage, and control structures, open channels, and drainage systems; design project. *Prerequisite:* 160.

170 Structural Analysis I Analysis of statically determinate beams, frames, and trusses; expected loads, reactions; influence lines; moving loads; geometric methods for displacement calculations; introduction to matrix analysis for trusses. *Prerequisites:* 100, Computer Science 16.

171 Structural Analysis II Statically indeterminate structural analysis by consistent deformation and stiffness methods; determinations of deflections by energy methods; matrix analysis for frame structures and computer-aided analysis. *Prerequisites:* 170.

172 Structural Steel Design Theory and design of steel structures including flexural members, axially loaded members and combined stress members; design of composite members; and plastic analysis and design. Pre/co-requisite: CE 170.

173 Reinforced Concrete Analysis of stresses in plain and reinforced concrete members; design of reinforced concrete structures; and theory of prestressed concrete. *Prerequisite:* CE 170.

175 Senior Design Project Comprehensive design projects will integrate the multiple areas of specialization in civil engineering. Student teams will prepare and present designs to professional review panels. *Prerequisite:* Senior standing in CE.

176 Senior Design Seminar Guest lecturers from private practice discussing professional issues; integration of multidiscipline teams from student design projects; and oral and written presentations. *Co-requisite:* One design elective; senior standing.

180 Geotechnical Principles Characteristics and classification of soils; physical, mechanical and hydraulic properties of soils; seepage; the effective stress principle; stress distribution, soncolidatino, settlement; shear strength; laboratory testing. *Prerequisite:* CE 100.

191 Special Projects Investigation of special topic under guidance of faculty member. Library investigations, unique design problems, laboratory and field studies. *Prerequisites:*

Senior standing, departmental permission.

192 Special Projects Investigation of special topic under guidance of faculty member. Library investigations, unique design problems, laboratory and field studies. *Prerequisites:* Senior standing, departmental permission.

193, 194 College Honors

195 Special Topics *Prerequisite:* Senior standing in Civil Engineering.

210 Airphoto Interpretation Aerial photographic interpretation: principles of stereoscopic viewing, identification or airphoto features related to landform, vegetation, drainage, soils, topography use of airphoto interpretation in soil identification.

220 Intro to Finite Element Anyl Introduction to finite element analysis: applications in solid mechanics, hydrodynamics, and transport: analysis of model behavior: Fourier analysis. Computer project required. *Prerequisites:* computer programming, linear algebra, or permission of instructor.

226 Civil Engineering Systems Anyl Linear programming, dynamic programming, network analysis, simulation; applications to scheduling, resource allocation, routing, and a variety of civil engineering problems. *Prerequisite:* Senior or graduate standing in CEE or instructor permission.

241 Traffic Operations & Design Advanced concepts of traffic engineering and capacity analysis; highway and intersection capacity; traffic analysis and simulation software; design and application of controls. *Prerequisite:* CE 140 or permission of instructor.

245 Intelligent Transportation Sys Introduction to Intelligent Transportation Systems (ITS), ITS user services, ITS applications, the National ITS architecture, ITS evaluation, and ITS standards. *Pre/Co-requisites:* CE 140 or equivalent, instructor permission.

248 Hazardous Waste Mgmt Engr Management of hazardous and industrial waste from generation to disposal; emphasis on pollution prevention within industry; waste minimization, recovery, reuse, treatment technologies; environmental regulations, risk assessment, costs and public policy; group projects. *Prerequisites:* Senior standing in engineering or sciences.

249 Solid Wastes Significance of solid wastes from municipal, industrial, agricultural, mining; optimization and design of collection, disposal, recycle systems; sanitary landfills, incineration, composting, material recovery. *Prerequisites:* Chemistry 25, Physics 25. UG only.

251 Envr Facility Dsgn/Wastewater Design of wastewater conveyance and treatment facilities; sewage treatment plant design; equipment selection. *Prerequisite:* 151.

252 Industrial Hygiene Industrial hygiene problems; effects of pollutants on health; threshold limit values; emphasis on the engineering evaluation of hazard and control techniques. *Prerequisites:* Chemistry 31 or 25, Physics 31.

253 Air Pollution Sources of air pollution, methods of measurement, standards, transport theory and control techniques used. Emphasis on source measurement and contaminant control design. *Prerequisites:* Chem 31 or 25, Physics 31.

254 Environmental Quantitive Anyl Chemistry and microbiology of water quality management; diffusion, equilibria, reaction kinetics, acids and bases, colloids, enzymes, bacterial physiology, pollution indicator organisms; laboratories demonstrate standard techniques. *Prerequisites:* Chemistry 31 or 25, Math. 22.

255 Phys/Chem Proc Water/Wstwater Theory of physical/chemical processes for treating waters and wastewaters; reactor dynamics, mass transfer, adsorption, ion exchange, precipitation. *Pre/Co-requisites:* CE 151, 154, or permission of instructor.

256 Biol Proc Water/Wastewater Tr Theory and application of biological processes for treating industrial and domestic wastewaters and contaminated ground water; microbiological considerations; aerobic and anaerobic processes; reactor design, in-situ bioremediation; bench-scale and pilot-scale experimentation. *Prerequisites:* 151 and 154 or equivalent or permission of instructor.

259 Msmt of Airborne Contaminants Quantifying airborne contaminants from processes and ambient levels. Laboratories demonstrate calibration and measurement, stack sampling and ambient air monitoring, and specific contaminant generation and measurement. *Prerequisite:* 252 or 253.

260 Hydrology Theory of precipitation, run-off, infiltration, and ground water; precipitation and run-off data; and application of data for use in development of water resources. *Prerequisites:* 160 or permission of instructor.

261 Open Channel Flow Application of the laws of fluid mechanics to flow in open channels; design of channels and transition structures; modeling; uniform and gradually-varied flows. *Prerequisite:* CE 160.

265 Ground Water Hydrology Principles of ground water hydraulics, well characteristics, aquifers, and use of numerical methods to solve ground water flow problems. *Prerequisites:* Math 121 or instructor's permission.

272 Structural Dynamics Vibrations, matrices, earthquake engineering, stability and wave progagation. *Prerequisites:* Senior or graduate standing in Engineering or physical sciences, or instructor permission. (Same as ME 272).

280 Applied Soil Mechanics Use of soil mechanics in evaluation of building foundations, braced excavations, earth structures; lateral earth pressures, pile foundations, caisson foundations, slope stability, and construction problems. *Prerequisite:* 180.

281 Geotechnical Design Subsurface explorations; bearing capacity, lateral earth pressures, slope stability; analysis and design of shallow and deep foundations, retaining structures, and slopes. *Pre/Co-requisites:* CE 180.

282 Engr Properties of Soils Study of soil properties influencing engineering behavior of soils: soil mineralogy, physiochemical concepts, plasticity properties, permeability, and compaction: laboratory study of soil index properties, permeability, compaction tests. *Prerequisites:* 180 or equivalent.

283 Designing with Geosynthetics Geotextiles, geogrids, geonets, geomembranes, geocomposites, geopipes. Design for separation, reinforcement, filtration, drainage, erosion, control, liners. Applications in transportation, drainage, solid waste containment. Material testing, behavior. *Prerequisite:* 180.

290 Engineering Investigation Independent investigation of a special topic under the guidance of a staff member. Preparation of an engineering report is required.

295 Special Topics Content is dictated by expanding professional interest in newly developing, or recently developed, technical areas in which there is particular need or opportunity. *Prerequisite:* Senior or graduate standing.

CHEMISTRY (CHEM)

023 Outline of General Chemistry One-semester survey of principles and concepts of genera chemistry, designed primarily to meet needs of students in agricultural and health sciences. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 25, 31 or 35.

025 Outline of General Chemistry One-semester survey of principles and concepts of general chemistry, designed primarily to meet the needs of students in agricultural and health sciences. NO LABORATORY. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 23, 31 or 35.

026 Outline of Organic & Biochem Broad overview of most important facts and principles of organic and biochemistry and interrelationships between these branches of chemistry. *Prerequisite:* 31 or 23. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 28, 42 or 44.

028 Outline of Organic & Biochem Broad overview of

most important facts and principles of organic and biochemistry and of interrelationships between these branches of chemistry. NO LABORATORY. *Prerequisite:* 31 or 23 or 25. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 26, 42 or 44.

031 Introductory Chemistry Basic course in principles and concepts of general chemistry. These courses, or CHEM 35, 36 serve as suitable prerequisites for 100-level courses in Chemistry. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 23, 25 or 35.

032 Introductory Chemistry Basic course in principles and concepts of general chemistry. These courses, or CHEM 35, 36 serve as suitable prerequisites for 100-level courses in Chemistry. *Prerequisite:* 31 or 35. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 36.

035 General Chemistry General chemistry for students with a strong background in physical sciences. Recommended for students concentrating in physical sciences. *Prerequisites:* One year of high school chemistry, concurrent enrollment or background in calculus. High school physics recommended. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 23, 25 or 31.

036 General Chemistry General chemistry for students with a strong background in physical sciences. Recommended for students concentrating in physical sciences. *Prerequisites:* One year of high school chemistry, concurrent enrollment or background in calculus. High school physics recommended; 31 or 35. May not be taken concurrently with, or following receipt of, credit for CHEM 32.

039 Introduction to Research Overview of methods, areas, and instrumentation of modern chemical research, including hands-on laboratory experiences and written and oral presentations of a research project. *Prerequisite:* score of 4 or 5 on the AP Chemistry examination or permission of department.

040 Introduction to Research Overview of methods, areas, and instrumentation of modern chemical research, including hands-on laboratory experiences and written and oral presentations of a research project. *Prerequisite:* score of 4 or 5 on the AP Chemistry examination or permission of department.

042 Intro Organic Chemistry Concepts for understanding chemistry of structurally simple organic compounds of everyday importance. These principles applied to more complex molecules such as polymers and biologically important compounds such as proteins, lipids, and carbohydrates. (Does not satisfy medical school entrance requirements for undergraduate preparation in organic chemistry.) *Prerequisite:* 31 or 23. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 26, 28, 44, 141 or 143.

044 Intro Organic Chemistry Concepts for understanding chemistry of structurally simple organic compounds of everyday importance. These principles applied to more complex molecules such as polymers and biologically important compounds such as proteins, lipids, and carbohydrates. (Does not satisfy medical school entrance requirements for undergraduate preparation in organic chemistry.) NO LABORATORY. *Prerequisite:* 31 or 23 or 25. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 26, 28, 42, 141 or 143.

095, 096 Intro Special Topics See Schedule of Courses for specific titles.

121 Quantitative Analysis Theory and practice of volumetric and gravimetric analysis. Theoretical discussion of indicators, buffers, pH, etc. Introduction to data analysis, pectrophotometry, and chromatography. *Prerequisite:* 32 or 36.

131 Inorganic Chemistry Symmetry, group theory, molecular structure; valence shell; MO, crystal field, and ligand field bonding models; solid state, electron deficient, acid-base, and simple organo-metallic systems. *Prerequisite:* Credit for or concurrent enrollment in 142 or 144.

141 Organic Chemistry Survey of properties and reactions of organic compounds with consideration of bonding, stereochemistry, mechanisms, principles of reactivity, spectroscopy, syntheses, and utilization. Designed for premedical, predental, and preveterinary students and for those majoring in biological and physical sciences. *Prerequisites:* 31, 32 or 35, 36. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 42,44 or 143.

142 Organic Chemistry Survey of properties and reactions of organic compounds with consideration of bonding, stereochemistry, mechanisms, principles of reactivity, spectroscopy, syntheses, and utilization. Designed for premedical, predental, and preveterinary students and for those majoring in biological and physical sciences. *Prerequisites:* 141. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 144.

143 Organic Chemistry for Majors Survey of principles and reactions of organic chemistry for chemistry majors. *Prerequisites:* 31,32 or 35,36. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 42 , 44 or 141.

144 Organic Chemistry for Majors Survey of principles and reactions of organic chemistry for chemistry majors. *Prerequisites:* 143. May not be taken for credit concurrently with, or following receipt of, for credit for CHEM 142.

146 Adv Organic Laboratory Laboratory practice in separation, purification, synthesis, identification, spectroscopy, and physical organic techniques as applied to organic compounds. For Chemistry majors. *Prerequisite:* 144.

160 Phys Chem for Bio Sci Students Aspects of physical chemistry most pertinent to work in biological sciences: acid-base equilibrium, theory of solutions, thermodynamics and kinetics. *Prerequisites:* 32 or 36, PHYS 11 or 31. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 162.

161 Physical Chemistry Elementary quantum chemistry, bonding, spectroscopy, and statistical mechanics. *Prerequisites:* 32 or 36; Physics 42, Math. 121 or Chem. 167.

162 Physical Chemistry Properties of gases and solutions; thermodynamics and kinetics. *Prerequisites:* 32 or 36; PHYS 42, MATH 121 or CHEM 167. Note: CHEM 162 may be taken before 161. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 160.

167 Physical Chemistry Preparation (Same as Math. 167.) Review of relevant mathematical and physical concepts as applied to physical chemistry. *Prerequisites:* 32 or 36; Math. 22.

195, 196 Intermediate Special Topics See Schedule of Courses for specific titles.

198 Readings & Research

201 Advanced Chemistry Lab Laboratory and discussion only. Laboratory problems requiring modern analytical, physical, and inorganic synthetic techniques. *Prerequisites:* 142 or 144; credit for or concurrent enrollment in 161 or 162, and 221.

202 Advanced Chemistry Lab Laboratory only. Laboratory problems requiring modern analytical, physical, and inorganic synthetic techniques. *Prerequisites:* 201.

205 Biochemistry I Introduction to chemistry and structure of biological macromolecules; examination of mechanisms of chemical processes in biological systems including enzyme catalysis, biosynthesis, regulation, and information transfer. *Prerequisites:* CHEM 142 or 144. Crosslisted with BIOC 205 and MMG 205.

206 Biochemistry II Continuation of Biochemistry I. Biochemistry of nucleic acids; nucleic acid based processes, such as replication and transcription; cellular information transfer, genomics, and proteomics. *Prerequisites:* 205. Crosslisted with BIOC 206 and MMG 206.

207 Biochemistry Lab Introduction to biochemical tools, including spectrometry, chromatography, and electro-

phoresis; natural and recombinant enzyme isolation; assays of DNA-modifying enzymes; computer-based structure / function exercises. Corequisites: 205 or 206. Crosslisted with BIOC 207 and MMG 207.

214 Polymer Chemistry Polymer size and weight distributions. Kinetic models for step polymerization, addition polymerization, copolymerization. Physical properties, characterization of polymers in the solid state and in solution. *Prerequisites:* 144, 162. Alternate years.

221 Instrumental Analysis Systematic survey of modern methods of chemical analysis. Fundamental principles and applications of spectroscopy, electrochemistry, and separation techniques. *Prerequisites:* 121; credit for or concurrent enrollment in 161 or 162 strongly recommended.

223 Mass Spectrometry This course covers basic aspects of modern mass spectrometry instrumentation and techniques as well as specific applications relevant to the students in the course. *Prerequisites:* 142 or 144 and 221 or instructor's permission.

224 Chemical Separations Theory and practice of chromatographic separations. Emphasis on gas-liquid, liquid-liquid, and liquid-solid chromatography. *Prerequisite:* 221. Alternate years.

225 Electroanalytical Chemistry Principles of modern electrochemical analysis focusing mainly on finite current methods - voltammetry, polarography, chronoamperometry, cyclic voltammetry, etc. Introductory to modern operational amplifier instrumentation. Double layer theory and electron transfer kinetics. *Prerequisite:* 161. Alternate years.

226 Analytical Spectroscopy Principles of optical spectroscopic methods of analysis. Emphasis on theory and practice of atomic spectroscopy and new molecular spectroscopic methods. *Prerequisite:* 221. Alternate years.

227, 228 Spec Topics in Analytical Chem Selected topics of current interest in analytical chemistry. New techniques and methodologies, especially in chemical instrumentation. Credit as arranged.

231 Adv Inorganic Chemistry Advanced group theory; electronic transitions in metal complexes and spectroscopic analysis; inorganic substitution and electron transfer mechanisms; homogeneous and heterogeneous catalytic processes; bioinorganic chemistry. *Prerequisite:* 131.

234 Organometallic Chemistry Systematic survey of synthesis, properties, structures, bonding, and reactions of both main group and transition series organometallic compounds. Variation of structure and metal-carbon bond stability throughout periodic system. *Prerequisite:* 231. Alternate years.

236 Physical Inorganic Chemistry Fundamental physical basis for spectroscopic techniques and other observable phenomena important to field of inorganic chemistry. Topics include ligand field theory, magnetism, magnetic resonance, Mossbauer spectroscopy, and optical activity. *Prerequisites:* 161, 231. Alternate years.

237, 238 SpecTopic: Inorganic Chemistry Areas of current interest involving inorganic systems such as bioinorganic, solid state and polymers with unusual properties. Credit as arranged.

241 Advanced Organic Chemistry Stereochemistry, reactivity criteria, reaction mechanisms, and synthetic methods stressed. Reactive intermediates such as carbanions, carbocations, carbenes, and free radicals used to systematize mechanistic discussions. *Prerequisites:* 142, 162.

242 Advanced Organic Chemistry Detailed mechanistic descriptions of processes which may include enolate reactions and stereochemical considerations, addition processes such as halogenation, cycloadditions, hydroboration, hydride and metal-ammonia reductions, annelations such as biomimetic cyclizations, oxidation processes, rearrangements, eliminations, and examinations of approaches to multistep syntheses. *Prerequisite:* 241.

251 Physical Organic Chemistry Structure-reactivity relationships, molecular properties and their interpretation. Methods and results of investigations of mechanisms of common organic reactions. *Prerequisites:* 142, 162. Alternate years.

257, 258 Special Topics in Organic Chem Advanced level discussion of specific topics in organic chemistry of current interest such as photochemistry, carbenes, bioorganic chemistry, magnetic resonance, etc. Credit as arranged.

262 Chemical Thermodynamics Systematic study of application of thermodynamics to chemical problems. Concepts of statistical thermodynamics introduced. *Prerequisites:* 161, 162. Alternate years.

263 Intro to Quantum Mechanics General considerations of quantum mechanics. Development of techniques pertinent to application of quantum mechanics to chemical problems. *Prerequisites:* 161, 162. Alternate years.

264 Fundamentals of Spectroscopy In-depth discussion of the theory of molecular states and transitions between them, with applications to electronic spectroscopy. Explicit treatment of vibrations in molecules. *Prerequisites:* 161, Math.121. Alternate years.

265 Statistical Mechanics Development of statistical mechanics and its application to problems of chemical interest. *Prerequisites:* 161, 162; 263 recommended. Alternate years.

266 Molecular Orbital Theory Introduction to Huckel molecular orbital method. Energy levels and orbitals, molecular properties and their interpretation. Effects of substituents on electronic structure. Extensions of Huckel method. *Prerequisites:* 142, 161. Alternate years. UG only.

267, 268 Special Topics in Phys Chem Advanced discussion of physical chemistry and chemical physics, group theory, solid state, molecular orbital theory, irreversible thermodynamics, kinetics and mechanisms, solution theory, calculations, spectroscopy. Credit as arranged.

282 Senior Seminar Oral and written presentation of a subject of current chemical interest. *Prerequisite:* Audit of 381.

285, 286 Special Topics

291 Undergrad Research Special study in inorganic, analytical, physical, or organic chemistry with an assigned staff member. Findings submitted in written form. *Prerequisite:* Departmental permission. Credit as arranged with maximum of four hours per semester and 12 hours for the undergraduate program.

295, 296 Advanced Special Topics See Schedule of Courses for specific titles. UG only.

CHINESE (CHIN)

001, 002 Elementary A study of Mandarin Chinese designed to give the beginning student the fundamental grammar and vocabulary for speaking, reading, and writing the modern national language.

051, 052 Intermediate A continuation of 1, 2 designed to enable the student to converse in everyday Chinese, and to read and write simple texts. *Prerequisite:* 2 or equivalent.

095, 096 Special Topics Introductory courses on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

101, 102 Advanced Chinese Structured readings with emphasis on sentence structures, vocabulary expansion, and increased fluency in self-expression. *Prerequisite:* 52 or equivalent.

195, 196 Special Topics See Schedule of Courses for specific titles.

197, 198 Readings & Research Individual research project or directed reading in area of special interest to student. *Prerequisite:* Instructor's permission. Variable credit.

201, 202 Adv Conversation & Composition To improve oral and written proficiency through reading newspapers and short stories, discussion, and composition. *Prerequisites:* 102 or equivalent for 201; 201 for 202.

295, 296 Advanced Special Topics Advanced courses

or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles. *Prerequisites:* CHIN 202 or equivalent.

CLASSICS (CLAS)

013 Ideas in the Western Tradition Great books of Western civilization in their Historical setting. Greece and Rome. *Prerequisites:* Concurrent enrollment in English 27.28; Religion 27, 28; Integrated Humanities Program. Cross-listings: HST 013.

015 From Letters to Literature Topics in script, literacy, books, libraries, cultural expression, preservation and access from ancient Mesopotamia to the age of printing and the era of electronic information.

021 Classical Greek Civilization (Same as History 21.) A study of the "Golden Age of Pericles," the course covers the whole of Athenian society from art to war, culminating in the trial of Socrates.

022 Etymology The study of English vocabulary derived from Greek and Latin. Topics include analysis of word formation, historical and comparative linguistics, and international scientific terminology.

023 Classical Roman Civilization (Same as History 22.) Growth of the Roman Empire; political and social disruption in the Roman world from the second century B.C.E., through the first century C.E.

024 Myths/Legends Trojan War Homeric epics, Virgil's Aeneid, selections from tragedy dealing with the Trojan War and Greco-Roman cultural identity. Examples from art and archaeology supplement the literary theme.

035 The End of the Roman Republic Participants describe the Republic's end: Caesar justifies conquest and civil war; Catullus and Sallust reveal a society in turmoil; Cicero documents first-century politics: political gangs, bribery, and violence.

037 Early Roman Empire: Lit Trans Poetry and prose in the first century C.E. (the age of Augustus, Nero, Trajan), emphasizing varieties and limitations of political and literary freedom.

042 Mythology (same as WLIT 42.) Greek myth in literature, art, and music from antiquity to modern times. No prerequisites. Spring semester.

095, 096 Special Topics See Schedule of Courses for specific titles.

121 History of Greece (Same as History 121.) Political and social developments of ancient Greece: birth of democracy, conflict of autonomy and hegemony, federal states, invention of "otherness," spatial and cultural restraints on citizenship. *Prerequisites:* History 9 or Classics 21 (History 21) or appropriate work in Classics.

122 History of Rome Expansion of Rome in Italy and conquest of the Mediterranean world: cultural conflict, development of a unifying national identity, and the foundation of European states. *Prerequisites:* History 9 or Classics 23 (History 22) or appropriate work in Classics.

145 Comparative Epic (Same as WLIT 145.) Interdisciplinary introduction to epic poetry and performance, from Gilgamesh and the Homeric poems to the Kalevala traditions of Finland to the griot poetry and music of West Africa. *Prerequisite:* Sophomore standing.

149 History of Ancient Near East Survey of primary civilizations of Egypt and Mesopotamia and the secondary cultures of Anatolia, Syria-Palestine, Assyria, and Persia. *Prerequisites:* History 9 or Classics 21 (History 21) or appropriate work in Classics.

153 Greek Drama Plays of Aeschylus, Sophocles, Euripides, and Aristophanes in their historical and cultural setting. *Prerequisite:* Sophomore standing.

154 Stories and Histories (Same as WLIT 154.) Creation and development of genres which the Greeks and Romans used to represent true narratives about people or events, especially the development of historical writing. *Prerequisites:* Sophomore

155 Ancient Epic Homer, Apollonius, and Vergil, as well as readings selected from other Greek and Latin epic (including epyllia) and didactic poetry. *Prerequisite:* Sophomore standing.

156 Satiric Spirit Comedy, satire, epigram and prose fantasy as vehicles for political, social, and literary criticism in the Greco-Roman world. *Prerequisite:* Sophomore standing.

157 Greek Feminism (Same as History 157, Women's Studies 157.) The construction of the status of women in ancient Greek society. Readings include lyric, tragic, and comic poetry, philosophy, oratory, novel, and nonliterary documents. *Prerequisites:* Sophomore standing, three hours in literature, history, anthropology, or sociology.

158 Greco-Roman Political Thought History of Greco- Roman political thought and political reality, as revealed by lawgivers, philosophers, politicians, and historians. *Prerequisite:* Sophomore standing.

161 Plato (Same as Philosophy 108.) A survey of Plato's works, including the "early," "middle," and parts of the "late" dialogues. Emphasis will be laid on reading the dialogues themselves. *Prerequisites:* One course in Philosophy or one course in Classics (Greek Culture), or Greek.

195, 196 Intermediate Special Topics See Schedule of Courses for specific titles.

197, 198 Readings & Research

221 Seminar in Ancient History Selected aspects of Near Eastern, Greek, or Roman History (e.g. trade and colonization, imperialism, social and political institutions, cultural and intellectual developments). *Prerequisites:* Junior, senior, or graduate standing, 12 hours of history.

222 Seminar in Ancient History Selected aspects of Near Eastern, Greek, or Roman History (e.g. trade and colonization, imperialism, social and political institutions, cultural and intellectual developments). *Prerequisites:* Junior, senior, or graduate standing, 12 hours of history. UG only.

295, 296 Advanced Special Topics See Schedule of Courses for specific titles.

CELL BIOLOGY (CLBI)

295 Special Topics Credit as arranged.

COMMUNICATION SCIENCES (CMSI)

001 American Sign Language I Introduction of American Sign Language with emphasis on visual receptive and expressive use including facial expressions and gestures. Elements of the Deaf Culture are explored.

002 American Sign Language II Expansion of ASL I discusses concepts and principles: advanced vocabulary, grammar patterns, use of space/modulation of signs for time/location. Further explores Deaf Culture. *Prerequisite:* ASL I or successful completion of placement interview.

020 Intro to Disordered Comm Survey of language, speech, and hearing disorders, emphasizing the importance of understanding such disorders as a part of the fuller understanding of human behavior.

051 Intermediate Sign Language Continuation of 1, 2 designed to foster further development of proficiency in American Sign Language and appreciation of Deaf Culture. *Prerequisites:* CMSI 2, or equivalent experience.

080 Introduction to Linguistics Introduction to biological, cognitive, and cultural bases of human communication through language, and to modern linguistic theory. Assignments provide opportunities for critical thinking and writing.

090 Phonetics Linguistic, acoustic, and articulatory phonetics applied to the description of speech. Stresses use of the International Phonetic Alphabet with English, foreign languages, and disordered speech.

094 Dev of Spoken Language Speech and language

acquisition interpreted in light of current learning and cognitive theory, linguistic theory, and methods of linguistic analysis.

095, 096 Introductory Special Topics Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

101 Speech & Hearing Science Structure and function of the respiratory, phonatory, articulatory, and hearing systems, coupled with models of speech and hearing as part of human communication.

125 Clinical Experience A supervised exposure to clinical practice in speech-language pathology. Students gain experience as assistants in the University speech-language clinic. *Prerequisite:* Six hours in Communication Sciences.

126 Clinical Experience A supervised exposure to clinical practice in speech-language pathology. Students gain experience as assistants in the University speech-language clinic. *Prerequisite:* Six hours in Communication Sciences.

160 Intercultural Communication Exploration of communication between individuals of different races, socioeconomic status, ethnic groups, genders, and occupations. Emphasis on culturally-based misunderstanding, conflict, and resolution.

162 American English Dialects (Same as English 103) Class will examine dialects of American English and the methodology of dialectology with focus on Vermont speech and the social meaning of dialect variation.

164 Structure of English Language Using descriptive linguistic theory, this course examines basics of English grammar with emphasis on hands-on examples. Also includes exploration of politicization of English grammar. *Prerequisites:* 3 hours English or CMSI.

195, 196 Intermediate Special Topics Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

197, 198 Readings & Research Instructor permission.

208 Cognition & Language Study of cognition and language in terms of mental representation models; contemporary models of memory, as well as capacity theories of language comprehension and production. *Prerequisite:* PSYC 109, 161 or instructor permission. Cross-listed: PSYC 208.

262 Measurement of Comm Processes Introduction to the scientific method and measurement principles used in group and single-case research on communication and as applied to persons with communication disorders. *Prerequisites:* CMSI 80, 101; Statistics 111 or 141. UG only.

271 Introduction to Audiology Survey of hearing and the nature and causes of hearing impairment. Includes an orientation to assessment procedures and rationales, hearing screening and counseling considerations. *Prerequisite:* CMSI 101.

272 Hearing Rehabilitation Examination of the impact of hearing loss on development and its overall effects on communication. Survey of management considerations, sensory devices, speech reading, and auditory training. *Prerequisites:* CMSI 271.

273 Internship in Audiology Seniors interested in practical experience can intern at the UVM Audiology Clinic. Exposure to diagnostic and rehabilitative procedures will increase clinical confidence prior to graduate studies. *Prerequisites:* CMSI 271, CMSI 272 (or concurrent enrollment), 3.0 or greater GPA and instructor permission.

274 Culture of Disability Focus on theoretical questions of how societies understand disability and its consequences for social justice, by examining the biological, social, cultural, political, and economic determinants in the societal construction of disability. *Prerequisites:* Junior, Senior or graduate standing. Cross-listing: EDSP 274.

281 Cognitive Neuroscience The structure and organization of the human central nervous system as related to higher cognitive and linguistic behaviors. Pre/corequisites: a college level Human Biology course, such as BIOL 4. Not for graduate credit.

284 Augmentative Communication An introduction to development and selection of augmentative/alternative communication strategies and systems for persons with severe communication challenges. *Prerequisites:* Nine hours in Communication Sciences or instructor's permission.

285 Collab Intervntn Schl Settings Introduction to a transdisciplinary approach to collaborative, curriculum-based assessment and intervention for students with special needs in school settings. *Prerequisites:* Graduate standing, or Undergraduate by instructor permission.

287 Early Lang&Communicat'n Interv Research in normal and disordered language, cognition, and social development is applied to interventions for children, birth to age 5, with language and communication problems. *Prerequisite:* CMSI 94.

291 Clinical Study Supervised practicum experiences with children and adults presenting disorders of speech, hearing, and language. *Prerequisite:* Permission

292 Clinical Study Supervised practicum experiences with children and adults presenting disorders of speech, hearing, and language. *Prerequisite:* Permission

293, 294 Seminar *Prerequisite:* Instructor's permission. Variable credit.

295, 296 Advanced Special Topics Advanced Special Topics Advanced courses of seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles. UG only.

298 Senior Seminar

299 Autism Spect Dis:Assess&Interv Assessment and intervention considerations in communication, social interaction and play, selection and use of evaluation tools, and implementation of intervention strategies for children with autism.

COMPUTER SCIENCE (CS)

002 MS Office: Beyond the Basics Word documents looking dull? Excel charts lacking something? PowerPoint slides fizzling? All this and more is covered. Learn more than just the basics.

003 Concepts of Computer Systems Introduction to computer systems, components, system software, editors, utilities and language processors, programming, problem solving, applications. May not be taken for credit concurrently with, or following receipt of credit for, any CS course numbered higher than 3. *Prerequisite:* Two years high school algebra.

005 Introductory Special Topics *Prerequisite:* Instructor permission. Hours variable. May not be taken for credit after any CS course numbered 16 or higher.

008 Introduction: WWW Design (2-2) Provides a strong foundation in HTML, working with images, beginning JavaScript programming, and web design so that the student can create a functional web site.

014 Visual Basic Programming Programming in the MS Windows environment using forms, objects, methods, functions, and code. Creation of regular applications and customized office suite applications.

016 Prog MATLAB Engineers&Science Problem solving, computer programming, and the use of standard numerical methods, visualization and systems thinking in the context of engineering and scientific applications using MATLAB. *Prerequisite:* Concurrent enrollment in Math 20 or 22.

019 Introduction to Programming A gentle introduction to computer programming using Java Applets on web pages. Topics include selection, repetition, functions, objects, event-driven programming, arrays, inheritance, GUI design. *Pre/Co-requisites:* No credit after CS 21 or higher.

021 Computer Programming I Introduction to algorithmic problem solving. Designed to provide a foundation for further studies in computer science. Credit not given for more than one in the pair CS 11, 21. *Prerequisite:* Math. 10 or a strong background in secondary school algebra and trigonometry.

026 Computer Programming II Introduction to more advanced programming concepts that provide a foundation for further study in computer science. Topics include data structures and algorithms, concepts of style, design, documentation, testing and debugging techniques. *Prerequisites:* 21.

032 Puzzles, Games & Algorithms Introductory computer science through exploration and analysis of mathematical puzzles and games, and the algorithms that handle them.

042 Dynamic Data on the Web Data is everywhere; Learn to collect, organize, and classify it. Students will design and create tables, queries and reports on the web using introductory programming.

095 Special Topics *Prerequisite:* Instructor's permission.

100 Object-Oriented Programming Object-oriented software analysis, design, and programming using a modern object-oriented programming environment. Topics include encapsulation, information hiding, inheritance, and polymorphism. *Prerequisite:* 26.

101 Computer Organization Introduction to computer system organization including performance, assembly language, machine-level data representation, arithmetic for computers, processor datapath control, memory, and input/output. *Prerequisite:* 26.

103 Programming Languages Systematic treatment of principles underlying the features and implementation of programming languages. Contrast of traditional procedural languages and at least one nontraditional language. *Prerequisite:* 26.

104 Data Structures Lists, Strings, Arrays, Trees and Graphs. Storage systems and structures. Storage allocation and garbage collection. Searching and sorting techniques. Generalized data management systems. *Prerequisites:* 26, Math. 52 or 54.

148 Database Design for the Web Design and implementation of a relational database model using SQL and PHP. Typical project includes creation of ecommerce shopping site. *Prerequisites:* One semester of programming,

192 Independent Service & Teaching Independently designed project or pedagogical experience that benefits the University or the Community under the direction of a CS faculty member. Requires final presentation. *Pre/Co-requisites:* Departmental permission.

195 Special Topics *Prerequisite:* Instructor's permission.

201 Operating Systems Supervisory and control software for multiprogrammed computer systems. Processes synchronization, interprocess communication, scheduling, memory management, resource allocation, performance evaluation, object-oriented systems, case studies. *Prerequisites:* 103, 104.

202 Compiler Construction Practice in design and implementation of translators for ALGOL-like languages. Regular and context-free grammars, parsing, code generation for stack and register machines. Interpreters. Run-time storage administration for block-structured languages. *Prerequisites:* 103, 243.

204 Database Systems Techniques for processing very large collections of data. Secondary storage. Database design and management. Query languages and optimization. Database recovery. *Prerequisites:* 101, 104; 201 recommended.

205 Software Engineering Treatment of software engineering problems and principles, including documentation, information hiding, and module interface specification syntax and semantics. Requires participation in a team project. Students who receive credit for 205 may not receive credit for 208 or 209.

208 Software Requirements&Design Project management, requirements for software products, design methodologies and formal and informal notations describing designs. Includes developing requirements and design for a substantial software product. Credit not awarded for more than one of 205 and 208. *Prerequisites:* CS 100, CS 104.

209 Software Implement&Verificat'n Covers advanced program development methodologies, software performance measuring and tuning and the verification and validation of software. Includes a significant implementation and evaluation project. Credit not awarded for more than one of 205 and 209. *Prerequisites:* CS 100, CS 104.

222 Computer Architecture Architecture of computing systems. Control unit logic, input/output processors and devices, asynchronous processing, concurrency, parallelism, and memory hierarchies. *Prerequisite:* 101.

224 Analysis of Algorithms Introduction to both analytical and experimental techniques in algorithm analysis. Basic algorithm design strategies. Introduction to complexity theory. *Prerequisites:* 103, 104. Math. 173 recommended.

228 Human-Computer Interaction The design, implementation and evaluation of user interfaces for computers and other complex, electronic equipment. Includes a significant project.

231 Bioinformatics Introduction to current topics in bioinformatics. Applications may include sequence alignment, dynamic programming, hidden Markov models, phylogenetics trees, microarray data analysis, genomics, and proteomics. *Prerequisites:* STAT 151, CS 26, and MMG 102 desirable. Crosslisting MMG 231.

243 Theory of Computation Introduction to theoretical foundations of computer science. Models of computation. Church's thesis and noncomputable problems. Formal languages and automata. Syntax and semantics. *Prerequisite:* 104. (Same as Math 243).

251 Artificial Intelligence Introduction to methods for realizing intelligent behavior in computers. Knowledge representation, planning, and learning. Selected applications such as natural language understanding and vision. *Prerequisites:* CS 103, CS 104, STAT 153 or equivalent.

256 Neural Computation Introduction to artificial neural networks, their computational capabilities and limitations, and the algorithms used to train them. Statistical capacity, convergence theorems, backpropagation, reinforcement learning, generalization. *Prerequisites:* Math 124 (or 271), Stat 153 or equivalent, computer programming. Crosslisted: STAT 256

260 Parallel Algorithms&Prog Tech Taxonomy of parallel computers, basic concepts for parallel computing, effectiveness and scalability, parallel algorithms for variety of problems, message-passing programming paradigm and data-parallel languages. *Prerequisite:* 103, 104. MATH 173 and MATH 124 recommended.

265 Computer Networks Introduction to the theoretical and pragmatic principles of computer networking and client-server computing. Topics include: Local Area Networks; the Internet; ATM technology; TCP programming. *Prerequisite:* CS 101, 104, STAT 153 or equivalent.

266 Network Security&Cryptography Security and secrecy in a networked environment. Cryptography: public and private key. Authentication: trusted agents, tickets. Electronic mail and digital signatures. Privacy and national security. *Prerequisites:* 104, Math. 124 or 271.

274 Computer Graphics Graphical representation of two- and three-dimensional objects on color raster displays. Line generation, region filling, geometric transformations, hidden line and surface removal, rendering techniques. *Prerequisite:* 104, Math. 121, Math. 124 or 271.

283 Undergraduate Honors Thesis See description of Honors Thesis Program in the College of EM section of this catalog.

284 Undergraduate Honors Thesis See description of Honors Thesis Program in the College of EM section of this catalog.

292 Senior Seminar Oral presentations that pertain to the ethical practice of computer science in government, industry, and academia. Topics may include computer security, copyright, and patent law. *Prerequisite:* Senior standing in computer science.

294 Independent Readings&Research Independent readings and investigation under the direction of faculty

member. *Prerequisite:* Department's permission.

295, 296 Special Topic:Computer Science Subject will vary from year to year. May be repeated for credit.

ECONOMICS (EC)

011 Principles of Macroeconomics Introduction to economic concepts, institutions, and analysis, particularly as related to the economy as a whole.

012 Principles of Microeconomics Study of individual economic units with particular emphasis on market interactions among firms and households. *Prerequisite:* 11.

020 Economic Problems Exploration of a current economic issue. Topics vary and may include international trade, debts and deficits, environment, ethnicity, race and gender, and employment and work.

060 Capitalism & Human Welfare Investigates theories of growth of the capitalist economy and the historical process of the ascendance, domination, and recent relative decline of the U.S. economy.

095, 096 Intro Special Topics See Schedule of Courses for specific titles.

110 American Economic History Survey of the economic history of the U.S. from colonial origins through early 20th century, emphasizing economic and institutional changes and events promoting economic growth and development. 11, 12 or instructor permission. *Prerequisite:* 11, 12 or instructor permission.

113 Evolution of Capitalism Origins and development of capitalism; their social-economic institutions and their transference from Western Europe to North America. *Prerequisite:* 11, 12 or instructor permission.

120 Money and Banking Commercial and central banking with special attention given to the Federal Reserve system, monetary theory, and policy. *Prerequisite:* 11, 12 or instructor permission.

130 Public Policy Revenues and expenditures of federal, state, and local governments and intergovernmental relationships; the effects of expenditures and taxation upon individuals, business institutions, and the national economy. 11, 12 or instructor permission.

133 Economics Environmental Policy Investigation of the relationship of markets and government regulation to environmental quality. Alternative public policies to improve efficiency and equity will be evaluated. *Prerequisite:* 11, 12 or instructor permission.

135 Law and Economics Economic analysis of the law, including property, contracts, torts and criminal law. Covers accident and malpractice compensation, product liability, breach of contract, deterrence of crime. *Prerequisite:* 12.

140 Economic Development Theories of economic growth applied to developing countries of the con-temporary world including the political and social determinants of economic progress. *Prerequisite:* 11, 12 or instructor permission.

143 International Econ I: Trade Trade Theory, policy, and history of international trade patterns, terms of trade, protectionism, competitiveness, structural adjustment, and international aspects of microeconomics. *Prerequisite:* 11, 12 or instructor permission.

146 International Econ II:Finance Finance Theory, policy, and history of foreign-exchange markets, balance of payments, world monetary arrangements, and international aspects of macroeconomics and capital markets. *Prerequisite:* 11, 12 or instructor permission.

150 Labor Economics The economics of work, including wage determination, unemployment, productivity, discrimination, unions, and policy issues. *Prerequisite:* 11, 12 or instructor permission.

153 African Amer in the US Economy An examination of historical and contemporary inequality between whites and blacks, focusing especially on labor, housing, and credit markets. *Pre/Co-requisites:* EC 11 and EC 12.

156 Economics of Gender Examines how gender differences produce different economic outcomes for women and men in work, leisure, earnings, poverty. Explores effectiveness of policies to overcome gender gaps. *Prerequisite:* 11, 12. Cross-listings: WGST 185.

160 Industrial Organization The structure, conduct, and performance of U.S. industry and appraisal of its economic efficiency and social impact, including governmental policies. *Prerequisite:* 11, 12 or instructor permission.

170 Economic Methods Introduces statistical and mathematical methods for understanding economic literature including probability distributions, data sources, statistical concepts, and simple regression, taught using economic examples and applications. *Prerequisite:* Math 19. Credit not given for both 170 and any of following STAT courses: 111, 140, 141,143.

171 Macroeconomic Theory Keynesian and other theories of the macroeconomy. Government policies in relation to the problems of employment, price stability, and growth. *Prerequisite:* Math. 19, 11, 12 or instructor permission.

172 Microeconomic Theory Analysis of consumer demand, supply, market price under competitive conditions and monopolistic influences, and the theory of income distribution. *Prerequisite:* Math 19, 11, 12 or instructor permission.

194 ISSP Thesis Design, research, and writing of a thesis on an economic topic for students in the Integrated Social Sciences Program. *Prerequisite:* 11, 12 or instructor permission.

195, 196 Intermediate Special Topics See Schedule of Courses for specific titles. *Prerequisite:* 11, 12 or instructor permission.

200 Econometrics & Applications A combination of economic theory, mathematics, and statistics for testing economic hypothesis and developing economic models. Conceptual development and applications. *Prerequisite:* 170 and either 171 or 172.

210 Sem A:Econ Hst, Systems&Ideas Economic History, Systems, and Ideas Topics on the evolution of economic systems and ideas. *Prerequisite:* 170 and either 171 or 172 or both.

220 Sem B:Macroeconomics&Finance Macroeconomics and Finance Topics such as national economic policies, income, wealth and welfare, financial markets and the macroeconomy, central banking, and other issues concerning macroeconomics and money. *Prerequisite:* 170 and either 171 or 172 or both.

230 Sem C:Microeconomics & Appl Microeconomics and its Applications Topics from microeconomics and fields applying it, such as game theory, health economics, environmental economics, the Vermont economy, and urban and regional economics. *Prerequisite:* 170 and either 171 or 172 or both.

240 Sem D:Intern'l & Dev Economics International and Development Economics Topics such as the economies of countries or regions, international trade agreements, international debts, deficits and structural adjustment, and aspects of development economics. *Prerequisite:* 170 and either 171 or 172 or both.

250 Sem E:Labor, Race & Gender Labor, Race, and Gender Topics such as labor-management relations, aspects of contemporary labor markets, discrimination, economics of education, and other aspects of the economics of gender and race. *Prerequisite:* 170 and either 171 or 172 or both.

260 Sem F:Firms, Inst, & Growth Firms, Institutions, and Growth Topics such as antitrust and regulation, decision making and the firm, technological change and industrial policies, and the economics of growth.*Prerequisite:* 170 and either 171 or 172 or both.

291, 292 Macro and Micro Applications Combination of real-world work experience with a related independent study project or readings and research. Pre/corequisites: EC 170 and either EC 171,172, or both.

295, 296 Advanced Special Topics See Schedule of Courses for specific titles. *Prerequisite:* 170 and either 171 or 172 or both.
297, 298 Readings & Research Independent study with permission of supervising professor prior to registration.*Prerequisite:* 170 and either 171 or 172 or both.

EARLY CHILDHOOD SPECIAL EDUC (ECSP)

187 Student Teaching Practicum Full semester student teaching internship in a setting or combination of settings that includes infants, toddlers, and/or preschoolers with disabilities. Integrated readings, research activity and weekly seminar. *Prerequisites:* ECSP 210, 211.
200 Contemporary Issues
202 Inft,Tdlr,Preschl w/ Disabil Characteristics and educational interventions with young children, including typical development and disabilities, addressing needs of young children through curriculum and instructional practices, technology and therapy. *Pre/Co-requisites:* EDSP
210 Meet Curr Needs Chil w/ Disabl Curricular areas essential to the development of young children with disabilities, development and adaptation of curricula integrated with assessment in early childhood including children with mild, moderate and severe disabilities. *Pre/Co-requisites:* ECSP 202
211 Assmt Intvntn Erly Chld Sp Ed Screening and assessment essential to identification of and planning for young children with disabilities. Planning for, selection of tools and procedures, and interpreting results from screening and assessment, including young children with mild, moderate and severe disabilities. *Pre/Co-requisites:* ECSP 202
295 Lab Experience in Education UG only.

ART EDUCATION (EDAR)

140 Foundation Studio El Ed Majors Students select a foundation studio course (Art 2, 3 or 4) from those sections designated each semester on the course schedule. See course descriptions listed under Art.
177 Curriculum & Pract in Elem Art Study and implementation of curriculum in elementary school. Students work directly in an elementary classroom. Lectures and discussions. *Prerequisites:* Eighteen hours studio art, junior standing.
178 Curriculum&Pract Middle/HS Art Study and implementation of curriculum in middle and high school. Students work directly in a middle or high school. Lectures and discussions. *Prerequisite:* Eighteen hours studio, junior standing.
200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas. One to six hours.
283 Current Issues in Art & Ed Research and discussion of issues relevant to contemporary art and the teaching of art. *Prerequisite:* Senior standing or permission.
284 Current Issues in Art & Ed Research, discussions, and field work relevant to contemporary art and the teaching of art. *Prerequisite:* Junior standing or permission.
295 Laboratory Experience in Educ Supervised field work designed to give students experience in specialized areas for their professional development.*Prerequisite:*Permission of the Coordinator of Professional Laboratory Experiences. One to six hours.

COUNSELING (EDCO)

220 Developmental Persp in Counsel Survey of major and emerging theories of human development and application of theoretical concepts to self and others from a counseling perspective. *Prerequisites:* Graduate standing. Others by permission.
291 Special Topics in Counseling Special issues in counseling, administration and planning, social work or higher education not appropriate to content of existing courses. Courses reflect the social services orientation of the Department of Integrated Professional Studies.

EARLY CHILDHOOD PRE K-3 (EDEC)

001 Intro to Early Education Introduction to a social-constructivist approach to early childhood curriculum development and strategies for observing and documenting young children's development and learning. Offered spring only.
055 Special Topics I
063 Child Development The biological, psychological, and social growth and development of children and their relationships with family, peers, and institutions.
100 Inquiry & Pedagog in Early Edu Strategies for the observation, documentation and development of curriculum in early education from a social-constructivist perspective through seminar participation and an internship experience in an early childhood setting Offered fall only. *Pre/Co-requisites:* EDEC 1.
187 Field Practicum Full semester student teaching internship in a primary (K-3) setting. *Prerequisite:* EDEC 189; permission.
189 Early Childhood Practices Supervised planning and conducting the Early Childhood Laboratory Center. Integrated Readings and Research, Early Childhood Seminar, and Curriculum Workshop. *Prerequisite:* Permission. Variable credit.
195 Special Topics Lectures, laboratories, readings, or projects relating to contemporary areas of study. Enrollment may be more than once, accumulation up to 12 hours. *Prerequisite:* Varies with course.
197 Readings & Research
200 Contemporary Issues
291 Special Problems Reading, discussion, and special field and/or laboratory investigations. *Prerequisite:* Departmental permission. Students may enroll more than once up to 12 hours.
295 Special Topics Lectures, laboratories, readings, or projects relating to contemporary areas of study. Enrollment may be more than once, accumulation up to 12 hours. *Prerequisite:* Departmental permission.
296 Field Experience Professionally-oriented field experience under joint supervision by faculty and community representative, credit arranged up to 15 hours. *Prerequisite:* Departmental permission.

ELEMENTARY EDUCATION (EDEL)

010 Intro to Teaching & Learning Orientation to professional program. Introduction to research base for meaningful teaching and learning. Analysis of teaching autobiographies by successful teachers. One credit each semester for two consecutive semesters.
011 Computers in El Ed Classroom Students use the University's network and internet, exchange e-mail, construct electronic portfolios, and examine software to help them in their studies and future classrooms.
024 Learners and Learning Process Distinctions among dominant theories of learning and development. Learning theories applied to selected issues derived from context of schools. Students work with individual learner in appropriate setting.
055 Special Topics
056 Teachers&the Teaching Process Students examine lives of teachers, demands of the profession, and selected models of teaching. Student observation of teachers in appropriate settings and knowledge of learning and development.

Prerequisites: 10, 24; concurrent with EDEL 177, EDSP 5.

155 Lab Experience in Inquiry Supervised practicum in field sites. Implementation of teaching methods from Inquiry Block. Documentation of classroom work, child study, and development of portfolio. *Prerequisites:* Admission to Elementary Teacher Education Program; concurrent with EDEL 157, 158, 159.

156 Teaching Math for Meaning Methods of teaching mathematics in elementary school. Research base for how children learn mathematics and how math curriculum is organized. Special focus on teaching diverse groupings of learners. *Prerequisites:* Admission to Elementary Teacher Education Program; concurrent with EDEL 175, 176, 178.

157 Social Educ and Social Studies Methods of social education for elementary-aged school children. Promoting children's efficacy by nurturing personal interests. Development of folio of developmentally-sound examples of social studies learning. *Pre/Co-requisites:* Admission to Elementary Education Program; EDEL 155, 158.

158 Teaching Science for Meaning Teaching K-6 science through inquiry. Use of constructivist pedagogy to develop lessons and activities that develop concepts from physical, earth and life sciences. *Pre/Co-requisites:* Admission to the Elementary Education Program; concurrent with EDEL 155 & 157.

159 Integrating the Arts Incorporate visual and performing arts (music, movement, theatre) as a way of learning and teaching by focusing on artistic expression. Emphasis on multi-cultural arts. *Pre/Co-requisites:* EDEL 10 fall semester or permission of the instructor.

175 Lab Experience in Literacy Supervised practicum in a field site. Implementation of teaching methods from Literacy Block. Documentation of classroom work, child study, and development of portfolio. *Prerequisites:* Admission to Elementary Teacher Education Program; concurrent with EDEL 156, 176, 178.

176 Language Arts&Literacy Skills Cognitive research base for the social context of children's learning. Methods of language arts as literate activity. Emphasis on emergence of literacy in the child of special need. *Prerequisites:* Admission to Elementary Teacher Education Program; concurrent with EDEL 156, 175, 178.

177 Children's Lit & Literacy Learning about the breadth of literature available for use in elementary school. Developing the ability to evaluate and use literature in reading and writing activities. Emphasis on bias-free methods. *Pre/Co-requisites:* Admission to Elementary Teacher Education Program; concurrent with EDEL 156, 175 and 176.

178 Mtg Indiv Needs:Assmt&Instruct Methods of responding to individual differences within a heterogeneous classroom. Sources of student variability, developing settings of least restriction, and appropriate assessment strategies. *Pre/Co-requisites:* Admission to Elementary Teacher Education Program; concurrent with EDEL 56, EDSP 5.

181 Student Teaching

185 Student Teaching Internship Supervised student teaching internship in field site. Fifteen-week total immersion as a beginning teacher. Responsibilities specified in internship handbook. Documentation of activities for professional portfolio. Concurrent with EDEL 187 and 188. *Prerequisite:* Method Blocks in Inquiry and Literacy. Variable credit

186 Seminar in Student Teaching

187 Plan,Adapt,Deliv Rdg Instruct Methods of diagnostic teaching in reading and writing. Identifying components of effective programs and use of research findings to deliver instruction in meaningful contexts. Documentation of personal model of literacy for professional portfolio. *Prerequisite:* Method Block in Literacy.

188 Principles of Classroom Mgmt Application of basic learning principles to classroom management. Creation of behavior management plans with emphasis on social and academic behavior of diverse groupings of children. Concurrent with 185 and 187. *Prerequisite:* Method Blocks in Inquiry and Literacy.

189 Portfolio Dev&Reflective Pract This course develops candidates' critical reflectivity on their knowledge and expertise of classroom teaching through the construction of a professional portfolio. *Prerequisites:* Concurrent with EDEL 185 and 188.

197 Readings & Research

200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas.

241 Science for Elem Schools Examination of elementary school science programs. Emphasis on methods and materials relating to construction, use of science units for children in grades K-6. *Prerequisites:* Twelve hours in education and related areas, or permission.

244 Social Studies in Elem Schls Study of literature, research, and problems in teaching social studies in the elementary school. *Prerequisite:* Twelve hours in education and related areas.

256 Methods & Materials in Math Evolution of mathematical concepts, notations. Meaning of numbers, number-systems. Theory underlying fundamental operations, metric measurements, analysis of modern approach to mathematics. Manipulative approach to teaching mathematics. *Prerequisite:* Twelve hours in education and related areas.

270 Kindergarten Methods & Org Objectives, organization, curriculum, methods and materials, and relationships of kindergarten preschool experiences. *Prerequisite:* Twelve hours in education and related areas.

271 Kindergarten Educ W/Lab Designed to acquaint the prospective kindergarten teacher with educational research conducted by Piaget, Bruner, Montessori, and others with experiences provided for working with children of kindergarten age. *Prerequisite:* Twelve hours in education and related areas.

295 Lab Experience in Education Supervised field work designed to give students experience in specialized areas for their professional development. *Prerequisite:* Permission of the Coordinator of Professional Laboratory Experiences.

FAMILY&CONSUMER SCIENCES (EDFC)

055 Special Topics I

123 Methods In Nutrition Education Planning and presenting of appropriate methods, media, and materials for audiences in community, school, and institutional settings emphasizing interperson communication and group process skills.

197 Readings and Research

200 Contemporary Issues

220 Fam&Consumer Sci/Contemp Schl Required for licensure. Exploration of education options in a variety of family and Consumer Sciences related areas and in different types of schools and programs. (Not offered for graduate credit).

221 Mgmt School Youth Organization The role of youth organization advisor, particularly FCCLA. Emphasis on service learning and use of advisory councils. Includes observation and participation in school related activities. (Not offered for graduate credit).

222 Curriculum Dev Human Sciences Basic principles of curriculum development applied to human sciences education. Unique characteristics and contributions of human science education as related to educational, economic, and sociological trends. Spring (odd number years).

224 Evaluation In Human Sciences Test, questionnaire, interview schedule construction, and other non-testing means of evaluation. Usability, objectivity, validity, reliability, and discrimination of evaluation instruments. Selected sociometric techniques and evaluation in affective domain. Spring.

225 Teaching Pract: Human Sciences Teaching in middle or secondary schools under guidance of cooperating teachers and college supervisor. Credits variable up to 15 hours per semester. (Not offered for graduate credit).
295 Lab Experience in Education
296 Special Topics

FOUNDATIONS (EDFS)

197 Readings and Research
200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas.
203 Soc, Hst & Phil Found of Educ Critical examination of central educational/social issues and values with special emphasis on the struggle for justice and equality. Themes include schooling and social class, race, and gender; the purposes of education; and the responsibilities of teachers. *Prerequisite:* Enrollment in teacher licensing program.
204 Sem in Educational History Selected topics in history of education. Education in democratic and authoritarian social orders. Topics: education of women, black heritage, American higher education in transition. *Prerequisite:* Twelve hours in education and related areas or permission.
205 History of American Education Educational principals and practices in the U.S. as they relate to the main currents of social history. Key ideas of historic and contemporary significance. *Prerequisite:* Twelve hours in education and related areas or permission.
206 Comparative Education Examines educational challenges confronting countries around the world. Explores issues related to sustainable development, diversity, citizenship, and justice in formal and nonformal educational contexts. *Prerequisite:* Twelve hours in education and related areas.
207 Traditionalist Education Perspecitives on schooling at all levels directed at preserving and extending a heritage (cultural, racial, ethnic, religious, regional, national), or promoting individual freedom, character, or academic excellence. Selected topics, instructor choice. *Prerequisite:* Junior standing, also for graduate credit.
209 Intro to Research Methods Seminars and research projects. Methods of historical, descriptive, experimental, quasi-experimental, field studies, and survey research.
255 School as Social Institution Examination of the school and related social institutions, focus on themes, including: social class, race, ethnicity, socialization, role of the family, social change. *Prerequisite:* Twelve hours of education and related areas.
295 Lab Experience in Education Supervised field work designed to give students experience
in specialized areas for their professional development. *Prerequisite:* Permission of the Coordinator of Professional Laboratory Experiences.

HEALTH EDUCATION (EDHE)

046 Personal Health Concepts of personal health related to problems of daily living. Mental health, sex education, nutrition and weight control, fatigue and relaxation, chronic and communicable disease, stimulants and depressants.
150 Sem: Health Educ Research, discussion, and critical examination of selected topics and special issues in health not currently covered in existing courses. *Prerequisite:* Six hours in health education or instructor's permission. Variable credit, one to four hours.
173 Practicum in Field Experience Individually prescribed teaching experience involving work with health agencies, both public and private. Responsibilities approximate those commonly associated with student teaching. *Prerequisite:* Permission. Variable credit
182 Health Methods and Materials Fundamental methods of teaching health as applied to school and public health education. Consideration of materials applicable to health education, evaluation techniques, preparation of teaching units and bibliographies. *Prerequisite:* 46.
200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas.
208 School Health Programs Organization of the total school health program. Problems and administration in the area of school environment, health services, health education, and school-community relationship. *Prerequisite:* 46 or equivalent.
211 Community Health Ed Government and voluntary agencies' sociological, historical, educational, environmental, and medical influences. Role of community health educator in these influences and major American health concerns. *Prerequisite:* EDHE 46 or equivalent.
220 Stress Mgmt Hlth Professionals Physiological, psychological, and sociological aspects of stress. Theory, practices, teaching techniques, and application relevant to teaching students and/or clients. *Prerequisites:* EDHE 46 or equivalent.
295 Lab Experience in Educ Supervised field work designed to give students experience in specialized areas for their professional development. *Prerequisite:* Permission of the Coordinator of Professional Laboratory Experiences.

HIGHER EDUCATION (EDHI)

055 Special Topics
200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas.
202 Human Rel in Univ Res Halls Emphasis on human relations, group dynamics, advising models, student development theory, organizational development, and contemporary student issues in a residential environment. *Prerequisite:* Residence hall staff. (Not offered for graduate credit.)
213 Ldr:Theories,Styles&Realities Introductory course in leadership development designed for student leaders. Includes study of planning, time management, organizational theory, communication skills, group process, team building. (Not offered for graduate credit.)
214 Adv Seminar in Leadership Focuses on student leaders' experiences and how those experiences relate to activities beyond the University setting.
295 Lab Experience in Education Supervised field work designed to give students experience in specialized areas for their professional development. *Prerequisite:* Permission of the Coordinator of Professional Laboratory Experiences.
297 Special Topics Learning modules may vary each semester as the need to address topics arises. Learning modules are 5 week classes.

LIBRARY SCIENCE (EDLI)

200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas.
272 Manage Schl Library Media Ctrs Overview of administrative issues, including development of policies and procedures, budget preparation, personnel administration, and public relations. Focus on information technology and literacy. *Prerequisite:* Twelve hours in education and related areas, or permission.
273 Organizing Schl Libr Media Ctr Introduction to cataloging of print and non-print materials, Dewey Decimal

Classification, application of microcomputers to catalog and circulation services. *Prerequisite:* 272 or equivalent.

274 Design Instr Sch Lbr Media Ctr Designing library instruction for integration with curricula and collaborating to create effective lessons. Issues surrounding active learning, critical thinking, learning styles, and assessment are examined. *Prerequisite:* 272 or equivalent.

275 Dev Sch Libr Media Ctr Collect Evaluating and selecting books, periodicals, audiovisuals, software, and other materials for full range of student ages and ability levels. Maintaining collection, weeding, using interlibrary loan, and dealing with censorship. *Prerequisite:* 272 or equivalent.

276 Information Sources & Services Helping students and teachers find information using print, online, CD-ROM and other resources. Developing interview skills and selecting materials for elementary and secondary core collections. *Prerequisite:* 272 or equivalent.

277 Info Tech Schl Libr Media Ctrs Selecting, using, and maintaining full range of media equipment, including audiovisual and computer based systems. Designing and improving presentation facilities for media. *Prerequisites:* 272 or equivalent.

295 Lab Experience in Educ Supervised field work designed to give students experience in specialized areas for their professional development. *Prerequisite:* Permission of the Coordinator of Professional Laboratory Experiences.

LEADERSHIP AND POLICY STUDIES (EDLP)

200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas.

264 Evaluation in Ed & Soc Srvcs For educational and social service personnel. Overview of the state-of-the-art of evaluation, emerging concepts, related models. Potential applications to settings; systematic data analysis. *Prerequisite:* Twelve hours in education or permission.

266 Educational Finance National, state, and local practices in educational financing and taxation; educational policies and incentives in funding; other revenue sources; financial expenditure procedures. *Prerequisite:* Twelve hours in education or permission.

268 Educational Law Legal basis for education. State and Federal statutes; related court casesTHE COLLEGE OF ARTS AND SCIENCES |; Attorney General opinions; Special Education procedures; Vermont State Board and State Education Department policies; regulations. *Prerequisite:* Twelve hours in education or permission.

280 Schl Business Mgmt Analysis of basic management concepts applied to administering schools. Topics include leadership/management trends, types of budgets, risk management, planning, and other personnel and business operations issues. *Prerequisite:* Twelve hours in education.

291 Spec Tpcs in Org&Hum Res Dev Special issues in counseling, administration and planning, social work, or higher education not appropriate to content of existing courses. Courses will reflect the social services orientation of the Department of Education.

295 Lab Experience Supervised field work designed to give students experience in specialized areas for their professional development. *Prerequisite:* Permission of the Coordinator of Professional Laboratory Experiences.

LITERACY (EDLT)

200 Contemporary Issues

222 Cltvate Chil Lit in El/Mid Sch Contemporary research and practice related to the development of strategic, motivated, and independent readers and writers. Emphasis on integrating reading and writing within collaborative environments. *Prerequisites:* Twelve hours in education and/or related areas including an introductory course in reading or permission.

223 Read Pgms in Sec Schl & Col Relationship of reading to learning study or organization, instructional procedures, and materials for developing reading improvement programs for secondary and college students; reading in content areas. *Prerequisite:* Twelve hours in education and/or related areas or permission.

228 Lit in Jr/Sr High Schl Curr (Literacy Criticism for Teachers.)

234 Lit & Lang for Chil & Youth Characteristics, interests, reading habits of children and youth; selection, evaluation of literature. Organizing book units for teaching literature, for content areas. Emphasis on development of oral, written expression. *Prerequisite:* Twelve hours in education and related areas or permission.

236 Multicultural Children's Lit Current research in multicultural education and literacy informs examination of representation and perspective in literature for children and youth. Perspectives include religion, race, gender, SES.

295 Laboratory Experience in Educ

MIDDLE LEVEL TEACHER EDUCATION (EDML)

010 Introduction to Teaching Orientation to teaching at middle level. Examination of young adolescent students, teachers' roles, reflective practice, guided inquiry, middle schooling and middle school concept. *Prerequisites:* Admission to Pre-professional teaching education.

024 Learners, Development&Learning Students learn about the interrelated processes of development and learning throughout childhood but with special emphasis on the approximate ages of ten to fourteen. *Prerequisites:* EDML 10.

055 Special Topics I

056 Teachers & Teaching Process Students examine professional responsibilities of middle level teachers as defined by Vermont and national standards via classroom observations. *Prerequisites:* EDML 10, 24.

171 Teaching Practicum II Second teaching practicum on a middle level team to learn policy, curriculum, exemplary pedagogy, assessment in second of two academic concentrations defined by student's IDIMC plan. *Prerequisites:* Admission to Middle Level Professional Program.

177 Adolescent Lit and Literacy Course participants examine middle school literature, focusing on research-based instructional practices for teaching and engaging middle schoolers in reading and writing across the subject areas.

197 Readings & Research

200 Contemporary Issues

207 Adoles Lrng&Beh&Cog Perspect Indepth examination of cognitive learning theory and its background in behavioral and other learning theories, with application to teaching in a middle or secondary setting. *Pre/Co-requisites:* Acceptance to licensing program. (Crosslisted with EDSC 207).

260 Teaching Young Adolescents Focus on understanding and reflecting on an integrative developmental approach to the design of middle level curriculum, with an emphasis on literacy and numeracy.

261 Middle Level Teaching Pract Teaching practicum on middle level team in two areas of academic concentration, acquiring knowledge of and skills in curriculum, pedagogy, and assessment. *Pre/Co-requisites:* Admission to Middle Level Professional Program.

270 Middle School Org & Pedagogy Focuses on exploring theory and practice in responsive school organization for young adolescents, including interdisciplinary/partner teaming, block scheduling, and teacher advisories, as well as teaching lessons in one area of specialization. *Pre/Co-*

requisites: EDML 260, 261.

285 Middle Level Student Teaching Full-time supervised student teaching internship as a member of a middle school team. Development of a professional portfolio as stipulated in the Middle Level Program Handbook. *Pre/Co-requisites:* EDML 260, 261, 270 and permission.

286 Internship Support Seminar Seminar addresses and responds to internship experiences including planning, reflective practice, classroom management, teamwork, and assessment of learning. Guidance in development of Professional Teaching Portfolio.*Pre/Co-requisites:* EDML 260,261,270.

287 Literacy & Mathematics All middle level teachers are expected to teach reading, writing, literature and mathematics. This course is the capstone for work previously done in these pedagogies. *Pre/Co-requisites:* Successful completion of EDML 260, 261, 270.

295 Laboratory Experience

MUSIC EDUCATION (EDMU)

181 Music for Elementary Teachers Development of musical skills, understandings, and attitudes pertinent to the teaching of music in elementary classroom. *Prerequisite:* Elementary majors, acceptance into teacher education program.

281 Elementary Music Ed Methods Methods and materials for teaching music in elementary schools. Five hours classroom observation per week required. *Prerequisite:* Junior standing in Music Ed. UG only.

282 Secondary Music Ed Methods Methods and materials in the teaching of vocal and instrumental music in secondary schools. Five hours classroom observation per week required. *Prerequisite:* Junior standing in Music Education. UG only.

PHYSICAL EDUCATION-PROF (EDPE)

021 Foundations of Phys Educ Examination of the development of physical education as an academic discipline and profession, its foundations, current trends, issues and career opportunities. *Prerequisites:* Physical Education majors; others by instructor's permission.

023 Amer Red Cross Emergency Resp To meet the needs of individuals who are in a position to provide first aid and emergency care frequently. Red Cross certification for successful performance in Advanced First Aid Emergency Care. *Prerequisite:* PE, HDS, and Health majors, others by instructor's permission.

024 Life Skills: Student Athletes This course provides students with skills training for academic and athletic success, alcohol education and prevention, and moral reasoning and decision-making.

026 Water Safety Instructor Advanced performance skills in swimming, diving, survival, and rescue techniques. Theory and practice in techniques of teaching aquatic skills. Red Cross certification as Water Safety Instructor or Instructor for Beginning Swimming. *Prerequisite:* Current Red Cross Lifesaving Certificate.

032 Recreational Sport Officiating Basic techniques and skills of rule interpretation for officiating recreational sport competition.

054 Hist, Phil, and Trends in Rec Review of chronological history of evolution of recreation movement; examination of past and emerging theories and philosophies of recreation and leisure; exploration of trends in recreation and leisure and probable impact on our life styles.

055 Special Topics I

100 Integ Movement/Elem School Cur Planning and implementing movement-based lessons and integrating movement across the curriculum for children aged 5-12.

104 Phys Educ Teaching Experience Experience-based course sequence emphasizing relationship of motor development to learning. Includes age level needs and appropriate physical education activity sequences. First semester: grades K-3; second semester (105); grades 4-6. *Prerequisites:* 23 or 157, junior standing.

105 Phys Educ Teaching Experience Experience-based course sequence emphasizing relationship of motor development to learning. Includes age level needs and appropriate physical education activity sequences. First semester: grades K-3; second semester (105); grades 4-6. *Prerequisites:* 23 or 157, junior standing.

121 Coaching Baseball Theory and technique of coaching interscholastic baseball. Includes practice, game, and schedule organizations. *Prerequisites:* Skill competency in baseball, sophomore standing or permission.

123 Coaching Softball Theory and technique of coaching interscholastic softball. Includes practice, game, and schedule organizations. *Prerequisites:* Skill competency in softball, sophomore standing or permission.

155 Phys Educ in Secondary Schl Theories of teaching which include unit plan development, classification and grouping of students for instruction, and a variety of teaching methods. Laboratory experience in teaching activity skills to youth aged 12-18. *Prerequisite:*Junior standing, PE majors only.

166 Kinesiology Designed for the teacher/coach to analyze factors of peak physical performance. Muscle actions, mechanical principles, related factors enhancing movement are emphasized. *Prerequisite:* One year of biological science; PE majors, coaching minors, students enrolled in Athletic Training Concentration, Sports Nutrition; others by instructor's permission. Crosslisted with EXMS 166.

167 Exercise Physiology Investigates physiological responses during exercise. Laboratory, classroom experiences enable understanding of bodily responses during exercise. Content includes energy metabolism, muscular, cardiovascular, pulmonary responses, and temperature regulation. Prerequistes: PE majors, coaching minors, sports nutrition, Athletic Training; others by instructor's permission. Crosslisted with EXMS 269.

168 Measurement&Data Analysis Introductory statistics and research design class. Covers basic statistics—t-tests, measurement scales, Anova,correlations, etc. Application in physical education and exercise science are specifically discussed. *Prerequisites:* EXSS majors only; others by instructor's permission. Crosslisted with EXMS 168.

173 Practicum in Field Experience Individually prescribed teaching experience involving work with youth groups in activities related to physical education, health, or recreation. Responsibilities approximate those commonly associated with student teaching. *Prerequisite:* 104, 105, or 155, instructor's permission.

181 Student Teaching Teaching in elementary or secondary schools under guidance of cooperating teachers, principals and college supervisors. A full-time, full semester, 12-credit experience. *Prerequisites:* Acceptance into the teacher education program; must meet criteria for student teaching. Variable credit, three to 12 hours.

182 Student Teaching Seminar Provides students opportunities to discuss, process, give and receive input and to receive materials to support and enhance their experience, and develop licensure portfolio. *Prerequisites:* Concurrent with EDPE 181.

185 Injury Eval&Rec:Athl Training Course is integrative and clinical in nature, consisting of injury evaluation and recognition skills. Injury mechanisms, etiology, pathology, clinical signs and symptoms. *Prerequisites:* 157, 158.

195 Hlth/Fitness Ldrshp&Programmng Practical approach to significance, theories, and characteristics of leadership content, and methods of program planning. Field work practice in planning and leadership techniques. *Prerequisite:* EDPE 21.

197 Readings & Research Crosslisted with EXMS 197

200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas.

201 Admin of Athletic Programs Background for effective administration of the athletic program of schools. Include scheduling, budgeting, management, equipment, policy, public relations, and education justification. *Prerequisite:* Twelve hours of education and psychology.

203 Principles of Physical Ed Principles basic to sound philosophy of physical education for appraisal of historical development; relationship to health education, recreation, and other areas; foundation and functions of physical education. *Prerequisites:* Admission to the program and permission.

220 Sport in Society Examines sport as a social institution, emphasizing interrelationships between sport and the social context in which it exists; analyzes functions and dysfunctions of sport in contemporary society. *Prerequisites:* Sociology 1 or 19, or equivalent.

240 Motor Skill Learning & Control Nature of motor learning; factors affecting motor learning (motivation, emotion, stress); concepts of transfer, retention; alternatives in teaching, coaching methodologies based upon applied principles in motor learning. *Prerequisites:* 166, ECHD 62 or 63, or equivalent. Crosslisted with EXMS 240.

241 Sem in Phys Educ & Athletics Examination and analysis of contemporary issues and trends in physical education and athletics not especially appropriate within the boundaries of an existing course. *Prerequisite:* Twelve hours in physical education and related areas. Crosslisted with EXMS 241.

260 Adapted Physical Activity Recognition, prevention, correction of functional, structural deviations from normal body mechanics. Organization of programs adapted to needs of handicapped individuals in both special class and mainstreamed settings. *Prerequisite:* 155, 104, 105 or equivalent teaching experience. Crosslisted with EXMS 260.

265 Exercise & Sport Science Discussion and integration of topics related to exercise physiology, kinesiology, motor learning, and sociocultural aspects of sport. *Prerequisites:* 166, 167, 220, 240; senior standing, or permission. UG only. Crosslisted with EXMS 265.

266 Ex Prescrip:Sprt,Hlth,Fit,Perf Course covers basic concepts of exercise prescription and exercise program design. Particular attention is paid to individualization of exercise program to meet participant needs. Crosslisted with EXMS 266.

267 Sci Strength Training&Condtng Course focuses on physiology of muscle adaptation following resistance or aerobic training. Particular attention is paid to specificity of metabolic adaptation for individual sports. Cross-listed with EXMS 267.

295 Lab Experience in Education Supervised field work designed to give students experience in specialized areas for their professional development. *Prerequisite:* Permission of the Coordinator of Professional Laboratory Experiences.

SECONDARY EDUCATION (EDSC)

011 Ed Tech in Sec Ed Classroom Students are introduced to a variety of uses for information technology in education with particular applications to stimulate and manage a student-centered classroom.

050 Exploring Education Introduction to philosophical, psychological, sociological questions basic to teaching and learning. Exploration of beliefs and understandings about personal learning and the field of education.

055 Special Topics

197 Readings & Research

200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas.

207 Adolscnt Dev:Ed/Psy Perspec In depth examination of developmental and learning theory with applications for teaching in secondary settings. Core activities: exploration of personalization in education and service learning. *Co-requisites:* EDFS 203/EDSC 209

209 Practicum in Teaching Field-experience in secondary setting. Focus on school culture and student needs while documenting effectiveness in one-on-one teaching. Professional attributes/dispositions are critically assessed. *Pre/Co-requisites:* EDFS 203/EDSC 207

215 Reading in Secondary Schools Theory and methods of reading/writing explored in the context of literacy. Focus on reading, writing, speaking and critical thinking across disciplines. Cultural contexts explored. Pre/co-requisite: EDSC 216.

216 Curr,Instr&Assmt Sec Schl Tchr Development of methods related to secondary school teaching. Study and application of constructivist learning theory, differentiation, authentic assessment in planning. Focus on cross-disciplinary collaboration. Co-requisite: EDSC 215.

225 Tchg Soc Studies in Sec Schls Includes multiple teaching modes, questioning techniques, micro-teaching laboratory, analysis of historical content to determine students' prerequisite cognitive skills and processes for construction of historical scenarios. *Prerequisite:* Twelve hours of education and related areas.

226 Teaching Internship Collaboration with professional teachers in design and implementation of effective instruction, with special focus on developing programs in a high school setting. *Prerequisites:* 203, 207, 209, 215, 216 and Special Methods.

227 Tchng Science in Sec Schls Consideration of science curricula and instructional strategies for grades 7-12. Topics may include: teaching science as problem solving, research in science teaching, affective education through science. *Prerequisites:* Twelve hours in education and related areas or permission.

230 Teaching for Results Analysis of planning, curriculum design, teaching, evaluation and classroom management from the perspective of research and practice. Individual tasks culminate in production of a licensure portfolio. Co-requisite: EDSC 226.

240 Teach English:Secondary School Approaches to teaching composition, literature, and the English language in secondary school. *Prerequisites:* Acceptance into licensure program.

257 Tchg Math in Secondary Schools Contemporary secondary school mathematics curricula and instructional strategies for grades 7-12. Topics may include problem solving, research in mathematics education, use of calculators and computers, manipulatives, and evaluation. *Prerequisites:* Twelve hours in education and related areas or permission.

259 Tchg Foreign Lang in Sec Schls An overview of language teaching methodology. The learning/ teaching process as it relates to language learning; techniques used in the teaching and testing of second language skills and culture. *Prerequisite:* Acceptance into licensure program.

295 Lab Experience Supervised field work designed to give students experience in specialized areas for their professional development. *Prerequisite:* Permission of the Coordinator of Professional Laboratory Experiences.

SPECIAL EDUCATION (EDSP)

005 Iss Aff Persons W/Disabilities Students explore the effects of severe disabilities. Best service practices, current legislation, advocacy, and family issues for children and adults are emphasized.

197 Independent Study

200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially

appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas.

201 Foundations of Special Ed Examination of historical, current trends in the treatment of individuals with disabilities, including the effects of litigation, legislation, and economic considerations on educational and residential service delivery systems. *Prerequisite:* Twelve hours in education and related areas, or permission.

202 Stdnt w/Signif Dis:Char&Ed Int Normal development - birth through six years, developmental disorders, disabilities, medical/health considerations. Management of significant disabilities through the employment of such procedures as handling, positioning, and feeding. *Prerequisites:* Permission

207 Cooperative Learning Theoretical and experiential instruction in procedures to increase social acceptance and academic achievement of exceptional learners in mainstream settings through cooperative learning. *Prerequisites:* Permission. Three hours.

216 Curr&Instr Needs/All Students Introduction to curriculum and instruction for all students with a focus on individuals who present academic and behavioral challenges. Emphasis on assessment, evaluation, curriculum, instruction, theories of learning and social development. *Prerequisite:* Permission.

217 Instr Indiv/Significant Disab Individualized instruction for learners with significant disabilities emphasizing objectives, assessment, task analysis, and behavior analysis. *Prerequisite:* Permission.

221 Family Centered Services An in-depth study of families of children with special needs; family ecology; interaction and life cycle. Development and implementation of family/professional collaboration strategies. Practicum required. *Prerequisites:* Permission.

224 Meeting Inst Needs/All Stdnts Students apply principles of learning and social development to improve academic and social skills of all individuals with a focus on those who present academic and behavioral challenges. *Prerequisite:* Permission.

228 Instr for Severely Handicapped Students apply advanced principles of behavior analysis in the development and implementation of instructional programs for learners with moderate and severe disabilities. *Prerequisite:* Permission and introductory behavior analysis course.

274 Culture of Disability Focus on theoretical questions of how societies understand disability and its consequences for social justice, by examining the multiple determinants of the societal construction of disability. *Prerequisites:* Junior, senior or graduate standing. Corss-listings: CMSI 274.

275 Voc Instr Students W/Spec Need Development of instructional strategies for including students with disabilities in vocational education. Procedures for developing, implementing, and evaluating individualized vocational plans. *Prerequisite:* Admission to an approved teacher certification program or permission.

280 Assessment in Special Ed Course covers assessment knowledge and skills essential for special educators, including test selection, administration and scoring, and legal issues related to special education assessment. *Prerequisites:* Admission to Graduate Program in Special Education or permission of instructor.

290 Meeting Curr Needs of Students Study of curriculum and technology areas related to the development, adaptation, and assessment of all students focusing on students with academic and behavioral challenges. *Prerequisite:* Permission.

295 Laboratory Exp in Education Supervised field work designed to give students experience in specialized areas for their professional development. *Prerequisite:* Permission of the Coordinator of Professional Laboratory Experiences.

296 Laboratory Exp in Education Credit as arranged.

297 Curr for Indvdls W/Handicaps Students develop and implement an objectives-based curriculum for learners with learning disabilities, mental retardation, behavior disorders, and/or multidisabilities. *Prerequisite:* Permission.

298 Special Educ Practicum Students provide direct instruction for six learners with learning disabilities, mental retardation, behavior disorders, and/or multidisabilities. *Prerequisite:* Permission.

EDUCATION (EDSS)

001 Schooling, Learning & Society Introduction to issues and problems in American education: schools and learning, professional careers, individuals in systems, characteristics of learners. Required readings and papers.

010 ACCESS Education Create a safe community to discuss disability related issues. Introduce students to organizational systems, goal setting, learning styles, self-advocacy, disabilities, and study skills.

011 Race and Culture Introduction to issues of diversity, multiculturalism and cultural pluralism in our different communities and in our country as a whole.

012 Race&Culture Contemp Issues Gives an expanded introduction to US social justice issues. Forms of discrimination that shape US culture explored and skills in self-reflection and critical analysis developed.

055 Special Topics

197 Readings & Research

200 Contemporary Issues Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisites:* Twelve hours in education and related areas.

208 The Mass Media as Educator Analysis and assessment of the mass media's teachings about reality and worth and how to live our lives individually and collectively. Appropriate for non-education students. *Pre/Co-requisites:* Junior standing for undergraduates; also can be taken for graduate credit.

211 Educational Measurements The essential principles of measurement in education. Topics include validity, reliability, principles of test construction, item analysis, and analysis of standardized tests as they apply to the classroom. *Prerequisite:* Twelve hours in education and related areas.

215 The Gifted Child

238 Teaching W/Global Perspective Approaches to teaching global and multicultural issues: justice and human rights, peace, and the environment. Development of curriculum materials. Links between local and global concerns. *Prerequisite:* Twelve hours of education and related areas.

239 S.L.I.P. Seminar Professional education course designed to facilitate student's integration of academic, social, personal, and career objectives through seminar or project syllabus method of support for internship experience in the community. *Prerequisite:* Instruc-tor's permission, junior standing. UG only.

245 Microcomp Appl in Education For elementary, secondary educators with experience in simple programming. Design of instructional procedures, integrating computers into school curriculum. Use of computer software to teach basic skills, reasoning, thinking skills. *Prerequisites:* Computer Science 3 or equivalent, permission.

248 Educational Media Modern instructional aids, theory and practice, educational media related to psychology of teaching and learning. *Prerequisite:* Twelve hours in education and related areas.

261 Current Dir:Curric&Instruction Current trends, issues, literature, programs, and organizational activities in fields of curriculum and instruction emphasizing areas of individual concern. Focus on elementary and secondary school levels. *Prerequisite:* Twelve credits in education or equivalent.

295 Laboratory Exp in Education Supervised field work designed to give students experience in specialized areas

for their professional development. *Prerequisite:* Permission of the Coordinator of Professional Laboratory Experiences.

ELECTRICAL ENGINEERING (EE)

001 First-year Design Experience Introduction to the engineering profession and design. Hands-on experiences that emphasize interdisciplinary teamwork, technical communications, and project design methodologies. Cross-listings: ME 1.

003 Linear Circuit Analysis I Circuit elements, laws, and analysis. Network principles and theorems. Energy-storage elements. Magnetically coupled circuits. Transient analysis and time constants. *Prerequisite:* MATH 22.

004 Linear Circuit Analysis II Sinusoids and phasors. Sinusoidal steady-state response and power. Complex frequency and network functions. Resonance. Laplace transform techniques. Fourier series and Fourier transforms. *Prerequisite:* EE 3; Corequisite: MATH 271.

081 Linear Circuits Laboratory I Electrical instruments; oscilloscope measurements; resistive, capacitive, and inductive components;applications of operational amplifiers; digital-to-analog converters; transient response of RL and RC circuits. Corequisite: EE 3

082 Linear Circuits Laboratory II Transients in RLC circuits; steady state sinusoidal response in RLC circuits; real and reactive power in RLC circuits; operational amplifier active filters. *Prerequisite:* EE 81; Corequisite: EE 4.

095 Special Topics *Prerequisite:* Departmental permission.

100 Electrical Engr Concepts Introduction to analog and digital electrical measurements and circuits; introduction to microprocessors. No credit for EE majors. *Prerequisite:* Physics 42 with 22 or 125.

101 Digital Control w/Embedded Sys Applications of single-chip microcomputers as embedded systems for data acquisition/real time control. Assembly language; parallel and serial ports; timers; counters; A/D and D/A. Laboratory. *Prerequisite:* EE 100.

113 Electromechanical power Electromechanical power generation, transmission and utilization in machines and drives. Three phase power, transformers, rectifiers, inverters, AC/DC motors and control. Alternative generation. *Prerequisite:* EE 4 or EE 10.

120 Electronics I Theory of operation of diodes and MOS transistors. DC and transient analysis using diodes and transistors. NMOS and CMOS logic circuits and memory cells. Circuit simulation software. *Prerequisite:* EE 4

121 Electronics II Bipolar transistor circuits. DC and high frequency amplifier design using MOS and bipolar transistors. Feedback, oscillators, and stability criteria. Operational amplifiers and switched capacitor filters. *Prerequisite:* EE 120.

131 Fundamentals of Digital Design Combinational logic simplification and design, MSI and PLD components, synchronous and asynchronous sequential design, algorithmic state machines, registers, counters, memory units, introduction to hardware design languages. *Prerequisite:* Sophomore standing.

134 Fund of Microcomp Based Syst In-depth study and applications of a modern microprocessor in embedded digital systems for real-time control and data acquisition. Assembly language and the design of interfaces. *Prerequisites:* 3 or 100, and Computer Science 16 or 21; EE 131 and Computer Science 101 desirable.

141 Electromagnetic Field Theory I Basic laws and elementary applications of electromagnetic fields; vector analysis, steady-state electric and magnetic fields, boundary value problems, transmission lines. No credit may be received for both EE 140 (offered in prior years) and the current EE 141. *Prerequisites:* EE 4, Math. 271, Physics 42.

142 Electromagnetic Field Thry II Basic laws and elementary applications of electromagnetic fields, waves and radiation; Maxwell's equations, Poynting's theorem, plane wave propagation, wave guides, antennas. *Prerequisite:* 141.

163 Solid State Phys Electronics I Physical principles required to understand the operation of common semiconductor devices. Physical models of p-n junctions, Schottky barriers, and MOS field-effect transistors. *Prerequisites:* Physics 42 with 22, Math 271.

164 Solid St Phys Electronics II Theory of operation of bipolar junction transistors. Heterojunction transistors. Compound and alloy semiconductor materials and devices. Dielectric and magnetic materials and devices. *Prerequisite:* EE 163.

171 Signals & Systems Discrete and continuous-time signals and systems. Input/output descriptions and analysis. Convolution, Fourier analysis and Laplace transforms, Sampling and z-transforms. Application to electrical engineering design problems. *Prerequisite:* EE 4.

174 Intro to Communication Systems Signal analysis. Wireless communication including modulation and link budget analysis. Fundamentals of digital communications including PCM, channel coding, pulse shaping and multiplexing. Modern systems survey. *Prerequisite:* EE 171.

183 Electronics Laboratory I Characteristics and applications of diodes and MOSFETs; CMOS inverters and logic characterization; applications of operational amplifiers. Corequisite: EE 120.

184 Electronics Laboratory II Characteristics and applications of bipolar junction transistors; medium frequency and differential amplifiers; operational amplifier output stages; analog and digital filters. *Prerequisite:* EE 183; Corequisite: EE 121.

185 Systems and Applications Lab AC and DC machines; power transformers; electromagnetic waves on transmission lines; digital logic design; design project. Pre/corequisites: Senior standing in EE.

186 Telecommunications Lab Telecommunication system measurement techniques. Spectral analysis, distortion, analog and digital modulation, eye patterns, signal constellations and bit error rate. Team project. *Prerequisite:* Senior standing in EE; Corequisite: EE 174.

187 Professional Design Issues Project management, professional ethics, social/ economic impact, and contemporary issues that arise in engineering practice. Interdisciplinary project development including project selection, design requirements, prototyping and communications. *Pre/Co-requisites:* Senior standing.

188 Major Design Experience Cumulative, team-based interdisciplinary design experience. Subsystem design, implementation and test. System integration and test. Project demonstration, report, and presentation. *Pre/Co-requisites:* EE 187.

193, 194 College Honors

195 Special Topics *Prerequisite:* Departmental permission.

201 Linear System Theory Basic concepts in system theory; linear algebra; state space representation; stability; controllability and observability. Applications of these concepts.*Prerequisite:* 171 or graduate standing.

209 Transient Phenomena Study of complex variable basis of Laplace and Fourier Transforms; applications to transient behavior of lumped and distributed parameter systems, root locus. Nyquist criterion and two-dimensional field problems. *Prerequisite:* 4. Not offered 2001-02.

210 Introduction Control Systems Analysis and design of continuous and discrete-time control systems; stability, signal flow, performance criteria, classical and state variable methods, simulation design tools, computer-based realizations. *Prerequisite:* 171.

212 Computer Vision Introduction to computer vision systems for interactive and industrial applications using both hard/software computational approaches. *Pre/Co-requisites:* Math 124 or 271 and CS 26 or instructor's permission. Cross-listing: CS 212.

214 Ubiquitous Cmptg & Interaction Introduction

to human computer interaction in the area of sensory intelligence with concentration to biofeedback, biometric analysis, human factor, wearable computing, mixed reality, and graphical user interfaces. *Pre/Co-requisites:* CS 26 and senior or graduate standing in engineering, math, or computer science, or instructor permission.

216 Sensory based robotics Introduction to broad aspects on modern robotics, including industrial robotic hand, humanoid robot, personal robot, mobile robot, and entertainment robot. *Pre/Co-requisites:* Senior or graduate standing in engineering, math, or computer science, or instructor permission.

221 Prin VLSI Digital Circuit Des Design of VLSI circuits using a modular approach with industrial grade software: schematic capture; circuit design languages (HDL); full-custom layouts; mixed signals; synthesis. Laboratory. Pre/corequisites: EE 131, 163,121.

222 Prin VLSI Analog Cir Design The design, layout, and simulation of VLSI analog circuits. Emphasis on small signal models and circuits used in operational amplifiers. *Prerequisites:* 163, 121, instructor's permission.

224 Principles VLSI System Design Survey of VLSI design. Architecture and partitioning of functions. Design for testability. Simulation including timing. Synthesis. Design verification; manufacturing interface. Required team project and report. *Prerequisite:* 221 or instructor's permission.

227 Biomed Measmnts Instrum & Sys Biomedical and clinical engineering in research, industry, and health care institutions. Measurement techniques and instrumentation. Integrated biomedical monitoring, diagnostic, and therapeutic systems. Corequisites: 121, ANPS 20, instructor's permission. Alternate years.

228 Sensors Sensor design, interrogation, and implementation. A wide variety of electrical, electronic, optical, mechanic, and cross-disciplinary devices. System designs, measurement techniques, and methodologies. *Prerequisite:* Senior standing in engineering or physics.

231 Digital Computer Design I Hardware organization and realization, hard-wired and microprogrammed control units, interrupt and I/O systems. Hardware design language introduced and used for computer design. *Prerequisites:* 131; either 134 or Computer Science 101.

232 Digital Computer Design II Memory designs, error control, high-speed addition, multiplication, and division, floating-point arithmetic, cpu enhancements, testing and design for testability. *Prerequisite:* 231.

233 Microprocessor Systems & Appl Basic principles of mini/microcomputers; A/D; D/A; channels, magnetic devices, display devices, mechanical devices; interface designs of analog systems to mini/microcomputers; principles of microprogramming; bit-slice-based microcomputers. *Prerequisites:* Departmental permission, Computer Science 101 desirable.

241 Electromagnetic Theory I Maxwell-Lorentz theory emphasizing uniqueness and conservation laws. Potential theory with applications to boundary value problems, Green's unction techniques, multipole expansions, and numerical methods. *Prerequisites:* 141; Math. 272 recommended.

242 Electromagnetic Theory II Macroscopic Maxwell theory, boundary conditions and dispersion relations for spatio-temporal fields. Electromagnetic wave propagation, reflection and transmission, guided waves, radiation, scattering and diffraction phenomena. *Prerequisite:* 241 or instructor's permission.

245 Lasers&Electro-Optical Devices A theoretical description of light-matter interactions in photon emitting resonant cavities. A practical understanding of laser design and operation. *Prerequisite:* 142.

246 Engineering Optics Applications of optics to the solution of engineering problems. Optical signal processing, fiber optic sensors, integrated optics. *Prerequisite:* 245 or instructor's permission.

247 Physical Optics I Fundamental properties of the optical field. Molecular optics and the Ewald-Oseen extinction theorem. Foundations of geometrical optics. Diffraction and aberration theory. *Prerequisites:* 142, or Physics 214.

248 Physical Optics II Partially coherent light and the Van-Cittert Zernike theorem. Rigorous diffraction theory, the optics of metals and crystal optics. *Prerequisite:* 247.

250 Test Engineering Parametric, structural, functional, characterization and stress testing of components and subsystems. Test methods, strategies, planning, and economics. Test equipment hardware and software. *Prerequisites:* 121, 131.

251 Digital Syst Testing & Design Circuit failures, fault models, testing and test pattern generation, logic and fault simulation, design for testability, scan design, test interfaces, design for built-in self-test. *Prerequisite:* 131.

261 Solid State Mat & Devices I Energy band theory, effective mass, band structure and electronic properties of semiconductors. Transport of electrons and holes in bulk materials and across interfaces. Homojunctions, heterojunctions, and Schottky barriers. *Prerequisite:* 163.

262 Solid State Mats & Devices II Multijunction and interface devices. Heterostructure and optical devices. Dielectric and optical properties solids. High-frequency and high-speed devices. *Prerequisite:* 261.

266 Science & Tech Integrated Cir Science and technology of integrated circuit fabrication. Interaction of processing with material properties, electrical performance, economy, and manufacturability. *Prerequisites:* 163 or 261, concurrent registration in 164 or 262.

270 Stochastic Processes Probability theory, random variables, and stochastic processes. Response of linear systems to random inputs. Applications in electrical engineering. Cross-listed with STAT 270. *Prerequisites:* EE 171 and STAT 151.

271 Detection and Estimation Foundations of linear and nonlinear least squares estimation, smoothing and prediction, computational aspects, Kalman filtering, nonlinear filtering, parameter identification, and adaptive filtering. Cross-listed with STAT 271. *Prerequisite:* EE 270.

272 Information Theory Introduction to probability concepts of information theory; entropy of probability models; theoretical derivations of channel capacity; coding methods and theorems, sampling theorems. *Prerequisite:* STAT 143/151/153.

273 Digital Communications Digital modulation/demodulation methods and BER performance; source entropy and channel capacity; optimal detection; convolutional codes and decoding algorithms. Pre/corequisites: EE 174, and EE 270 or STAT 143 or STAT 151.

274 Intro Wavelets & Filter Banks Continuous and discrete-time signal processing. Continuous wavelet transform. Series expansion of continuous and discrete-time signals. Perfect reconstruction, orthogonal and biorthogonal filter banks. Wavelets from filters. *Prerequisites:* 171, or instructor's permission. Cross-listing: Math 278.

275 Digital Signal Processing Sampling and reconstruction of signals. DFT, FFT and the z-transform. FIR and IIR filter design. Speech coding. Accompanyting lab: 289. *Pre/Co-requisites:* 171, permission.

276 Image Processing & Coding Image enhancement techniques by point and spatial operations. Data compression techniques to include scalar quantization, entropy coding, transform and sub-band coding. Labs on PC hardware; PC and Unix-based software. *Prerequisites:* 275;270 recommended.

277 Image Anyl&Pattern Recognition Image, shape, and texture analysis. Statistical pattern recognition methods. Pattern recognition and computer vision techniques for machine parts recognition and automatic visual inspection. *Prerequisite:* 276.

278 Wireless Communication Systems Modern wireless systems, including cellular design, propogation model-

ing, multiple access and equalization techniques. *Pre/Co-requisites:* Pre: EE 174 and (EE 270 or STAT 143 or STAT 151 or STAT 153)

281 Materials Science Seminar Presentation and discussion of advanced electrical engineering problems and current developments. *Prerequisite:* Senior or graduate engineering enrollment.

282, 283, 284 Seminar

289 Digital Signal Processing Lab Design and microprocessor implementation of real-time digital signal processing systems. PC-based evaluation module and development tools. Experiments include sampling, digital filtering, and the FFT. *Pre/Co-requisites:* 171.

295 Special Topics Special topics in developing areas of electrical engineering. *Prerequisite:* Senior standing or permission.

ENGINEERING MANAGEMENT (EMGT)

175 The Management of Technology (Same as Business Administration 175.) Role of technology in industry, the nature of technological change, strategies, management, research and development, forecasting, product service/project selection, development, management, transition to market, and evaluation. *Prerequisite:* Senior standing in engineering or business administration.

176 Plant Planning and Design Analysis of facilities and services requirements, material handling, office and clean room layout, mathematical and computer techniques, safety and plant conservation. *Prerequisites:* Junior standing in engineering or business administration, or instructor's permission.

185 Senior Project Individual management engineering study designed to the particular interest of the student, utilizing and synthesizing the student's engineering management education experience. *Prerequisite:* Senior standing in EMBA.

195 Special Topics Specialized or experimental course offered as resources permit.

ENGINEERING (ENGR)

001 Introduction To Engineering An introduction to engineering and what engineers do. Design projects, guest lecturers and visits to engineering enterprises. S/U grading.

002 Graphical Communication Principles of computer-aided drafting/design; production of engineering drawings including: orthographic, auxiliary, section, pictorials and dimensioning, graphics and charts; applications in specific engineering disciplines.

010 Diversity Issues Math/Sci/Eng Diversity in CEMS: under-representation, environmental justice, gender/race participation, ethical considerations, urban planning, equal opportunity, Title IX. Landscape of race/gender in STEM.

095, 195, 295 Special Topics

ENGLISH (ENGS)

001 Written Expression A course in writing with some selected readings as examples of style and writing strategies.

004 Engl for International Stdnts Review of English grammar, practice in expository writing, vocabulary building, and improvement of speaking and listening skills. *Prerequisite:* Instructor's permission.

005, 006 First Year Seminar Students to write in a variety of forms, styles, and genres in response to selected texts of literary or cultural significance. Themes, texts, and writing assignments to vary by section. *Prerequisites:* First-year standing in College of Arts and Sciences.

011 Types of Literature Introduction to fiction, poetry, and drama - past and present, British and American.

012 Introduction to Drama Study of the play as a work of literature and as a dramatic experience. Continental, British, and American drama from all ages.

013 Introduction to Fiction Exploration of a variety of fictional forms, including the short story, the novella, and the novel.

014 Introduction to Poetry Examination of the forms of poetry, past and present, British and American. Provides a wide variety of perspectives on the poem.

021 British Literature Survey of major figures in British literature such as Chaucer, Milton, Swift, Wordsworth, and Woolf.

022 British Literature Survey of major figures in British literature such as Chaucer, Milton, Swift, Wordsworth, and Woolf.

023, 024 American Literature Survey of major American writers from the beginning of the 19th century to the present, such as Hawthorne, Melville, Dickinson, Twain, Hemingway, and Faulkner.

025, 026 World Literature Survey in comparative literature dealing with the great writers of the world, to include Virgil, Dante, Goethe, and similar major figures. Students may not take for credit both English 25 and 27; or both English 26 and 28.

027 Lit of Western Trad:Int Humn Study of primary authors in the Western cultural tradition from Homer to the modern period with particular reference to history, religion, and philosophy. Students may not take for credit both English 25 and 27; or both English 26 and 28. *Prerequisites:* Concurrent enrollment in Religion 27, 28. *Prerequisites:* Concurrent enrollment in Religion 27,

028 Lit of Western Trad:Int Humn Study of primary authors in the Western cultural tradition from Homer to the modern period with particular reference to history, religion, and philosophy. Students may not take for credit both English 25 and 27; or both English 26 and 28. *Prerequisites:* Concurrent enrollment in Religion 27, 28; History 13, 14; Integrated Humanities Program.

040 Science Fiction & Fantasy Lit Representative modern works of fantasy and science fiction, including works by Asimov, Tolkien, and Clarke. I, II.

041 Crime Story A study of the use of "crime situations" as the central plot device in various types of narrative: novels, short stories, films, and television series.

042 Women in Literature Survey of women's literary tradition in English. Focuses on the ways women have written, read, written about, and been represented in 19th and 20th century literature.

050 Expository Writing Writing and analysis of expository (nonfiction) essays. *Prerequisite:* Sophomore standing.

053 Intro to Creative Writing Introductory course on techniques of writing poetry, short prose fiction, and creative nonfiction. Classes organized around discussion of student work; weekly writing assignments. *Prerequisite:* Sophomore standing.

057 Race&Ethnicity Lit Stds:Intro Introductory courses addressing the representation and construction of "race" in literature and/or the contributions of ethnically diverse writers to the American culture. Focus and readings vary by instructor. May be repeated for credit.

061 Intro to African Literature Readings in African literature, concentrating on major human and political themes and literary techniques.

065 Survey of Folklore Basic concepts of folklore; development of the discipline; defining the major genres; role of folklore in modern society.

085 Text&Context:1st Yr Prosp Mjrs Introduction to the critical work of close reading and close writing. Readings vary by section. Recommended for first-year students planning to major in English.

086 Critical Approaches to Lit Several theoretical approaches to literary study applied to specific texts. No prerequisite, but recommended only for students with sophomore standing or first-year students with Advanced Place-

ment. Required of all English majors.

095, 096 Introductory Special Topics See Schedule of Courses for specific titles.

101 Structure of English Language Descriptive study of modern American English. *Pre/Co-requisites:* 3 hrs in English numbered 5-96; soph standing. Cross-listings: CMSI 164.

102 Hist of English Language Principles of historic linguistics and their application to English. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

103 American English Dialects Class will examine dialects of American English and the methodology of dialectology with focus on Vermont speech and the social meaning of dialect variation. *Pre/Co-requisites:* 3 hrs English numbered 5-96; soph standing. Cross-listings: CMSI 162.

104 Tutoring Writing This course, for students who will be tutoring at the Writing Center, explores ways of responding to writers one-on-one. Permission required. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

105 Exploring Writing Centers A continuation of English 104, this course explores theoretical frameworks for writing centers and how they can shape ways tutors respond to writers. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

107 Topics in Comp & Rhetoric Topics vary by semester and by professor. Representative topics: U.S. Literacy Politics; Feminist Rhetorics. May repeat for credit with different content. Pre/co-requisites : 3 hours in English courses numbered 5-96 and sophomore standing.

109 Topics in Critical Theory Topics vary by semester and by professor. Representative topics: Psychoanalytic Criticism; Narrative Theory. May repeat for credit with different content. Pre/co-requisites : 3 hours in English courses numbered 5-96 and sophomore standing.

110 Gndr & Sex in Lit Stdies Courses address writing by women and LGBT authors and/or literary representations of gender and society. May be repeated for credit. *Pre/Co-requisites:* 3 hrs English #ed 5-96; soph standing. Cross-listings: WGST 110.

111 Race & Ethnicity in Lit Stdies Topics address "race" and/or the contributions of ethnically diverse writers to American culture. Focus and readings vary. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

112 Topics in Cultural Studies Topics focus on theoretical problems and practices of the interdisciplinary study of culture. Representative topic: Comparative identities. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

113 Topics in Genre Topics focus on the theoretical problems of various kinds of writing. Representative topics: Narrative; Gothic; Sentimentality. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

114 Topics in Writing Topics vary by semester and professor. Representative topics: Writing Literary Critcism; Reading and Writing Autobiography; Literary Journalism. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

117 Advanced Writing Non-Fiction In this workshop for experienced writers, students pursue projects of their own design, sometimes in accordance with a particular course theme such as "nature writing". *Pre/Co-requisites:* ENGS 1,50, 53 or instructor's permission.

118 Advanced Writing: Fiction This upper-level course for fiction writers of proven ability employs a seminar/workshop format, with most classroom time devoted to manuscript discussion. Permission required. *Pre/Co-requisites:* Sophomore standing and ENGS 53

119 Advanced Writing: Poetry This upper-level course for poets of proven ability employs a seminar/workshop format, with most classroom time devoted to manuscript discussion. Permission required. *Pre/Co-requisites:* Sophomore standing and ENGS 53.

120 Writer's Workshop This workshop for serious writers of all levels of ability emphasizes autobiographical aspects of the writing of fiction, poetry, and personal essays. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

131 Topics in Bible & Lit Examines literary, historical approaches to Bible and its influences. Topics include: Bible as Literature; Bible and Literary Imagination. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

133 Chaucer Study of the principle works of Chaucer, emphasizing Chaucer's literary scope, talents, and position in medieval literature. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

134 Topics in Medieval Literature Topics examining Medieval literature in various intellectual , historical, aesthetic contexts. Topics: Medieval Drama; Daughters of Mary/Daughters of Eve. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

135 Shakespeare Survey of Shakespeare's plays covering a range of genres (comedy, history, tragedy, romance, problem plays) drawn from the entire arc of Shakespeare's career. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

136 Topics in Shakespeare Examines Shakespeare's works in intellectual, historical, aesthetic contexts. Topics: Shakespeare and Philosophy; Engendering Shakespeare; Shakespeare and Renaissance Drama. May be repeated for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

137 Topics in Ren Lit & Culture Examines poetry, drama, and/or prose of English Renaissance in context of various movements of the Tudor-Stuart period. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

138 Milton Milton's major works in various intellectual, historical, and aesthetic contexts, with special attention to "Paradise Lost." *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

140 Survey Brit Lit to 1700 Works by major authors (including Chaucer, Shakespeare, and Milton) from the Anglo-Saxon period to early Enlightenment. Recommended for students considering graduate-level work in English. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

141 Restoration & 18thC Literature Significant writers and dramatists from Behn and Dryden to Sheridan and Johnson. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

142 18th Century British Novel Fiction from its origin through the 18th century. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

143 Topics:18C,19C Brit Lit & Cul Topics examining issues in 18th- and 19th-century British literature and culture. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

144 Topics in Romanticism Late 18th- and early 19th-century English literature, for example, works by Wordsworth, the Shelleys, Keats. Occasional special topics. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

145 Topics in Victorian Literature Primarily poetry, drama, non-fiction prose from 1832 to 1900, for example, Tennyson, the Brownings, the Rossettis, Wilde. Occasional special topics. May repeat with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

146 19th Century British Novel British fiction of the

19th century. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

150 Topics: Early American Studies Topics in literature and cultures of Americas from European conquest to 1800. Topics: Imagining America; Dissent in America. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

151 19th Century American Poetry American verse of various genres and modes by such authors as Whitman, Poe, Dickinson, Longfellow, and Sigourney. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

152 19th Century American Fiction Short stories, novellas, and novels by such writers as Cooper, Sedgwick, Poe, Hawthorne, Wilson, Melville, Stowe, James, Harper, Chesnutt, Chopin, and Jewett. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

153 19th Century American Prose American nonfictional genres including essays, histories, slave narratives, speeches, and sermons. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

156 Topics:19C American Studies Interdisciplinary topics examining issues in 19th-century American culture. Representative topics include: Dissent in America, American Literary Cultures. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

158 Topics:19C Women's Writing Various genres by 19th-century women. Topics: The Petticoat Empire; Women's Regionalist Fiction; 19th-century British and American Women's Writing. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing. Cross-listings: WGST 122.

159 Afr Am Lit to Harlem Ren A survey of African American writings from the Colonial period to WW1. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

160 Afr Am Lit & Cul Before 1900 Topics in literature and culture of African Americans before 1900. Topics: Slavery and American Literature; Slavery's Shadows. May repeat for credit with different content.*Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

161 20th-Century British Novel British novelists since 1900, including Forster, Conrad, Lawrence, Woolf, and other more recent writers. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

162 20th-Century Irish Literature Irish literature from 1890 to the present, emphasizing Joyce and Yeats. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

163 Topics:20C American Studies Interdisciplinary topics examining issues in 20th-century American culture. Representative topics include: Poe's Children; The Literary Vampire; Jazz. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

164 Modern Poetry Poetry from beginning of modern period to end of WWII, emphasizing Yeats, Eliot, Stevens, Auden, Frost, Williams. May be repeated for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

165 Modern Drama 20-century drama by writers such as Ibsen, Shaw, Beckett, Brecht, Miller, Pinter, and Churchill. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

166 Modern American Novel The tradition of the American novel through the mid-twentieth century. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

167 Topics in Modernism Topics vary by semester and by professor. Representative topics: Joyce. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

168 Topics in Post-Modernism Interdisciplinary topics examining literature and cultures of the Post-Modern condition. Representative topics include: Magical Realism, Realism and Hyper-realism. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

169 Queer Topics in 20C Lit & Cul Examines representations of non-normative sexuality and gender through theory, film, literature, and/or cultural studies. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

171 Contemporary American Poetry American poetry since 1950 by writers such as Lowell, Bishop, Levine, Olds, Hayden, Harper. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

172 Contemporary American Novel The American novel from the mid-twentieth century. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

173 Contemporary Short Fiction Among considerations of this discussion-oriented class will be strengths and weaknesses of short stories and story collections published from 1990 to present. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

176 Afr Am Lit since Harlem Ren Survey of the various literary traditions of African Americans during the 20th century. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

177 Topics in 20C Afr Am Lit & Cul Interdisciplinary topics in African American literature and culture. Representative topics include: The Harlem Renaissance and Negritude; Publishing Blackness. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

178 Literature of Vermont An exploration of Vermont writing from the narratives of the Allen brothers to poetry and fiction of today. Occasional special topics. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing. (See Vermont Studies 160)

179 Topics in African Literature Examines trends in contemporary African literature and relationship to other traditions. Topics: African Drama; African Fiction; African Poetry. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

180 Topics in Canadian Literature Topics vary by semester and by professor. Representative topics: The Development of a National Literature. May repeat for credit with different content. Pre/co-requisites : 3 hous in English courses numbered 5-96 and sophomore standing.

181 Topics in Caribbean Literature Topics vary by semester. Topics: Introduction to Anglophone Caribbean Literature; Contemporary Caribbean Women Writers; History of Caribbean Novel. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

182 Colonial/Post-Col World Lit Topics vary by semester. Representative topics: Contemporary Writing from the Non-Western World; Literature and Imperialism. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

188 Topics in 20C Comparative Lit Compares literary works from different countries, cultures, languages. Topics: 20th-Century Poetry of Witness; Magical Realism in Post-Colonial Literature. May repeat for credit with different content. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

189 Topics in 20C Women's Writing Works in various genres by 20-century women. Representative topics include: African Women's Writing; Gender and Modernism. May repeat for credit with different content. *Pre/Co-requisites:*

3 hours in English courses numbered 5-96 and sophomore standing.

190 Buckham Honors Seminar Each seminar includes participation of a distinguished visiting scholar or writer, such as Stephen Greenblatt, Barbara Johnson, Houston Baker, Sacven Bercovitch, William Kennedy, Stephen King. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

191, 192 Internship Pre-*Co-requisites:* Departmental permission, junior or senior standing.

195, 196 Intermediate Special Topics See schedule of courses for specific titles. *Pre/Co-requisites:* 3 hours in English courses numbered 5-96 and sophomore standing.

197, 198 Readings and Research Departmental permission required. Not to exceed three hours per semester. See schedule of courses for specific titles. *Pre/Co-requisites:* Departmental permission.

201 Sem Engl Lang or Critical Thry Recent topics: "Origins and Development of the English Language;" "Rediscipling the History of Literature and *Prerequisites:* 86, 6 hours at the intermediate level, and instructor permission

202 Sem Engl Lang or Critical Thry Recent topics: "Origins and Development of the English Language;" "Rediscipling the History of Literature and the Literature of History;" "Women's Texts." *Prerequisites:* 86, 6 hours at the intermediate level, and instructor permission.

211, 212 Sem in Composition & Rhetoric Recent topics: "Writing the New Yorker;" "Writing Vermont Life;" "Editing and Publishing." *Prerequisites:* 86, 6 hours at the intermediate level, and instructor permission.

221, 222 Seminar in Literature to 1800 Recent topics: "Women in 17th Century English Poetry;" "Dante and the Experience of Reading;" "Orality and Textuality in Middle English Literature." *Prerequisites:* 86, 6 hours at the intermediate level, and instructor permission.

241, 242 Seminar in 19th Century Lit Recent topics: "Dickens"; "Reader, I Married Him: The Brontes;" "Love, Marriage, and Literary Criticism: Jane Austen;" "Reading Serially: The Victorian Novel;" "Invisible Man and 19th Century American Literature," "The Gothic." *Prerequisites:* 86, 6 hours at the intermediate level, and instructor permission.

251, 252 Seminar in 20th Century Lit Recent topics: "The Beat Generation;" "Literature and Society in Modern Ireland;" "Dostoevsky's Influence on 20th Century American Literature." *Prerequisites:* 86, 6 hours at the intermediate level, and instructor permission.

281, 282 Sem Lit Themes,Genres,Folklore Recent topics: "Spiritual Journeys;" "Murder, He Said: Detective Fiction;" "Chekhov to Cheever: The Short Story." *Prerequisites:* 86, 6 hours at the intermediate level, and instructor permission.

290 Sem Prospective Tchrs of Engl Approaches to teaching composition, literature, and the English language in secondary school. This course does not logical, artistic, economic, and sociological history of the cinema from its inception through the 1920s. *Prerequisites:* 86, 6 hours at the intermediate level, and instructor permission.

295, 296 Advanced Special Topics *Prerequisites:* 86, 6 hours at the intermediate level, and instructor permission.

297, 298 Readings and Research Departmental permission required. Not to exceed three hours per semester. UG only.

ENVIRONMENTAL SCIENCES (ENSC)

001 Intro Environmental Sciences Emphasizes the impacts of human activity on the environment. Attention to resources at risk and pollutant fate and effects on ecosystems.

101 Pollutant Mvmt/Air,Land&Water Physical, chemical, and biological aspects of pollutant behavior from source to ultimate fate. Laboratory methodologies for measuring pollutants and predicting their transport, behavior, and fate. *Prerequisites:* 1; Biology 1, 2; Chemistry 31, 32; Math. 19, 20; co-requisite Chemistry 42.

130 Global Environmental Assessmnt Assessment of human impacts on the global environment. Hands-on application of satellite remote sensing and geographic information systems to address key environmental issues. *Prerequisites:* Biology 1 or Botany 4; Chemistry 23 (or equivalent); Math. 19.

185 Special Topics See Schedule of Courses for specific titles. Variable credit.

195, 196 Internship Professionally-oriented field experience under joint supervision of faculty and business or community representative. *Prerequisites:* Proposal and permission of ENSC Director; junior standing; good academic standing. Maximum of six hours; three can be applied to elected concentration with Director's permission.

201 Recovery&Restor Altered Ecosys Role of stress and disturbance and the natural process of recovery in aquatic and terrestrial ecosystems. Human efforts to modify, restore, and remediate altered ecosystems. *Prerequisites:* Natural Resources 103 or an intermediate-level ecology course; or instructor's permission. Environmental Sciences 101 strongly recommended.

202 Ecological Risk Assessment Approaches used to identify, measure, and manage ecological risk. Problem formulation, characterization, uncertainty analysis, and risk management. Case studies. *Prerequisites:* 201; Natural Resources 140 or Statistics 141; senior standing or instructor's permission.

222 Pollution Ecology Impacts of pollutants on the structure and function of ecosystems. Examination of how air, land, and water influence ecological fate and effects of pollutants.*Prerequisites:* Biology 1; Chemistry 23, Natural Resources 103 or equivalent ecology course. (Not offered for graduate credit.)

285 Adv Special Topics ENSC See Schedule of Courses for specific titles. *Prerequisites:* Senior standing or instructor's permission. Variable credit. (Not offered for graduate credit.)

299 Environmental Sciences Honors Honors project dealing with environmental sciences. *Prerequisites:* By application only; see program chair.

ENVIRONMENTAL STUDIES (ENVS)

001 Intro to Environmental Studies Survey of environmental studies examining ecological, socioeconomic, aesthetic, and technological influences determining quality of life on earth. *Prerequisite:* First-year or sophomore standing, or instructor's permission.

002 Internat'l Environmental Stds A multidisciplinary analysis of the interaction of global and local variables in understanding and solving pervasive environmental problems. *Prerequisite:* First-year or sophomore standing.

007 Environmental Awareness Selected current environmental issues from evolving political, religious, scientific, and social perspectives. For non-majors. Cannot receive credit for both 1 and 7.

095, 096 Special Topics Introductory courses of current areas of interest which vary each semester. Topics have included environmental health, energy, regional planning, international studies, literature, ethics, and natural areas management.

100 Environmental Theory Comparative analysis of emerging concepts of human/environment relationships; the history, philosophy, and theoretical framework of environmental studies. *Prerequisites:* 1,2.

151 Intermed Environmental Studies Individual investigation of interdisciplinary areas of environmental studies with emphasis on academic and career choices and preparation for senior thesis/project.*Prerequisites:* Major in

Environmental Studies; 1, 2; permission.

152 Environment Information Skills This course focuses on the complexities of conducting environmental research in a networked information age by teaching information concepts, skills, and broad ranging resources. *Prerequisites:* ENVS 151, or concurrently enrolled in ENVS 151.

156 Permaculture (Cross-listed with Plant and Soil Science 156.) Design of agriculturally productive environments that have the diversity, stability, and resilience of the natural biosphere to harmoniously integrate landscape and people. *Prerequisites:* Three hours basic biological or ecological science, or permission.

166 Environmental Hst of N America Examination of human-environmental interaction on the North American continent over the past five hundred years. *Pre/Co-requisites:* 3 hours history. Cross-listing: HST 166

173 Landscape Natural History This field-based course examines patterns and processes on local landscapes from an interdisciplinary perspective, with an emphasis on geology, soil science, plant ecology, and ecosystem geography. *Prerequisites:* ENVS 1, sophomore standing.

174 Nat Areas Conservation&Steward Examines land protection and stewardship efforts of conservation organizations and public agencies. Builds on principles of conservation biology to understand issues in conserving and managing natural areas. *Prerequisites:* ENVS 1 or NR 1 or permission.

177 Intro to Landscape Restoration Introduction to the history, philosophical foundations, and approaches to restoration of natural landscapes damaged by human activity and neglect. Case studies of selected local sites. *Prerequisites:* 1, Natural Resources 1, or permission.

178 Environmental Ethics Current approaches and problems in environmental ethics drawing on philosophy and case studies in animal rights, land ethics, deep ecology, wilderness protection, and human rights. *Prerequisites:* One environmental course, junior standing.

179 Ecofeminism (Cross-listed with Women's Studies 179.) Investigation of the parallel dominations of women and nature, through analysis and reflection on ecofeminist theory, activism, and spirituality. *Prerequisites:* 1, 2 or Women's Studies 73, sophomore standing.

180 Radical Environmentalism Survey of radical environmental philosophy and activism from a liberation ethics perspective. Includes deep ecology, ecofeminism, environmental justice, and ecological resistance movements around the world. *Prerequisites:* 1, 2, sophomore standing.

182 Religion and Ecology Exploration of the greening of major world religious traditions in both practice and philosophy. Includes institutional, activist, and lifestyle initiatives in ecological spirituality. *Prerequisites:* ENVS 1 or 2; or NR 2, REL 20 or 21 preferred, sophomore standing.

190 Environmental Skills Workshops to develop applied skills useful for environmental work and/or research. Topics vary by semester. *Prerequisites:* 1, 2.

191 Environmental Practicum Individual readings and research, internship, or field-based learning experience under direction of a faculty member or environmental practitioner. Credit arranged. *Prerequisite:* Permission of course coordinator.

195, 196 Special Topics Intermediate courses of current areas of interest which vary each semester. Topics have included environmental health, energy, regional planning, international studies, literature, ethics, and natural area management. *Prerequisites:* One environmental course, sophomore standing.

197 Student Designed Course Course Student-taught courses beyond the scope of existing formal courses in environmental studies. Developed according to Program guidelines, with sponsorship by interested faculty. *Prerequisites:* 1, 2, permission.

201 Research Methods Planning, design, and methods for the required senior thesis or project. Includes literature review and proposal writing. *Prerequisites:* 151, junior standing.(Not offered for graduate credit.)

202 Senior Project and Thesis Senior level project or thesis under faculty direction. *Prerequisites:* 201, permission of Environmental Program. Credits arranged. (Not offered for graduate credit.)

203 Honors Thesis UG only.

204 Seminar Environmental Studies Review and discussion of current environmental research and literature. *Prerequisites:* 1, 2, junior or senior standing. (Not offered for graduate credit.)

284 Teaching Assistantship Students gain practical teaching experience through assisting with instruction, evaluation, and reflection. Tasks may include: leading discussion sessions, grading, and developing course materials. *Prerequisites:* Senior standing or permission of instructor, concurrent teaching assistant in ENVS course. Variable credit. May be repeated. UG only.

289 Environmental Economics Application of economic theory and methods to environmental problems and policies. Includes cost-benefit analysis and economic incentives as tools for environmental problem solving. *Prerequisites:* 1, three hours intermediate economics. For students in Arts and Sciences: Economics 11-12, intermediate course in ENVS. UG only.

290 Environmental Policy public policy dimensions of natural resource management and environmental protection; U.S. historical context; policy analyses of contemporary issues; administration of environmental resource institutions. *Prerequisites:* Six hours of intermediate or advanced courses in ENVS or related areas. UG only.

291 Advanced Environmental Pract Individual readings and research, internship, or field-based learning experience at the advanced level, under direction of faculty member or environmental practitioner. *Prerequisite:* 1, 2; senior or graduate standing.

293 Environmental Law Principles of environmental law, including legal research methods, threshold issues, case law, trial procedure, and international comparisons in aspects of air, land, and water law. *Prerequisite:* Junior standing.

294 Environmental Education Philosophy, concepts, and strategies of environmental education, emphasizing integration of environmental concerns into formal and nonformal educational programs for youth and adults. *Prerequisite:* Six hours of intermediate or advanced courses in environmental studies or related areas.

295, 296 Advanced Special Topics Advanced courses of current areas of interest which may vary each semester. Topics have included environmental health, energy, regional planning, international studies, literature, ethics, and natural area management. *Prerequisites:* One environmental course at 100 level, junior standing. UG only.

EXERCISE AND MOVEMENT SCIENCE(EXMS)

166 Kinesiology I Designed for the teacher/coach to analyze factors of peak physical performance. Muscle actions, mechanical principles, related factors enhancing movement are emphasized. Crosslisted with EDPE 166.

168 Measurement&Data Analysis Introductory statistics and research design class. Covers basic statistics—t-tests, measurement scales, Anova,correlations, etc. Application in physical education and exercise science are specifically discussed. Crosslisted with EDPE 168.

169 Kinesiology & Biomechanics II Application of advanced kinesiological and biomechanical concepts to the study of human movements such as locomotion, posture, and sport analysis. *Pre/Co-requisites:* EXMS 166.

197 Senior Research Crosslisted with EDPE 197

240 Motor Skill Learning & Control Nature of motor learning; factors affecting motor learning (motivation, emo-

tion, stress); concepts of transfer, retention; alternatives in teaching, coaching methodologies based upon applied principles in motor learning. *Prerequisites:* 166, ECHD 62 or 63, or equivalent. Crosslisted with EDPE 240.

241 Sem in Phys Educ & Athletics Examination and analysis of contemporary issues and trends in physical education and athletics not especially appropriate within the boundaries of an existing course. Crosslisted with EDPE 241.

242 Exercise and Sport Psychology Study interaction between psychological variable, human motor performance. Concepts, methods relating to achieving peak athletic performance; understanding psychology of injury; fostering adoption, adherence to exercise. *Pre/Co-requisites:* PSYC 001 and junior status.

260 Adapted Physical Activity Recognition, prevention, correction of functional, structural deviations from normal body mechanics. Organization of programs adapted to needs of handicapped individuals in both special class and mainstreamed settings. *Prerequisite:* 155, 104, 105 or equivalent teaching experience. Crosslisted with EDPE 260.

261 Physiol Chgs&Perform w/ Aging The purpose of this course is to study the age-related changes in physiological systems and evaluate how they affect physical and exercise performance. Pre/co-requisites ANPS 19,20; EXMS 269.

262 Human Perf & Ergongenic Aids The purpose of this course is to evaluate the role and effectiveness of performance enhancing substances in sports: including supplements, diets, banned substances, prescription and social drugs, and others. *Pre/Co-requisites:* ANPS 19,20; EXMS 269; NFS 163.

263 Fitness Pgms in Spec Populatns Principles of exercise testing and prescription in select special populations. Theory and application of physical fitness programming, emphasizing individuals with chronic and non-cardiac conditions. *Pre/Co-requisites:* EXMS 167, 260.

264 Neuro Mech & Motor Control Sensorimotor, musculomechanical systems for coordinated, purposeful movements, emphasizing neurophysiological mechanisms to maximize performance and rehabilitation. Injury, training, practice, learning and other cognitive processes are examined. *Pre/Co-requisites:* ANPS 19,20; EXMS 240.

265 Exercise & Sport Science Discussion and integration of topics related to exercise physiology, kinesiology, motor learning, and sociocultural aspects of sport. Crosslisted with EDPE 265.

266 Ex Prescrip for Sprt,Hlth& Fit Course covers basic concepts of exercise prescription and exercise program design. Particular attention is paid to individualization of exercise program to meet participant needs. Crosslisted with EDPE 266.

267 Sci Strength Training&Condtng Course focuses on physiology of muscle adaptation following resistance or aerobic training. Particular attention is paid to specificity of metabolic adaptation for individual sports. *Prerequisite:* Twelve hours in exercise and movement science and related area. Cross-lsited with EDPE 267.

269 Exercise Physiology Investigates physiological responses during exercise. Laboratory, classroom experiences enable understanding of bodily responses during exercise. Content includes energy metabolism, muscular, cardiovascular, pulmonary responses, and temperature regulation. Crosslisted with EDPE 167.

271 Practicum I The purpsoe of this practicum is to provide the student with a hands-on experience in a workplace environment by providing opportunity for the student to put classroom learning into practice. *Pre/Co-requisites:* ANPS 19,20; EXMS 269.

272 Practicum II - Option B The purpose of this practicum is to provide the student with a hands-on experience in a workplace environment by providing opportunity for the student to put classroom learning into practice. *Pre/Co-requisites:* EXMS 271.

FORESTRY (FOR)

001 Forest Conservation Introduction to the ecology and management of American forests: forest distribution, ownership, and ecological factors, species interactions, multi-resource management goals, and silvicultural practices. Cannot be taken by junior- or senior-level RSENR students.

021 Dendrology Classification, silvical characteristics, and identification features of native and introduced trees and shrubs.

073 Small Woodland Management Concepts of forest ecology, resource inventory, cultural practices, and multiple use management for small woodlandareas.

081 Forestry Seminar Readings and discussions introducing current issues in forestry. *Prerequisite:* First or second year standing in Natural Resources.

120 Forest Ecology Forest environment and its effects on the development and distribution of forest communities. Introduction to population dynamics, systems and analysis, diversity, stability, ecosystem disturbances, and succession. *Prerequisite:* Natural Resources 1, or another introductory biological science course. Not offered 2001-02.

121 Forest Ecology Laboratory Application of ecological principles in the analysis of forest communities. *Prerequisite:* Natural Resources 25, a course in tree identification, and previous or concurrent enrollment in Natural Resources 103.

122 Forest Ecosystem Analysis An integrated field course to investigate, through quantification and interpretation, the flora, fauna, and abiotic components (soils, physiography, water, and microclimate) of a selected forest ecosystem. *Prerequisites:* FOR 121, NR 140.

126 Forest Ecology Field Trip Assessment of southeastern forest ecosystems including Smoky Mountain communities, and upland and bottomland forests of the Georgia Piedmont and South Carolina Coastal Plain. Field trip at end of spring semester. *Prerequisites:* A course in plant identification, a course in ecology, instructor's permission.

132 Forest Fire Behavior & Mgmt Forest fire ecology, behavior, effects, weather relationships, danger rating, prevention, detection, management, prescribed fire, smoke management, wildland/urban interface, and multi-resource perspectives. *Prerequisite:* A course in plant ecology or concurrent enrollment. Knowledge of plant identification.
Alternate years.

133 Forest Entomology (Cross-listed with Plant and Soil Science 107.)

146 Remote Sensing of Natural Res (Cross-listed with Natural Resources 146, Geography 185.) Identification, interpretation, measurement, and mapping of natural resources from aerial photographs and satellite imagery. Labs include air photo interpretation and digital image analysis. *Prerequisites:* Junior standing. Alternate years.

152 Forest Resources Values History, methods, and current issues associated with the nonmarket and market values of forest-based resources, including aesthetics, wildlife, recreation, water, and timber. *Prerequisites:* Economics 12 or CDAE 61. (Same as Recreation Management 152).

158 Stewardship: Private Woodlands Basic financial, legal and operational aspects for long-term ownership and stewardship of woodlands; appraisals, taxation, land trusts, conservation easements, estate planning; Vermont focus. *Prerequisite:* Course in economics.

162 Properties & Uses of Wood Properties, uses, and identification of commercial woods of the U.S. Manufacture of major wood products. *Prerequisite:* A course in tree identification. Alternate years.

163 Timber Harvesting Private forest emphasis; impacts of alternative techniques on cultural and natural re-

sources; preharvest inventory, prescription, layout, contracts, bookkeeping; postharvest operations. Alternate years.

182 Advanced Forestry Seminar In-depth examination of contemporary issues in forestry. *Prerequisite:* Junior or senior standing in Forestry. Credit arranged.

185 Undergrad Special Topics Readings, investigations, and lectures in selected forest resource subjects. *Prerequisite:* Instructor's permission. Credit arranged.

191 Forestry Work Practicum Supervised work experience in forest resource area. *Prerequisite:* Instructor's permission. Credit arranged.

205 Mineral Nutrition of Plants (Cross-listed with Botany 205.)

222 Advanced Silviculture Scientific basis and contemporary status of silviculture practices. *Prerequisites:* 223, permission. Alternate years, 2000-01.

223 Multi-Resource Silviculture Theory and application of forest stand maintenance/manipulation for forest ecosystem sustainability. Topics: Silvics, regeneration, tree improvement, protection, stand structure/dynamics/tending, and multi-resource perspectives. *Prerequisites:* NR 25, 103, FOR 121 (FOR 122-Forestry majors). UG only.

225 Tree Structure & Function Basic anatomy and physiology of trees and other woody plants, emphasizing their unique structural and physiological adaptations to the environment. *Prerequisites:* Permission.

228 Ecosystem Ecology Examination of the structure and function of terrestrial ecosystems using a systems approach. Laboratory sessions involve modeling and data analysis. *Prerequisites:* Biology 1, 2, Chemistry 23, an intermediate ecology course, Natural Resources 140, Math. 19, Physics 11 or equivalent. Alternate years, 2002-03.

231 Integrated Forest Protection Integration of concepts of forest protection using a holistic ecological approach to forest pest management. Detection, population dynamics, evaluation, prediction, and pest management considerations. *Prerequisites:* 133, 234 or instructor's permission. Alternate years, 2001-02.

234 Forest Pathology An in-depth survey of diseases of forest and shade trees emphasizing identification, morphology, physiology, ecology, epidemiology, genetic relationships, integrated disease management, and multi-resource perspectives. *Prerequisites:* Biology 1 & 2, knowledge of plant identification and ecology. UG only.

272 Sustainable Mgmt Forest Ecosys Principles of long-term planning and plan implementation in support of sustainable forestry; Adaptive management; biodiversity and ecosystem health; major management planning project. *Prerequisites:* FOR 122, NR 205, concurrent or prior enrollment in 223; or graduate standing.

275 Forest Watershed Management Concepts of forest hydrology and forest watershed management; emphasis on natural processes and impacts of quantity, quality, and seasonal distribution of flow from watersheds. *Prerequisite:* Natural Resources 102, junior standing or permission. (Not offered for graduate credit.)

285 Advanced Special Topics Advanced special topics courses or seminars in forestry beyond the scope of existing formal courses. *Prerequisites:* Graduate or advanced undergraduate standing, instructor's permission. Credit as arranged.

291, 292 Senior Research Work on research problem under direction of a staff member. Findings submitted in written form as prescribed by department. *Prerequisites:* Senior standing, permission. (Not offered for graduate credit.)

299 Honors Honors project dealing with the biology and/or management of forest ecosystems. *Prerequisite:* By application only; see program chair. UG only.

FRENCH (FREN)

001 Elementary I Fundamentals of French composition, comprehension, pronunciation, speaking, reading, writing. Structure of the basic French sentence. No prior knowledge expected.

002 Elementary II Continuation of 1. *Prerequisite:* 1 or equivalent.

009 Basic French Grammar Review Thorough review of French grammar in preparation for intermediate level. Considerable emphasis on written exercises.

051 Intermed Rdg & Conversation I Designed to help students move from a basic knowledge of French to the ability to read, speak, and understand French better. Some grammar review and short compositions. *Prerequisite:* 2 or 9 or equivalent.

052 Intermed Rdg & Conversation II Continues building on skills developed in 51. Less stress on grammar review. Reading selections and compositions are longer and more sophisticated than in 51. *Prerequisite:* 51 or equivalent.

095, 096 Introductory Special Topics See Schedule of Courses for specific titles.

101 Writing Workshop Improvement of functional skills: writing, listening, and speaking. Development of techniques to explain, elaborate, support opinions, convince, and persuade in both writing and speaking. *Prerequisite:* French 52 or equivalent.

104 Contemporary France Study of selected aspects of France today. Improvement of language skills; emphasis on reading, writing, and analysis of a variety of materials (literature, journalism, images). Pre or Co-requisite: 101.

105 French Culture Study of the fundamentals of French culture from historical and structural perspectives, including a review of sociopolitical institutions. Pre- or Co-requisite: 101.

107 Focus on Oral Expression Guided practice of oral-aural skills through vocabulary and pronunciation exercises, readings, and oral presentations. Writing exercises reinforce oral work. *Prerequisite:* French 52 or equivalent.

111 French Lit in Context I A study of significant texts in the history of French literature from the Middle Ages through the 18th century, in their historical and cultural contexts.
Prerequisites: 101, senior French majors with permission only.

112 French Lit in Context II A study of significant texts in the history of French literature from the French Revolution to the present, in their historical and cultural contexts. *Prerequisites:* 101, senior French majors with permission only.

195, 196 Special Topics See Schedule of Courses for specific titles.

197, 198 Readings & Research Permission of chair required.

201 Adv Composition & Conversation Course activities (discussions, expos?s, written work, etc.) designed to lead to mastery of French oral and written expression. *Prerequisite:* 101. (Not offered for graduate credit.)

205 Topics in Adv Lang Study Varied topics devoted to a special area such as translation, creative writing, French for the professions (medicine, business, journalism, law), etc. Pre-requisites: 101. Not offered for graduate credit.

209 Advanced Grammar Comparative grammatical study centered on the specific problems encountered by Anglophones in written and spoken French. *Prerequisite:* 101. Not offered for graduate credit.

235 Medieval/Renaissance Studies Exploration of writing from Medieval/Renaissance France. Readings to include chivalric romances, heroic and comic epic, lyric poetry, tales by Marguerite de Navarre, essays by Montaigne. *Prerequisites:* 111 or 112.

237 Early French Women Writers Exploration of how women from the Middle Ages through the Revolution spoke of love, education, the place of women, the power of writing and more. *Prerequisites:* 111 or 112.

247 Power/Desire in Class Fr Drama How dramatists like Corneille, Moliere and Racine used history, legend and satire to explore questions of tyranny, freedom, passion,

generosity, hypocrisy, truthfulness and more. *Prerequisites:* 111 or 112.

256 EnlightenmentSocietyReimagined How did 18C writers use the representation of social hierarchy, gender relations, the exotic, etc., to (re-)define French culture on the eve of the Revolution? *Prerequisites:* 111 or 112.

265 Romanticism and Symbolism Exploration of the idealistic tradition in 19th century French poetry and novels. Authors may include Constant, Chateaubriand, Stael, Hugo, Flaubert, Baudelaire, Verlaine, Mallarme. *Prerequisites:* 111 or 112.

266 Rev&React in 19th C Narrative Study of the representations of major social issues of the period, such as power, class, money, and women. Representative authors: Balzac, Flaubert, Sand, Stendhal, Zola. *Prerequisites:* 111 or 112.

269 La Belle Epoque The aesthetic and moral dilemmas of the turn-of-the-century "decadent" period in French literature, focusing especially on the changing representation of the artist and intellectual. *Prerequisites:* 111 or 112.

270 Lyric Poetry:Harmony & Crisis A consideration of the French lyric tradition. Authors may include the troubadours, Ronsard, Dubellay, Hugo, Baudelaire, Mallarme, Rimbaud, Valery, Roubaud. *Prerequisites:* 111 or 112.

275 Morality&ItsDiscontents-20C Lt 20C French authors who challenge traditional notions of morality or advance new modes of philosophical thought and ethics. May include Colette, Gide, Malraux, Beauvoir, others. *Prerequisites:* 111 or 112.

276 Topics in Modern French Lit Selected topics dealing with poetry and/or narrative related either to an historical period or a literary movement. *Prerequisites:* 111 or 112.

279 Women's Autobiographies Study of several autobiographies written by contemporary French/Francophone women. Representative authors include Colette, de Beauvoir, Sarraute, Duras, Ernaux, Martin. *Prerequisite:* 111 or 112.

280 Francophone Crossings Study of works in French that demonstrate multiple cultural influences. Topics may include: exile writings, cultural/linguistic mixing, colonialism and independence movements, human rights, immigration. *Prerequisites:* 111 or 112.

285 Quebec Literature A study of contemporary (1960-1985) major works of fiction, poetry, and drama. Authors studied include Anne H?bert, Michel Tremblay, Jacques Godbout, Gaston Miron. *Prerequisites:* Either 111 or 112 or both.

289 African Lit: French Expression Study of West African poetry, theatre, novel, and civilization as an expression of the Black experience in the language of the French colonizer. *Prerequisites:* 111 or 112.

292 Topics in French Culture In-depth study of a major aspect of French culture. See Schedule of Courses for specific offering. *Prerequisites:* 104 or 105 or permission.

293 Quebec Culture Sociocultural study of the Francophone culture of Canada. *Prerequisite:* One 100-level French course.

294 Topics in French Cinema A topical approach to the study of French cinema and cinematographic aesthetics, from the medium's beginnings through contemporary films. *Pre/Co-requisites:* 111 or 112.

295, 296 Advanced Special Topics Advanced courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

297, 298 Advanced Readings & Research Permission of chair required.

FILM & TELEVISION STUDIES (FTS)

007 Dev Motion Pct I:Origin-1930 Introduction to basic film history, theory, and analytical skills. An hisotrical overview of international cinema from its origins until 1930.

008 Dev Motion Pct II:1930-1960 Introduction to basic film history, theory, and analytical skills. An historical overview of international cinema from the onset of sound to 1960.

009 History of Television Introduction to basic television history, theory and analysis. An historical overview of television from its invention to the present.

095, 096 Intro Spec Topics in Film/TV See schedule of courses for specific titles.

121 Studies in Film/TV Theory Intensive study of developments in film and/or television theory, such as realism, formalism, psychoanalysis, critical race theory, and feminism. May be repeated for credit. *Pre/Co-requisites:* FTS 7, 8, or 9.

122 Studies in Film/TV Genre An investigation into the theoretical and historical circumstances surrounding the production of film and/or television genres. May be repeated for credit. *Pre/Co-requisites:* FTS 7, 8, or 9.

123 Global Studies in Film/TV Investigations of nation and identity in film and/or television approached in their specific cultural, historical, and theoretical terms. May be repeated for credit. *Pre/Co-requisites:* FTS 7, 8, ot 9.

124 Cntmpry Topics in Film/TV Explorations into various issues, ideas, and movements within contemporary film and/or television. May be repeated for credit. *Pre/Co-requisites:* FTS 7, 8, or 9.

125 Studies in Non-Fiction Film/TV An investigation of various forms of non-fiction film and/or television, such as documentary film and television news. May be repeated for credit. *Pre/Co-requisites:* FTS 7, 8, or 9.

126 Intmd Topics:Film/TV History Intensive focus on various historical movements within film and/or television. May be repeated for credit. *Pre/Co-requisites:* FTS 7, 8, or 9.

195, 196 Intermediate Special Topics See Schedule of Courses for specific Titles. *Pre/Co-requisites:* FTS 7, 8, or 9.

197, 198 Readings & Research

271, 272 Seminar in Film/Television Advanced level investigations into the critical study of film and/or television. The topic will be the professor's choice. May be repeated for credit. *Pre/Co-requisites:* FTS 7, 8, or 9, and 121.

GEOGRAPHY (GEOG)

001 World Regional Geography Basic introduction to Geography by way of a regional approach to human and environmental topics.

002 World Natural Environments The patterns of the natural environment with particular attention to landforms, climate, soil, vegetation, and water resources.

043 Weather & Climate Introduction to the fundamentals of the weather, as well as midlatitude and tropical climates. Topics include cloud formation, hurricanes, tornadoes, winter weather, climate change.

051 Africa The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base.

052 Canada The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base.

055 Europe The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base.

056 Latin America The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base.

057 The United States The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base.

060 Geography/Race&Ethnicity in US Examination of the ways in which spatial and locational processes shape and are shaped by ethnic and racial identities, struggles, and relationships.

073 Geography of Global Economy Distribution of global economic activity and power. Processes of uneven development and globalization including industrialization, the "global assembly line," trade, investment, and migration.

081 Geotechniques Introduction to cartography, geographic information systems (GIS), and remote sensing. Map design and analysis using topographic/satellite data, air photo interpretation, digitizing, and Internet resources.

090 International Field Studies Field course abroad (e.g. South Africa or England). Intensive study of the geography of a country or region, with attention to related issues.

092 Vermont Field Studies (Same as Vermont Studies 92.) Field course on a geographical theme (e.g. physical or regional geography) in the Burlington area or surrounding region.

095, 096 Special Topics in Geography See Schedule of Courses for specific titles.

143 Climatology Analysis of regional and local climatic data with special reference to climatic controls; special laboratory projects. *Prerequisite:* 43 or instructor permission.

144 Geomorphology (See Geology 151.) *Prerequisite:* Geology 1 or 55.

145 Geography of Water Examination of the spatial dimensions of water distribution from local to global scales, and the social, political, and economic dimensions of its use. (same as NR 102).

146 Watershed Ecosystems:N America Examines the influence of climate, geomorphic processes, and biogeography on ecosystems at the scale of the watershed. Explores the role of social dynamics in the management and restoration of watersheds.

151 Southern Africa A regionally focused course. Topics will include: information economy, legacy of apartheid, impacts of HIV/AIDS, race, class, gender, land, governance and social justice. *Prerequisite:* 51.

154 Geography of Third World Dev Problems of poverty, insecurity, inequality and environmental degradation in the Third World. Economic change, migration, regional development, role of women. Focus on Africa and Asia.

155 Historical Geography of Europe (Same as History 120.) European geography within a framework of past times; the historical development and distribution of settlement, economic, and political patterns. *Prerequisite:* 55.

170 Historical Geography (Same as History 170.) Examination of the tools, techniques, and perspectives used in studying the historic development of places and landscapes. Vermont and other North American case studies. *Prerequisites:* 57 recommended or History 11 or 12 or instructor permission .

171 Cultural Geography Distribution of race, ethnicity, language, and religion at different geographical scales and how these factors contribute to world and regional events. *Prerequisites:* 1 or Anthropology 21 or Sociology 1.

173 Political Ecology Human-environment interactions under globalization. Social and economic causes of global and local environmental problems. Environmental movements and sustainable livelihoods in First and Third Worlds.

175 Urban Geography Analysis of the morphology, function and social structure of cities. Consideration of the nature, history and theories of urban growth and development. *Prerequisites:* 1 or 73 or instructor permission.

177 Political Geography (Same as Political Science 161.) Examines the relationships between nation states and political identity. Other political-spatial constructs are also examined, including the private and public dichotomy, cyberspace, and borders. *Prerequisites:* Recommended 1 or 73 or Political Science 51 or 71.

178 Gender, Space & Environment (Same as Women's Studies 170.) Examination of the ways in which human relationships to both the built and the natural environment are mediated by gender. *Prerequisites:* Six hours in geography or women's studies, or instructor's permission.

179 Cultural Ecology (Same as Anthropology 179.) Interrelationships of social groups and their natural environments and resource bases, with primary emphasis on nonindustrial cultures, examined from the perspectives of anthropology and geography. *Prerequisite:* 1 or Anthropology 21.

184 Geog Info:Cncpts & Applic Systematic approach to important geographical concepts (including distance, shape, scale dispersion) structured around the use of Geographical Information Systems (GIS) as an analytical tool. *Pre/Co-requisites:* GEOG 81 or NR 25 or equivalent.

185 Remote Sensing Examinations of the earth's surface from aerial photographs and satellite imagery. Emphasis is on image interpretation, classification, change detection, multivariate anlayses (e.g.principal components analysis). *Prerequisite:* GEOG 81 recommended. Cross-listed with FOR 146, NR 146.

190 International Field Studies Field course abroad (e.g.South Africa or England.) Intensive study of the geography of a country or region, with attention to related issues. *Prerequisite:* Three hours in geography.

191 Geography Internship Supervised internship in applied geography working with a local public agency or private firm. Individually arranged. *Prerequisites:* Junior or senior standing, departmental permission.

192 Vermont Field Studies (same as Vermont Studies 192.) Field course on a geographical theme (e.g. physical or regional geography) in the Burlington area or surrounding region. *Prerequisite:* Three hours in geography.

195, 196 Special Topics See Schedule of Courses for specific titles.

197, 198 Readings & Research

202 Research Methods A systematic overview of the art and science of geographical inquiry. Examination of key research and methodological approaches in the discipline. *Prerequisite:* Junior or senior standing; nine hours in geography.

203 Contemp Geog Thought Context A survey of paradigms and issues in contemporary geography. Attention paid to the social and historical contexts of geographic thought. *Prerequisites:* Nine hours in geography or permission of instructor.

204 Spatial Analysis Analysis of spatial pattern and interaction through quantitative models; introduction to measurement, sampling, and covariation in a spatial framework. *Prerequisite:* Senior or graduate standing with at least nine hours in geography or instructor permission.

245 Adv Top:Human Env Interactions Advanced offerings on various manifestations of social-environmental relationships. Possible topics include sustainable development, environmental justice, and urban ecology. *Prerequisites:* Senior or graduate standing with nine hours in Geography; or instructor permission.

246 Adv Top:Climate&Water Resource Advanced analysis of regional climatology, hydroclimatological hazards, or fluvial geomorphology. Special topics might include droughts, severe weather, floods and floodplain management, mountain and lowland rivers. *Prerequisites:* Senior or graduate standing with nine hours in Geography, or instructor permission.

272 Adv Top:Space, Power, Identity Advanced offerings on topics related to the spatial regulation and geographic construction of social identity, paying particular attention to race, gender and sexuality. *Prerequisites:* Senior or graduate standing with nine hours in geography, or instructor permission.

273 Adv Top:Political Econ&Ecology Advanced offerings in political ecology and political economy, particularly at global and regional scales. Possible topics include Third World economic restructuring, globalization, international environmental movements. *Prerequisites:* Senior or graduate standing with nine hours in geography, or instructor permission.

274 Adv Top:Critical Urban&Soc Geo Advanced offerings in urban and critical social geography. Possible topics include social justice and the city, human rights, geographies of social control. *Prerequisites:* Senior or graduate standing with nine hours in geography, or instructor permission.
281 Adv Topic:GIS & Remote Sensing Advanced offerings in GIS or remote sensing focusing on landscape interpretation for decision-making practices. Incorporation of applications from Vermont public and private sectors. *Prerequisites:* Senior or Graduate standing with 9 hours in Geography; or instructor's permission.
295, 296 Advanced Special Topics See schedule of courses for specific titles.
297, 298 Readings & Research

GEOLOGY (GEOL)

001 Earth System Science An introduction to the earth as a closed system, the cycling of materials and energy within it, and how it interacts with the hydrosphere and atmosphere.
003 Fire & Ice Introduction to volcanoes/plate tectonics ("fire") and glaciers/climate change ("ice") using lectures, slides, discussion, and field trips. Considers Vermont and world-wide geological examples.
005 Mt-Lake:Geol Lake Chmpln Bsn Scientific principles applied to the geology and geologic history of the Lake Champlain Basin.
007 Earth Hazards Understand geological and societal causes of death and destruction by earthquakes, landslides, floods, volcanoes, storms, and avalanches around the world.
008 The Dynamic Earth Exploration of Earth from a systems perspective, the exchange of mass and energy with the atmosphere, hydrosphere and lithosphere. How geologists use the scientific method. Credit not given for both GEOL 008 and either 005 or 001.
010 Geological Oceanography Characteristics and development of the oceans, their basins and shorelines, including plate tectonic history and basic physical, chemical, and biological processes. *Prerequisite:* 1 or introductory science course.
053 Planetary Geology Characterizes the differences and similarities between the Terrestrial and Jovian Planets, the dynamic processes that shape our home planet and compares the geologic processes active in our Solar System. *Prerequisites:* Introductory science course or ASTR 5.
055 Environmental Geology Introduction to geologic processes and materials pertinent to environmental problems: ground water movement, supply, and contamination, waste disposal, flooding, subsidence, and landslides. Local field trips. Designed for intended natural science majors.
062 Earth Env & Life Through Time This course presents an overview of how the Earth has changed over time and how this has influenced the history of life. *Prerequisites:* GEOL 1,3,4,5, or 55.
095, 096 Special Topics See Schedule of Courses for specific titles.
101 Field Geology Geological evolution of western Vermont as seen through actual field mapping in the Burlington area. Specifically designed for sophomores majoring or minoring in geology or related sciences. *Prerequisite:* 1, 55 or instructor permission.
110 Earth Materials Introduction to the major rocks and rock-forming minerals and their relationship to formation/depositional environments. *Pre/Co-requisites:* Introductory Geology course (1, 55 or 95).
112 Mineralogy&Optic Crystallgrphy
116 Glacial Geology Examines the Dynamics of glacier flow and landforms glaciers produce. Lectures, labs, and field trips emphasis processes in both modern and ancient glaciers. *Prerequisites:* GEOL 1,5, or 55.
131 Igneous/Metamorph/Sedmnt Petro (3-3) Description, classification, and genesis of igneous and metamorphic rocks. Introduction to petrogenetic models of the earth's crust and mantle. *Prerequisites:* 112.
135 Geochemistry Application of many basic principles of chemistry, e.g. thermodynamic, kinetic, and transport calculations involving abiotic and biotic processes, to selected problems in the geosciences. Field trips. *Pre/Co-requisites:* GEOL 110, CHEM 31,32.
151 Geomorphology (Same as Geography 144.) Examines, using lectures, labs, and field-based independent study research projects, processes which change Earth's surface and the history of landscape development. Considers fundamental geologic constraints on environmental problems. *Prerequisite:* 1 or 55.
153 Strat & Sedimentary Petrology Properties of physical sedimentation, principles of stratigraphy and basin analysis, and comparison of modern and ancient environments. Lab includes description and classification of sedimentary rocks. *Prerequisite:* 131.
172 Regional Geology Discussion of the geology of a selected region of North America. A four-week summer field trip to the area in question. *Prerequisites:* one other Geology course or permission.
195, 196 Special Topics See Schedule of Courses for specific titles.
197, 198 Research in Geology Supervised research and readings in a selected field of geology. Students from allied sciences, mathematics, and engineering may elect a research problem that combines their major field of study and geology. *Prerequisite:* Departmental permission.
201 Advanced Field Geology Advanced field mapping techniques, analysis of field data, preparation of geological maps and reports. *Prerequisite:* 260.
210 Systems Dynamics & Earth Sci Analysis of generic systems with examples from physical and natural sciences. Geological systems emphasized. Laboratories involve computer analysis of system structure and behavior over time. *Prerequisites:* A major or minor in science, mathematics, natural resources, engineering, or permission of instructor. UG only.
217 Vermont Field Geology Field observations of rocks and surficial materials across northern Vermont are utilized to decipher the region's geologic history. Reading complement field work. *Pre/Co-requisites:* Graduate student standing.
230 Adv Igneous&Metamorphic Petrol Application of phase equilibria, elemental and isotopic data, and textural interpretations to problems in igneous and metamorphic petrology, stressing modern theories of tectonics and petrogenesis. *Prerequisite:* 131.
233 Environmental Isotope Geochem Course focuses on stable isotope geochemistry of low temperature processes occurring on and near the earth surface through lecture, laboratory, and seminar. *Prerequisite:* Introductory chemistry.
234 Global Biogeochemical Cycles Integrated perspective on biogeochemical cycles describing the transformation and movement of chemical substances in the natural environment, as seen on the global context. *Prerequisite:* Introductory chemistry.
235 Geochemistry of Natural Waters Basic concepts of chemical equilibria applied to natural waters, including thermodynamics, pH, oxidation-reduction, weathering, and solution equilibria. *Prerequisites:* Chemistry 1, 2.
240 Tectonics Applications of igneous and metamorphic petrology to problems in tectonophysics, including petrochemistry of the earth's crust and upper mantle and the internal structure of orogenic belts. *Prerequisite:* 101, 110.
241 Clastic Depositional Systems Selected readings and field studies emphasizing the interpretation of clastic sedimentary deposits including transportation, processes of sedimentation, and geomorphology of ancient and recent sedimentary environments. *Prerequisites:* 153. Alternate years.
243 Clastic Petrology Laboratory Study of clastic rocks in hand specimen and thin section. *Prerequisite:* Concur-

rent enrollment in 241.

245 Carbonate Depositional Environ Paleoenvironmental analysis of carbonate rocks including selected readings, field investigations, and petrographic studies. *Prerequisite:* 153. Alternate years.

247 Carbonate Petrology Lab Study of carbonate rocks in hand specimen and thin section. *Prerequisite:* Concurrent enrollment in 245.

255 Geohydrology Field-based projects address hydrologic processes in geological context; precipitation, runoff, ground water flow, river behavior, and hillslope stability. Stresses data analysis, writing, and practical approaches to water-related environmental problems. *Prerequisite:* Major in science or engineering or permission.

260 Structural Geology Examines processes and problems concerning the mechanical behavior of the Earth's crust and surface. Includes rock deformation stress, strain, and the interpretation of geological structures. *Prerequisites:* 101, 110, Physics 11 or permission.

261 Geodynamics Examines physicial evolution of the Earth on regional to global scale. Project oriented, focusing on analysis and interpretation of geologic and geophysical data. *Prerequisites:* GEOL 101 and 110 or permission. UG only.

272 Regional Geology Discussion of the geology of a selected region of North America; a four-week summer field trip to the area in question. *Prerequisites:* 101, 110, 272a for 272b or equivalent.

273 Geology of the Appalachians Origin of mountain belts; the Appalachian mountain system discussed in terms of tectonics and geologic processes active in modern continental margins. *Prerequisites:* 101, 110, or permission.

278 Principles of Aquatic Systems (See Natural Resources 278.)

295, 296 Advanced Special Topics See Schedule of Courses for specific titles.

GERMAN (GERM)

001 Elementary An introduction to all aspects of contemporary standard German: Speaking, listening, reading, writing. Cultural components include topics such as: music, art, literature, and current events. No previous knowledge of German needed for 1.

002 Elementary An introduction to all aspects of contemporary standard German: Speaking, listening, reading, writing. Cultural components include topics such as: music, art, literature, and current events. *Prerequisite:* GERM 1 or equivalent.

051, 052 Intermediate Comprehensive review of German grammar, vocabulary-building skills, development of reading strategies and compositional abilities, study of contemporary German culture through literary texts. *Prerequisite:* 1, 2 or equivalent for 51.

095, 096 Special Topics See Schedule of Courses for specific titles.

103 Composition & Conversation An intensive language course concentrating on more advanced syntax, vocabulary building, and idiomatic expression through written compositions, translations, and oral presentations. *Prerequisite:* 52 or equivalent.

104 German News Media Analysis of journalistic style and content in news coverage of contemporary events as reported in newspapers, magazines, radio, and television in German-speaking countries. *Prerequisite:* 52 or equivalent.

121 Culture & Civilization to 1900 Historical, intellectual, and artistic developments of German culture and civilization from Roman times through the 19th century, stressing written and oral work. *Prerequisite:* 52 or equivalent.

122 20th C Culture & Civilization Social, cultural, and political developments in the German-speaking countries since 1900, stressing written and oral components. *Prerequisite:* 52 or equivalent.

155 Survey of German Lit to 1830 Selected prose, drama, and poetry from Medieval through Baroque literature, in-depth readings and analyses of major works by Lessing, Goethe, Schiller, and the Romantics. *Prerequisite:* 52 or equivalent.

156 Survey of German Lit from 1830 Major literary and intellectual movements and figures of the period through in-depth analyses of works by Buchner, Mann, Kafka, and Brecht. *Prerequisite:* 52 or equivalent.

195 , 196 Intermediate Special Topics See Schedule of Courses for specific titles.

197, 198 Readings & Research

201 Methods Research&Bibliography Introduction to tools and methods of research, including major bibliographical sources, reference works, dictionaries, editions, and journals concerned with German literature, language, and folklore. *Prerequisite:* Two 100-level courses.

202 Expository Writing Improvement of writing skills through work with authentic texts from different content areas (literature, media, science, business). Emphasis on stylistic development and sophisticated vocabulary-building. *Prerequisite:* Two 100-level courses.

213 History of the German Language Historical and linguistic development of the German language from Indo-European to the present, emphasizing sound shifts, the 16th century, and the modern age. *Prerequisite:* 155 or 156 and one other 100-level course.

214 Middle Ages Analysis and discussion of several "Minnesang" poets (esp. Walther and Neidhart), the Nibelungenlied, the courtly epics Erec, Parzival, and Tristan, and the satirical epic Helmbrecht. *Prerequisite:* 155 or 156 and one other 100-level course.

225 Goethe Study of Goethe's accomplishments in poetry, drama, and the novel during major phases of his literary career: "Sturm und Drang," Classicism, and Romanticism. *Prerequisite:* 155 or 156 and one other 100-level course.

226 Schiller Major attention will be paid to Schiller's development as a dramatist (from Die Rauber to Wilhelm Tell) as well as to his contributions to German Classicism. *Prerequisite:* 155 or 156 and one other 100-level course.

237 19th-Century Prose Literary and stylistic analysis of prose works by Tieck, Kleist, Stifter, Gotthelf, Droste-Hulshoff, Storm, Keller, and Hauptmann with emphasis on Romanticism, Poetic Realism, and Naturalism. *Prerequisite:* 155 or 156 and one other 100-level course.

238 19th Century Drama Analysis of plays by Tieck, Kotzebue, Kleist, Buchner, Grillparzer, Nestroy, Hebbel, and Hauptmann. Consideration of traditional Viennese "Volkstheater" and the period's major literary movements. *Prerequisite:* 155 or 156 and one other 100-level course.

247 German Lit from 1890 to 1945 Naturalism, Symbolism, Expressionism and subsequent trends through readings of authors such as Hauptmann, Rilke, Kaiser, Kafka, Mann, and Brecht. *Prerequisite:* 155 or 156 and one other 100-level course.

248 Contemporary German Literature Literary movements and their major representatives from 1945 to the present, including relevant sociopolitical, intellectual, and cultural aspects. *Prerequisite:* 155 or 156 and one other 100-level course.

251 German Folkore Verbal folklore genres (fairy tales, legends, folk songs, and proverbs) treated in their relation to literature, mass media, and popular culture. *Prerequisite:* 155 or 156 and one other 100-level course.

252 Faust Focus on one of the major themes of world literature. Readings include the "Volksbuch" of 1587, and works by Marlowe, Goethe, and Thomas Mann. *Prerequisite:* 155 or 156 and one other 100-level course.

263 German Romanticism Study of major works by authors such as Friedrich Schlegel, Novalis, Brentano, Hoffmann, and Eichendorff in their literary, artistic, philo-

sophical, and sociopolitical contexts. *Prerequisite:* 155 or 156 and one other 100-level course.

264 German Lyric Poetry The lyric genre and the historical development of German poetry from the age of Goethe to the present. *Prerequisite:* 155 or 156 and one other 100-level course.

271 Proverbs Diachronic and synchronic survey of German proverbs, proverbial expressions, and wellerisms, emphasizing their use and function in literature, art, mass media, advertisements and oral communication. *Prerequisite:* 155 or 156 and one other 100-level course.

273 German Intellectual Movements A survey of developments in art, music, philosophy, and social thought from the Enlightenment to 1945, with particular attention to their impact on German literature. *Prerequisite:* 155 or 156 and one other 100-level course.

275 Fin-de-Siecle Prevalent literary and intellectual movements at the turn of the 20th century in their historical, sociopolitical, and cultural contexts. Study of Nietzsche, Freud, Rilke, Hofmannsthal, Schnitzler, and Mann. *Prerequisite:* 155 or 156 and one other 100-level course.

276 Brecht & the Modern Drama Brecht's revolutionary concept of "epic theatre" in theory and practice and its influence on subsequent dramatists, including Durrenmatt, Frisch, Handke, Hochhuth, Muller, and Weiss. *Prerequisite:* 155 or 156 and one other 100-level course.

278 GDR Fiction GDR fiction in its literary, historical, and social contexts, with reference to major developments in the GDR from 1949-89. *Prerequisite:* 155 or 156 and one other 100-level course.

279 German Short Story after 1945 Aesthetic and thematic evolution of the short story and its relation to historical, political, and cultural developments from 1945 to the present. *Prerequisite:* 155 or 156 and one other 100-level course.

281 Sem in Lit Genre,Period,Theme Study of a literary genre, period, or theme through close readings of representative texts supplemented by lectures and reports on sociocultural context. May be repeated. *Prerequisite:* 155 or 156 and one other 100-level course.

282 Sem on Particular Author Study of author(s) through close readings of representative texts supplemented by lectures and reports on the works' sociocultural context. May be repeated. *Prerequisite:* 155 or 156 and one other 100-level course.

295 Advanced Special Topics See Schedule of Courses for specific titles.

296 Special Topics See Schedule of Courses for specific titles.

GREEK & LATIN (GKLT)

295 Special Topics UG only.

GENERAL LITERATURE (GLIT)

172 Chinese Lit in Translation

GRADUATE (GRAD)

291 Undergrad Research

GREEK (GRK)

001, 002 Elementary

003 Self-Paced Greek Fundamentals of Classical Greek through tutorial instruction, credit dependent on amount of material learned. May be repeated for credit. No credit with 1 and 2.

051 Intermediate Review of syntax. Readings from Plato, Herodotus, and Euripides.

052 Intermediate Review of syntax. Readings from Homer.

095, 096 Introductory Special Topics Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

111, 112 Greek Prose Style Readings in literary prose analyzed stylistically and imitated in composition. Required of Greek majors.

195, 196 Intermediate Special Topics Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

197, 198 Readings & Research

201 Greek Orators Selected speeches of Lysias and Demosthenes. B. Saylor Rodgers. Alternate years, as needed.

202 Greek Comedy Two plays of Aristophanes. Alternate years, as needed.

203 Greek Historians Thucydides, Books I and II; selections from Herodotus and Xenophon's Hellenica. Alternate years, as needed.

204 Greek Tragedy Sophocles' Antigone, and Euripides' Medea, or two equivalent plays. Alternate years, as needed.

205 Greek Philosophers Dialogues of Plato with attention to language and dialectical method; Aristotle, Xenophon or Presocratic philosophers may be read. Alternate years, as needed.

206 Greek Epic Reading in the Iliad and Odyssey. Problems of epic composition and language together with mythological and historical background. Alternate years, as needed.

227 Greek Lyric Poetry A study of early Greek personal, elegiac, and choral poetry from Archilochus to Pindar, including Sappho and Alcaeus, Simonides and Bacchylides. *Prerequisites:* Two years of college Greek or equivalent. Alternate years, as needed.

295, 296 Advanced Special Topics Advanced courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

GRADUATE NURSING (GRNU)

220 Palliative Care Adv Prctce Nsg A focused assessment with theory and research based interventions for people experiencing chronic / terminal illness will be explored from a family systems perspective. *Prerequisite:* RN license.

296 Special Topics Topics of interest to graduate nursing which are based on theory, research or advanced practice. Course content will deal with topics beyond the scope of existing formal courses or thesis research. *Prerequisite:* Permission.

HONORS COLLEGE (HCOL)

031 Music in Live Performance While attending five Lane Series events, students will discuss historical context and will learn to listen and criticize different genres of music and theatre.

032 Critical Looking This course develops strategies for looking critically at original works of art and architecture from the University and Burlington communities. Emphasis upon writing and speaking.

095, 096 Honors College First Year Sem A two semester sequence required of all Honors College First Year Students. Course content may vary slightly from year to year.

195, 196 Honors College Sophomore Sem A series of special topics courses available to Honors College Sophomore students. Course content will vary from year to year.

HUMAN DEVELOPMENT & FAMILY STDIES (HDFS)

001 Int Hum Dev&Fam Std&Acad Serv Seminar designed to introduce concepts and practices of Human

Development and Family Studies through integrating academic service-learning in developmental settings with critical thinking about development. *Prerequisite:* Majors only.

005 Human Development A comprehensive survey of life span individual and family development within social and historical context.

020 Aging:Change & Adaptation (Same as Nursing 20 and Sociology 20.) Individual and social meanings of aging and old age; physical, physiological, psychological, and sociological changes accompanying aging; individual, family, community, and societal adaptations to aging.

055 Special Topics I

060 Family Context of Development Developmental ecological approach to analysis of the family as a system in which individuals develop.

065 Human Relationships&Sexuality Sexual responsibility and the biological, social, psychological growth, and development of human beings in terms of sex role identity.

152 Biology of Aging (Same as Nursing 100.)

161 Social Context of Development Developmental ecological approach to analysis of social institutions as influences on human development. Focus on education, community, health care, and social services. Pre/co-requisite: HDFS 060.

167 Sexual Identities Exploration of diverse lesbian, gay, bisexual, and/or transgender identities, families, and communities, and their current personal, social, and cultural meanings and contexts. *Prerequisites:* Three hours in Human Development or related field; sophomore standing.

195 Special Topics Lectures, laboratories, readings, or projects relating to contemporary areas of study. Enrollment may be more than once, accumulation up to 12 hours. *Prerequisite:* Varies with course.

197 Readings & Research

200 Contemporary Issues UG only.

260 Family Ecosystem Family viewed in and as an environment for human development. The family ecological approach applied to practical family concerns. *Prerequisites:* Senior standing or instructor's permission.

263 A dvanced Child Development Survey of professional literature in child development with special emphasis on influence of early life experiences throughout the life cycle.

264 Contemporary Issues Parenting Contemporary cultural factors that influence adult lifestyles and their relationship to successful parenting. *Prerequisites:* Nine hours in Human Development or instructor's permission. May be taken more than once.

265 Teaching Human Development

266 Seminar in Human Development Intensive study of issues in human development and their application in a wide variety of professional areas. May be taken more than once up to a maximum of 12 hours. *Prerequisites:* Junior standing, nine hours in Human Development or instruc-tor's permission.

267 Adv Seminar Sexual Identities Intensive study of lesbian, gay, bisexual, and/or transgender identities, families, and communities in diverse individual, social, political, and cultural contexts. *Prerequisites:* Junior standing, nine hours in Human Development or instructor's permission.

268 Sem In Close Relationships Causal conditions influencing formation, maintenance, and dissolution of intimate adult relationships. Draws on theory and students' personal experiences to explicate the nature of close relationships in contemporary American society. *Prerequisites:* Junior standing, nine hours in Human Development or instructor's permission. Offered in alternate years.

289 Theories of Human Development Comparative overview of major theoretical perspectives in the study of human development with particular emphasis on the interplay of method and theory and the applied implications of each theoretical model and theory. *Prerequisite:* 9 hours HDFS or equivalent.

291 Special Problems Reading, discussion, and special field and/or laboratory investigations. *Prerequisite:* Departmental permission. Students may enroll more than once up to 12 hours.

295 Special Topics Lectures, laboratories, readings, or projects relating to contemporary areas of study. Enrollment may be more than once, accumulation up to 12 hours. *Prerequisite:* Departmental permission.

296 Field Experience Professionally-oriented field experience under joint supervision by faculty and community representative, credit arranged up to 15 hours. *Prerequisite:* Departmental permission.

HEBREW (HEBR)

001 Elementary The spoken language of everyday use with oral, aural, and written practice in speaking, reading, and comprehension.

002 Elementary The spoken language of everyday use with oral, aural, and written practice in speaking, reading, and comprehension. *Prerequisite:* HEBR 1 or equivalent.

051 Intermediate Reading, translation, and discussion in Hebrew of texts selected to show the development of Hebrew culture from Biblical times to the present. *Prerequisites:* 1, 2 or equivalent for 51; 51 for 52.

052 Intermediate Reading, translation, and discussion in Hebrew of texts selected to show the development of Hebrew culture from Biblical times to the present. *Prerequisites:* 1, 2 or equivalent for 51; 51 for 52.

095, 096 Special Topics

195, 196 Int Special Topics

197, 197 Readings & Research

HEALTH (HLTH)

015 Personal Power in Health Explores consumer power in health care. Addresses how an individual can influence personal health as well as health of community.

020 Aging: Change & Adaptation Individual and social meanings of aging and old age; physical, physiological, psychological, and sociological changes accompanying aging; individual family, community, and societal adaptations to aging. Cross-listed with SOC 20 & HDFS 20.

030 Trad Chin Med & Asian Bodywork This class introduces the student to Traditional Chinese Medicine. Emphasis is placed on developing assessment skills using TCM theories. The lab will include learning a basic, total bodywork session. *Prerequisites:* ANPS 19 & 20 or permission of instructor.

095, 096 Special Topics Introductory courses on health topics beyond the scope of departmental or college offerings. See schedule of courses for specific titles.

100 Biology of Aging Human aging examined emphasizing biological and nonpathological physiological changes and their effects on the functioning of elders. *Prerequisites:* BIOL 4 or ANPS 19-20 or permission.

105 Cultural Health Care Examine the principles and theories of culture in health and illness care. Students will also be involved in 15 hours of service-learning in various community sites.

107 Human Health & the Environment Interdisciplinary understanding of the effects of anthropogenic factors including pollution, reduced biodiversity, climate change, overpopulation, and resource depletion on the health of natural systems and human populations. *Pre/Co-requisites:* a college level science course and sophomore standing. Cross-listed with NR 107.

108 Explorations in Public Health From various disciplines, theoretical perspectives, and narrative experi-

ences, the class will build and apply to contemporary issues and populations an ideal public health service model.

115 Women's Health & Advocacy Aims to demystify women's health care issues through understanding options/choices concerning sexuality, contraception, reproductive health, sexually transmitted diseases, relationships, addictive disorders, anxiety/depression and more.

120 Health Care Ethics A study of ethical principles and applications used to help resolve dilemmas in health care delivery. Introduction to ethical decision-making models used in the practice of modern health care.

124 Mental Health and Aging Course will cover the main theories of older adult development and aging as well as the latest research on psychological and emotional changes with aging.

140 Issues in Women's Health A holistic exploration of the health care needs of women. This course will consider the stereotypical, theoretical, and clinical approaches of care used in treating women. *Prerequisites:* PSYC 1, HDFS 5, Sociology course below 100.

141 Healing Touch Level I Healing Touch is an energy based therapeutic approach to healing which uses touch to influence the energy system thus affecting physical, emotional and spiritual health and healing.

142 Healing Touch Level 2 The second level of Healing Touch includes an intake interview, back techniques, and a full healing sequence. Emphasis in the experimental learning is on developing sequences for specific client needs. *Pre/Co-requisites:* HLTH 141.

195, 196 Special Topics Intermediate courses on health topics beyond the scope of departmental or college offerings. See schedule of courses for specific titles.

295, 296 Special Topics Advanced courses on health topics beyond the scope of departmental or college offerings. See schedule of courses for specific titles.

HELIX (HLX)

095, 096 Introductory Special Topics See schedule of courses for specific titles. Cross-listings: Bio 95, 96.

295, 296 HLX/Epscor HS Summer Outreach Teams of a high school science teacher and two students apprentice with UVM faculty in research in preparation for an academic year of research. *Prerequisites:* Permission of HELiX/EPSCOR coordinator 656-0706.

HONORS (HON)

095, 096 Introductory Special Topics This seminar accompanies the visit of the Carol G. Simon Speaker to the John Dewey Honors Program each spring. *Prerequisite:* Admission to the John Dewey Honors Program. Satistactory/Unsatisfactory.

101 Thesis Proposal Seminar A one-credit course designed to assist students in the production and submission of a College Honors Proposal. *Prerequisite:* JDHP students or by permission; junior standing.

195 Intermediate Special Topics This seminar is usually taken by John Dewey Honors Program students in their Junior year. See schedule of courses for specific titles. *Prerequisite:* Admission to the John Dewey Honors Program.

196 Honors

201 JDHP Thesis Seminar This seminar brings John Dewey Honors Program students writing their college honors theses together in semi-monthly meetings to share their research problems, concerns and findings. Satisfactory/Unsatisfactory.

202, 203 Honors: Anthropology
204, 205 Honors: Studio Art
206, 207 Honors: Art History
208, 209 Honors: Biology
210, 211 Honors: Botany
212, 213 Honors: Chemistry
214, 215 Honors: Classics
216, 217 Honors:Communication Science
218, 219 Honors: Economics
220, 221 Honors: English
222, 223 Honors: French
224, 225 Honors: Geography
226, 227 Honors: Geology
228, 229 Honors: German
230, 231 Honors: Greek
232, 233 Honors: History
234, 235 Honors: Area & Int'l Studies
236, 237 Honors: Latin
240, 241 Honors: Music
242, 243 Honors: Philosophy
244, 245 Honors: Physics
246, 247 Honors: Political Science
248, 249 Honors: Psychology
250, 251 Honors: Religion
252, 253 Honors: Russian
254, 255 Honors: Sociology
256, 257 Honors: Spanish
258, 259 Honors: Theatre
260, 261 Honors: Environmental Studies
262, 263 Honors:Women's&Gender Studies
264, 265 Honors:Individually Designed
266, 267 Honors:Computer Science
268, 269 Honors: Italian Studies
273, 274 Honors: Film/Television Stdies Contact Department for specific Requirements. *Pre/Co-requisites:* FTS 7, 8, or 9 and 121.
275, 276 Honors: Biochemistry
277, 278 Honors: Environmental Sciences
288, 289 Honors: Mathematics

HISTORIC PRESERVATION (HP)

200 History American Architecture Study of architectural history to gain fluency in the stylistic terms so essential to historic preservation and to public support for conserving our architectural heritage. *Prerequisites:* Open to non-HP majors by permission.

201 History on the Land Identifying and interpreting evidence of the cultural forces - early settlement patterns, transportation, industry, agriculture, planning, conservation - that have shaped our land, buildings, towns and cities. Cross listings: HST 201, ENVS 295.

202 Special Topics Courses are offered under this number in specialized areas of historic preservation through Continuing Education.

204 Historic Pres: Devlpmnt Econ Survey of economic, financial aspects of real estate development pertaining to preservation and adaptive use of historic buildings (market studies, pro-formas). Field trips. Actual proposal development for underutilized properties. *Prerequisite:* 201.

205 Historic Preservation Law Legal issues in conservation of the built environment. Basic legal techniques for protection of historic structures (historic districts, protective legislation, easements, covenants). Study of significant court decisions. *Prerequisite:* 201.

206 Rschg Historic Structure/Sites Methods for researching historic structures and sites using archival and physical evidence, deciphering archaic building technologies, and documenting structures through professional reports, architectural photography, measured drawings. *Prerequisite:* HP majors or by permission.

HOLOCAUST STUDIES (HS)

017 German Literature:Translation See Schedule of

Courses for specific titles; Crosslisted with WLIT 17.
026 Europe, 1815-1945 Europe from the fall of Napolean to the end of World War II, focusing on political, social, economic, and intellectual developments. Crosslisted with HST 26.
027 Modern Eastern Europe Eastern Europe since 1772, especially areas comprising present-day states of Bosnia-Herzegovina, Croatia, the Czech Republic, Hungary, Macedonia, Poland, Slovakia, Slovenia, and Yugoslavia. Focus on politics and culture of nationalism. Crosslisted with HST 27.
095, 096 Introductory Special Topics See Schedule of Courses for specific titles.
115 History of Poland History of the Polish people and Polish state from the 10th century to the present. Strong emphasis on the 20th century. *Pre/Co-requisites:* HST 10 or 26 or 27. Cross-listings: HST 115.
117 German Literature:Translation See Schedule of Courses for specific titles; Crosslisted with WLIT 117.
139 Modern Germany Political, cultural, and social history of Germany from unification in 1871 through the Wilhelmine Empire, Weimar Republic, Nazi era, and post-war period. *Prerequisites:* History 10, 14, or 26, or work in German; Crosslisted with HST 139.
180 Moral&Rel Persp on Holocaust A study of the Holocaust in relation to questions of moral responsibility, justice, guilt, and human suffering, focusing on Jewish responses. Crosslisted with REL 180.
190 The Holocaust Study of the background, events, and aftermath of the Holocaust in Nazi Germany and Europe under German control. *Prerequisites:* History 10 or 26 or 27 or instructor's permission. Crosslisted with HST 190.
191 World War II Causes, conduct, and consequences of global war from 1931-1945, including social, economic, political, and diplomatic as well as military aspects. *Prerequisites:* History 10 or 12 or 26 or 51. Crosslisted with HST 191.
195, 196 Special Topics
197, 198 Readings and Research May be prescribed by an individual instructor; Junior or Senior standing.
226, 227 Seminar in Modern Europe Selected topics on European history from 1815 to present. *Prerequisites:* Junior or senior standing; 12 hours of history.
281 Sem:Lit Genre,Period or Theme Study of a literary genre, period, or theme through close readings of representative texts supplemented by lectures and reports on socio-cultural context. May be repeated. Crosslisted with GERM 281.
282 Sem:Lit Genre, Period or Theme Study of a literary genre, period, or theme through close readings of representative texts supplemented by lectures and reports on socio-cultural context. May be repeated. Crosslisted with GERM 282.
295, 296 Special Topics
297, 298 Advanced Readings & Research Declared minor in Holocaust Studies and permission of director.

HISTORY (HST)

009 Global History to 1500 The development and cross-fertilization of civilizations in Eurasia, Africa, and the Americas from about 3500 B.C.E. to A.D. 1500.
010 Global History Since 1500 Character, development, and emerging interdependence of the world's major civilizations since 1500.
011 History of the US Survey from the pre-Revolutionary period to 1876.
012 History of the US Survey from 1876 to the present.
013 Ideas in the Western Tradition Great books of Western civilization in their historical setting. Greece and Rome. *Prerequisites:* Concurrent enrollment in English 27, 28; Religion 27, 28; Integrated Humanities Program. Crosslist: CLAS 013
014 Ideas in the Western Tradition Great books of Western civilization in their historical setting. Renaissance to Existentialism. Credit will not be given for History 14 and History 25 or 26. *Prerequisites:* Concurrent enrollment in English 27, 28; Religion 27, 28; Integrated Humanities Program.
019 Western World Since 1945 Comparative history of European nations and the United States since 1945.
021 Classical Greek Civilization (See Classics 21.)
022 Classical Roman Civilization (See Classics 23.)
023 The Birth of Europe Survey of history of Western Europe from the late Roman Empire to the stabilization of Medieval Civilization around A.D. 1000.
024 High & Later Middle Ages The stabilization and expansion of Western European civilization in the Age of the Crusades; the crisis of the 14th century; 15th century recovery.
025 European Civilization to 1815 Introduction to political, social, and intellectual movements which have shaped the foundations of Western civilization from the Renaissance to the French Revolution.
026 Europe 1815 - 1945 Europe from the fall of Napoleon to the end of World War II, focusing on political, social, economic, and intellectual developments.
027 Modern Eastern Europe Eastern Europe since 1772, especially areas comprising present-day states of Bosnia-Herzegovina, Croatia, the Czech Republic, Hungary, Macedonia, Poland, Slovakia, Slovenia, and Yugoslavia. Focus on politics and culture of nationalism.
035 History of India to 1750 Introduction to the early history of the Indian subcontinent, focusing on the political, cultural, and religious forces that shaped the region before British colonialism.
036 History of India since 1750 Survey of the modern history of South Asia from the advent of British colonialism to the present, focusing on colonialism, nationalism, globalization, and religious conflict.
040 African History to C-1870 Introduction to the political, social and economic history of Africa, focusing on the major events and forces that shaped the continent before the colonial period.
041 Africa From C-1870 to Present Introduction to African history from European conquest to the present, with special attention paid to African resistance, the nature of colonialism, and African independence movements.
045 Hst Islam&Middle East to 1258 Introduction to the major institutions evolved in the Middle East from the advent of Islam to the Mongol conquest of Baghdad in 1258.
046 Hst Islam&Mid East Since 1258 Introduction to the major institutions evolved in the Islamic Middle East since the Mongol conquest of Baghdad in 1258 to the present.
050 China & Japan to 1800 Historical development of the politics, economics, social structure, philosophy, religion, and the arts in East Asia from neolithic times to 1800.
051 China & Japan Since 1800 Continuity and change in the politics, economics, society, and culture of China and Japan in the 19th and 20th centuries.
062 Colonial Latin American Hist Comparative survey concentrating on the complex cultural, economic, and political development of Spanish and Portuguese America from pre-Conquest to 1820.
063 Modern Latin American History Comparative survey concentrating on Latin America from the independence movements to the present with emphasis on cultural, political, and economic development and U.S. intervention.
065 History of Canada Survey of Canadian history from aboriginal settlement to the present. Themes include Indian-White relations, colonial societies, national identities, American influence. Field trip to Canada.
068 History U.S. Peoples of Color Comparative survey of historical experiences of African-Americans, Latinos,

Asian-Americans, and Native Americans in U.S. Racism, conquest, slavery, exploitation, civil rights, militancy, liberation movements, and cultural renaissance.

095, 096 Introductory Special Topics See Schedule of Courses for specific titles.

109 The British Isles, 1350-1688 Examines the social, cultural, and political history of the British Isles from 1350 to 1688, focusing on institutions, religious beliefs, literature, art, and everyday life. *Prerequisite:* 6 hours of history.

110 Britain Since 1688 Examines the social, cultural, and political history of Britain since 1688, focusing on social movements and relations, gender, industrialization, popular culture, and the world wars. *Prerequisite:* 6 hours of history

115 History of Poland History of the Polish people and Polish state from the 10th century to the present. Strong emphasis on the 20th century. *Pre/Co-requisites:* HST 10 or 26 or 27. Cross-listed: HS 115

116 Medieval Mystics & Heretics This course covers the explosion of new religious ideas that characterized the period 1100-1500, and the Church's response to these challenges. *Pre/Co-requisites:* Hst 23 or 24, or 6 hours of History, or Instructor Permission.

117 Medieval Urban Legends Examines legends from and about the European Middle Ages, analyzing how and why societies create and cling to intellectually improbable interpretations of the world. *Prerequisites:* HST 23 or 24, or 6 hours of History, or Instructor Permission

120 Historical Geography of Europe (Same as Geography 155.)

121 History of Greece (See Classics 121.)

122 History of Rome (See Classics 122.)

125 The Renaissance European society from the 14th to early 16th century, emphasizing the transition from medieval to "modern" society and the roots of Renaissance Italy's cultural and artistic brilliance. *Prerequisite:* 9 or 10 or 14 or 25 or 26.

126 The Reformation European society from the Renaissance to mid-17th century. Emphasis on religious struggles growing out of Protestant Reformation and their impact on the social, political, economic, and cultural movements of the era. *Prerequisites:* 10 or 14 or 25.

127 European Culture&Soc 1914-1945 Survey of European high modernism, focusing on the avant-garde, Stalinism, fascism, and popular culture. *Prerequisite:* 26 or 128 or three hours history.

128 Eur Soc & Culture 1880-1920 European society and culture before and during "The Great War." Transitions in the arts, philosophy, science and technology, industry, dance, theatre, attitudes, and diplomacy. *Prerequisite:* 26.

130 European Intellectual History The history of ideas in Europe from the 15th to the 20th centuries. Topics vary according to instructor. *Prerequisites:* 25 or 26.

132 Modern Irish History Ireland 1600 to present. English subjugation of Ireland, Anglo-Irish, emergence of Irish nationalism, Irish Literary Renaissance, Irish Free State, and ongoing problem of Northern Ireland. *Prerequisite:* 25 or 26.

137 History of Russia Russian political, social, and intellectual history from Kievan Rus' to the Revolutions of 1917, focusing on the Imperial period (1700-1917). *Prerequisite:* 10 or 26.

138 History of the Soviet Union Soviet political and social history, 1917-1991, centering on the Stalin era and on efforts of post-Stalin regimes to deal with the Stalinist legacy. *Prerequisite:* 10, 26 or 137.

139 Modern Germany Political, cultural, and social history of Germany from unification in 1871 through the Wilhemine empire, Weimar Republic, Nazi era, and postwar period. *Prerequisites:* 10 or 14 or 26 or work in German.

140 W Africa:Holy War-Colonialism Lecture survey. Topics include: Sudanic states, Islamic revolution, slavery and the slave trade, European scramble and the African resistance, colonialism and the colonial state, African nationalism. *Prerequisite:* 40 or 41.

141 History of Southern Africa Lecture survey, covering the history of Southern Africa from the Bantu Migrations to the end of Apartheid.*Prerequisites:* 40 or 41.

142 Nigeria:Giant of Africa History of Nigeria from earliest times to the present, concentrating on the impact of colonial conquest, nationalism and the politics and economics of independence. *Pre/Co-requisites:* HST 40 or 41; instructor permission.

146 History of Modern Middle East This course is designed to offer an historical understanding of social and political change in the Middle East during the 19th and 20th centuries. *Prerequisite:* 45 or 46 or instructor permission.

149 History of Ancient Near East (See Classics 149.)

150 China:The 19th&20th Centuries China from the late Qing Dynasty to the present, with particular attention to the influence of Western imperialism, the process of revolution, and the Communist era. *Prerequisite:* Six hours of history, 50 recommended.

151 Modern Japan Transition from tradition to modernity in Japan from the Meiji Restoration, 1868 to the present. *Prerequisite:* Six hours of history, 50 recommended.

152 The Chinese Revolution Examination of the ongoing process and significance of the Chinese Revolution of the 20th century, emphasizing the socio-economic and cultural aspects of the changes it wrought. *Prerequisites:* Six hours of history, 51 recommended.

154 The Atlantic World 1400-1800 A cross-cultural and comparative study of the Atlantic World, 1400-1800, focusing upon social, cultural, religious and economic topics and themes. *Prerequisite:* 6 credits of history

155 Colonial North America The political, economic and social history of colonial North America with special attention paid to cross-cultural and comparative history. *Prerequisite:* 6 credits of history or permission of the instructor

157 Greek Feminism (See Classics 157.)

160 Sex in Modern History Explores the history of sexuality in Europe and North America since 1700, focusing on medical and scientific theories as well as sexual cultures and practices. *Prerequisites:* 6 hours of history

165 Canadian-American Relations Canada's relationship with the U.S. from the Revolutionary War to the present, emphasizing diplomatic, economic, social, and environmental relations in the 19th and 20th centuries. *Prerequisite:* Three hours in U.S. or Canadian history.

166 Envirnmtl History of N America Examination of human-environmental interaction on the North American continent over the past five hundred years. *Pre/Co-requisites:* 3 hours history. Crosslisting: ENVS 166.

167 London: A Cultural History Explores the cultural, social and political history of London from Roman times to the present, focusing on the city's geography, social structures, populations and institutuions. *Prerequisite:* 6 hours of history

170 Historical Geography of the US (Same as Geography 170.)

171 Social History of the U.S. Selected topics in history of American society, including community structures, family life, work patterns, value systems, social class, and mobility. *Prerequisites:* 11 or 182.

172 Social History of the U.S. Selected topics in history of American society, including community structures, family life, work patterns, value systems, social class, and mobility. *Prerequisites:* 12 or 182.

173 US Foreign Relations to 1914 The domestic and international contexts of U.S. relations with the rest of the world, 1776-1914. *Prerequisites:* 10 or 11.

174 US Foreign Relations 1914 On The domestic and international contexts of U.S. relations with the rest of the

world, 1914-present. *Prerequisites:* 10 or 12.

177 American Revolution Survey of the Revolutionary Era, 1760-1791. Causes of the Revolution, War for Independence, establishment of the Constitution. *Prerequisite:* Six hours of history or other social sciences of which History 25 is highly recommended.

179 U.S. History Since 1960 Topical review of U.S. history since 1960, emphasizing problems of interpreting and reconstructuring the recent past. *Prerequisite:* 12.

181 Film and History Topics in the history of American and European cinema and society, focusing on the filmmaker as historian and thefilm as historical artifact. *Prerequisite:* Three hours history or film.

182 History of Women in the US (Same as Women's Studies 161.) Survey of the origins and changes in images, status, and roles of women in American society since the colonial period. *Prerequisite:* Three hours in history (11 or 12 recommended), or Women's Studies minor.

183 US Military History Development of the U.S. military establishment within the framework of U.S. history from the Colonial era to the present. *Prerequisite:* 10 or 11 or 12.

184 Vermont History Survey of Vermont history from early times to the present. *Prerequisite:* 11 or 12.

187 Afr Amer Hst:1619 to Civil War Economic, social, political, and intellectual developments in U.S. history as they have affected and been affected by African-Americans, 1619 to Civil War. *Prerequisite:* Three hours history.

188 Afr Amer Hst:Civil War-present Economic, social, political, and intellectual developments in U.S. history as they have affected and been affected by African-Americans, Civil War to present. *Prerequisite:* Three hours history.

189 Hist African-American Women An exploration of the experiences of women of African descent from their arrival in America to contemporary times. *Prerequisites:* Any one of the following: History 11; 12; 182, 187, 188; Women's Studies 73; 174, 235, 273.

190 The Holocaust Study of the background, events, and aftermath of the Holocaust in Nazi Germany and Europe under German control. *Prerequisite:* 10 or 26 or 27 or instructor's permission.

191 World War II Causes, conduct, and consequences of global war from 1931-1945, including social, economic, political, and diplomatic as well as military aspects. *Prerequisite:* 10 or 12 or 26 or 51.

192 Sp Meth Sec Ed for Soc Studies (Same as Education 179.) Social studies curricula and selected social studies topics. (Not acceptable toward fulfilling Arts and Sciences College major requirements.) *Prerequisite:* Acceptance in teacher certification program.

195, 196 Intermediate Special Topics See Schedule of Courses for specific titles. *Prerequisites:* Six hours of history or permission.

197, 198 Readings & Research *Prerequisites:* May be prescribed by an individual instructor; junior or senior standing.

199 Internship in History Supervised cooperative internship work in history in archives, museums, libraries, etc. To be individually arranged for each student. *Prerequisite:* Junior or senior standing, department permission.

201 History on the Land (Same as Historic Preservation 201; Art 201.)

209, 210 Seminar in Global History Selected topics on the nature and results of interactions among the world's peoples. 209: to 1500. 210: since 1500. *Prerequisites:* Junior, senior, or graduate standing; 12 hours of history including 9 or 10.

221, 222 Seminar in Ancient History (See Classics 221, 222.)

224 Seminar in Medieval Europe Selected topics on Europe from the Fall of Rome to the Renaissance. *Prerequisites:* Twelve hours of history including 23 or 24; junior, senior, or graduate standing.

225 Seminar in Early Modern Europe Selected topics on European history from the Renaissance to the French Revolution. *Prerequisites:* Junior, senior, or graduate standing and 12 hours of history.

226, 227 Seminar in Modern Europe Selected topics on European history from 1815 to present. *Prerequisites:* Junior, senior, or graduate standing; 12 hours history.

228 Seminar in Popular Culture History of the attitudes of ordinary people towards every day life in European society from the Middle Ages to the present. *Prerequisites:* Junior, senior, or graduate standing, 12 hours of history.

237 Seminar in Russia before 1917 Selected topics in Russian intellectual, social, and cultural history focusing on the period 1825-1917. *Prerequisites:* Junior, senior, or graduate standing, 12 hours of history including 137.

238 Seminar in Soviet History Selected topics in Soviet social and cultural history from the Bolshevik Revolution to the death of Stalin (1917-53). *Prerequisites:* Junior, senior, or graduate standing, 12 hours of history including 138.

240 Comparative Slavery:Hist Persp History of slavery from a comparative perspective, including Classical Antiquity, Islam and the Middle East, Africa, Latin America, and the Southern United States. *Prerequisite:* Junior, Senior, or graduate standing.

241 Seminar in African History Topics in African history. Generally, the seminar will focus on one of three themes: Islam, slavery or urbanism. *Prerequisite:* Junior, senior, or graduate standing; 12 hours history.

250 Seminar in East Asian History Topics in the history of East Asia. *Prerequisites:* Junior, senior, or graduate standing, 12 hours of history.

252 Seminar on China Selected topics on the history of China. *Prerequisites:* Junior, senior, or graduate standing; 12 hours of history, including 150 or equivalent.

265 Seminar in Canadian History Topics in 19th and 20th century Canadian history; national development, regionalism, multiculturism, and international relations. *Prerequisites:* Junior, senior, or graduate standing, 12 hours of history.

271, 272 Seminar in US Social History Topics in U.S. Social History. 271: to the Civil War; 272: Civil War to the present. *Prerequisites:* Junior, senior, or graduate standing, 12 hours of history.

273, 274 Seminar in Modern U.S. History Selected topics in U.S. history, among them foreign relations, the role of the presidency, World War II, and the Cold War. *Prerequisites:* Junior, senior, or graduate standing; 12 hours of history.

284 Seminar in Vermont History Topical approach to Vermont history through original research utilizing primary sources available at UVM, the Vermont Historical Society, and the Vermont State Archives. *Prerequisites:* Junior, senior, or graduate standing; 12 hours history, including 184 or permission.

287 Seminar in Historiography Topics and methods in contemporary historical writing. *Prerequisites:* Junior, senior, or graduate standing, 12 hours of history.

295, 296 Special Topics Seminar See Schedule of Courses for specific titles. *Prerequisites:* Junior, senior, or graduate standing, 12 hours of history.

HUMANITIES (HUMN)

095, 096 Special Topics

195, 196 Special Topics Intermediate courses or seminars on topics beyond the scope of existing offerings. See Schedule of Courses for specific titles.

295 Advanced Special Topics

INDIVIDUALLY DESIGNED MAJORS (IDM)

264, 265 Honors:Individually Des Major See pages

61 and 62, and contact program for specific requirements.

ITALIAN (ITAL)

001 Elementary I Fundamentals of Italian composition, comprehension, pronunciation, speaking, reading, writing. Structure of the basic Italian sentence. No prior knowledge expected.
002 Elementary II Continuation of 1. *Prerequisite:* 1 or equivalent.
051 Intermediate Rdg & Conv I Designed to help students move from a basic knowledge of Italian to the ability to read, speak, and understand Italian better. Some grammar review and short compositions. *Prerequisite:* 2 or equivalent.
052 Intermediate Rdg & Conv II Continues building on the skills developed in 51. Less stress on grammar review. Reading selections and compositions are longer and more sophisticated than in 51. *Prerequisite:* 51 or equivalent.
095, 096 Introductory Special Topics See Schedule of Courses for specific titles.
121 Issues in Italian Culture An introduction to the cultural realities of Italy, from politics to pop music, food to fashion. Emphasis on improving linguistic fluency. *Prerequisites:* 52 or equivalent.
122 Italian Literature & Film A study of the multiple relationships between literary and cinematic texts and their role as a window on Italian culture. Emphasis on improving linguistic fluency. *Prerequisites:* 52 or equivalent.
157 Modern Italian Fictions An introduction to Italian literature from the 18th century to today, with attention to art, music, cinema, and the Internet. Emphasis on improving linguistic fluency. *Prerequisites:* 52 or equivalent.
158 Early Italian Lit in Context An introduction to Italian literature from its beginnings through the early-modern period. Authors may include Dante, Boccaccio, Macchiavelli. Emphasis on improving linguistic fluency. *Prerequisites:* 52 or equivalent.
170 Cultures of Women in Italy A study of Italian women writers, journalists, artists, and film directors. Emphasis on reading and discussion. *Prerequisites:* 52 or equivalent.
195, 196 Intermediate Special Topics See Schedule of Courses for specific titles.
197, 198 Readings & Research Permission of department chair required.
296 Directed Readings

JAPANESE (JAPN)

001 Elementary Japanese I Introduction to spoken and written Japanese through aural-oral drills and grammar presentation. The three writing systems of Japanese (hiragana, katakana, and kanji) are introduced. *Prerequisite:* No prior knowledge expected.
002 Elementary Japanese II Continuation of JAPN 001. *Prerequisite:* JAPN 1 or equivalent
051 Intermediate Japanese I Continuation of JAPN 2 designed to enable the students to converse in everyday Japanese and to read and write basic texts. *Prerequisites:* JAPN 2 or equivalent.
052 Intermediate Japanese II Continuation of JAPN 051. *Prerequisite:* JAPN 51 or equivalent.
095 Special Topics See Schedule of Courses for specific titles.
096 Introductory Special Topics See Schedule of Courses for specific titles.
101 Advanced Japanese I Further development of oral proficiency and advanced study of grammatical structure of modern Japanese, supplemented by audiovisual materials and authentic written texts of several kinds. *Prerequisites:* JAPN 052 or equivalent.
102 Advanced Japanese II Continuation of JAPN 101. *Prerequisites:* JAPN 101 or equivalent.
121 Japanese Conversation I Development of speaking and listening skills related to concrete topics through total immersion in Japanese. *Prerequisites:* 52 or equivalent.
122 Japanese Conversation II Development of functional skills to carry out daily conversation in varied social contexts. *Prerequisites:* 52 or equivalent.
195, 196 Intermediate Special Topics See Schedule of Courses for special titles. *Prerequisite:* 52 or equivalent.
197, 198 Readings and Research Independent study of a specific area, subject, or theme with an approved instructor.
201 Studies of Japanese Texts I Introduction to rapid reading skills, directed reading of authentic texts and guided practice of conversational skills in multiple social contexts. Course can be repeated with different content. *Prerequisite:* JAPN 102 or equivalent
202 Studies of Japanese Texts II Continuation of JAPN 201.Application of the rapid reading skills developed in JAPN 201 using higher-level reading materials. Course can be repeated with different content. *Prerequisite:* JAPN 201 or equivalent.
221 Japanese for Communication I Training in skills to communicate on concrete and abstract topics. Repeatable with different content. *Prerequisites:* 102 or equivalent.
222 Japanese for Communication II Development of skills to present information and view points in varied social contexts. Repeatable with different content. *Prerequisites:* 102 or equivalent.
295, 296 Advanced Special Topics Contact department for details.
297, 298 Adv Readings and Research Advanced independent study of a specific area, subject, or theme with an approved instructor. *Prerequisite:* 102 or equivalent.

LATIN (LAT)

001 Elementary For students who present less than two years of high school Latin.
002 Elementary Latin For students who present less than two years of high school Latin.
003 Self-Paced Latin Fundamentals of Classical Latin through tutorial instruction, credit dependent on amount of material learned. May be repeated for credit. No credit with 1 and 2.
051 Intermediate Selections from Cicero and other prose authors.
052 Intermediate Latin Selections from Vergil and Ovid.
095 Special Topics Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
096 Elementary Special Topics Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
101 Survey Latin Literature Selections from principal Roman authors.
102 Survey Latin Literature Selections from principal Roman authors.
111, 112 Latin Prose Style Readings in literary prose analyzed stylistically and imitated in composition. Required of B.A. and B.Ed. Latin majors.
195, 196 Intermediate Special Topics Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
197, 198 Readings & Research
203 Republican Prose Extensive reading in Caesar and Sallust, and in the speeches of Cicero. Alternate years, as needed.
204 Epic Poets Extensive reading in Lucretius, Vergil, Ovid, and others. Alternate years, as needed.

227 Roman Lyric Poets Selections from the works of Catullus, Horace, Propertius, and Tibullus. Alternate years, as needed.
251 Roman Letters Letters of Cicero, Horace, and Pliny. Alternate years, as needed.
252 Comedy Two plays of Plautus and Terence. Study of the precursors of this literary form. Alternate years, as needed.
253 Roman Oratory Selections from Cicero's De Oratore, Orator, Brutus, and from his speeches. Historical development of forensic and other rhetorical canons. Alternate years, as needed.
255 Historians of the Empire Historians of the Empire. Augustus, Res Gestae; Tacitus, Annals, I-IV; selections from Suetonius and Ammianus Marcellinus. Alternate years, as needed.
256 Satire Selections from Horace, Persius, Juvenal, Petronius. Study of the development of this literary form. Alternate years, as needed.
271 Silver Latin Extensive reading of post-Augustan authors not included in other advanced courses. Alternate years, as needed.
295, 296 Advanced Special Topics Advanced courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Coursesfor specific titles.

LINGUISTICS (LING)

096 Introductory Special Topics
101 Intro Linguistics
102 Linguistics

MATHEMATICS (MATH)

001 Elementary College Algebra Review of fundamental operations and a more extensive study of fractions, exponents, radicals, linear and quadratic equations, ratio, proportion, variation, progressions, and the binomial theorem. Topics normally included in intermediate algebra in high school. Students who have satisfactorily completed two years of high school algebra, or the equivalent, receive no credit for this course. Offered only in Evening Division and Summer Session. *Prerequisite:* One year of high school algebra.
002 Plane Trigonometry Trigonometric functions, their graphs and other properties, solution of triangles, trigonometric equations and identities, and inverse trigonometric functions. May not be taken for credit concurrently with, or following receipt of, credit for any mathematics course numbered 20 or above. *Prerequisite:* 1 or 9. Offered only in Evening Division and Summer Session.
009 College Algebra Sets, relations, and functions with particular attention to properties of algebraic, exponential, and logarithmic functions, their graphs and applications. May not be taken for credit concurrently with, or following receipt of, credit for any mathematics course numbered 19 or above. *Prerequisites:* Two years of secondary school algebra, one year of secondary school geometry.
010 Pre-Calculus Mathematics Skills in working with numerical, algebraic, and trigonometric expressions are developed in preparation for 21. May not be taken for credit concurrently with, or following receipt of, credit for any mathematics course numbered 19 or above. *Prerequisites:* Two years of secondary school algebra, one of secondary school geometry.
011 Technical Calculus I Introduction to calculus of functions of one variable, emphasizing techniques and applications of differentiation and integration. *Prerequisites:* 10, or 9 and 2, or strong background in secondary school algebra and trigonometry and an associates degree in engineering. Dual credit not given for 11 and 21.
012 Technical Calculus II Transcendental functions, techniques of integration, polar coordinates, sequences, series and vectors. *Prerequisites:* 11 or 21; associates degree in engineering. Dual credit not given for 12 and 22.
013 Calculus via Modeling I Introduction to mathematical modeling and differential calculus with a graphical, problem-solving approach. Requires graphing calculator. *Prerequisite:* Three years high school math, or Math. 9. Credit not given for both Math. 13 and 19.
014 Calculus via Modeling II Further modeling and an introduction to integral and multivariate calculus with a graphical, problem-solving approach. Requires graphing calculator. Credit not given for both 14 and 20. *Prerequisite:* 13.
015 Elementary School Math Comprehension of operations with real numbers, measurements, and informal geometry provide background for algebra, number theory, statistics, probability, compass and ruler constructions, and problem solving. *Prerequisite:* 15 for 16. Open only to students in elementary education.
016 Fund Concepts Elem School Math Comprehension of operations with real numbers, measurements, and informal geometry provide background for algebra, number theory, statistics, probability, compass and ruler constructions, and problem solving. *Prerequisite:* 15 for 16. Open only to students in elementary education.
017 Applications of Finite Math Introduction to mathematics of finite systems with applications, such as probability, statistics, growth and symmetry, graph theory, fair division and apportionment problems, voting systems. *Prerequisite:* Two years of secondary school algebra or 9 or 10.
018 Basic Mathematics Data, statistics, modeling, algebra, word problems, calculus. Students who do well in the algebra section may continue with MATH 19 or MATH 21. *Prerequisites:* 3 years high school math. No credit for EM students.
019 Fundamentals of Calculus I Introduction to limits and differential calculus with a wide variety of applications. Students interested in intensive use of mathematics should take 21. Credit not given for more than one of the courses 19, 21 unless followed by 22. Credit not given for both Math. 13 and 19. *Prerequisite:* 9, 10, or sufficiently strong background in secondary school algebra and geometry.
020 Fundamentals of Calculus II Introduction to integral calculus with a wide variety of applications. A student who completes 20 may be admitted to 22; however 19, 21, 22 is preferable to 19, 20, 22. Credit not given for both MATH 14 and 20. *Prerequisite:* 19.*
021 Calculus I Introduction to calculus of functions of one variable including: limits, continuity, techniques and applications of differentiation and integration. Credit not given for more than one course in the pair 19, 21. *Prerequisite:* 10; or 9 and 2; or strong background in secondary school algebra and trigonometry
022 Calculus II Techniques and applications of integration. Polar coordinates, Taylor polynomials, sequences and series, power series. *Prerequisite:* 21.
052 Fundamentals of Mathematics Fundamental mathematical concepts and techniques, emphasizing proofs and algorithms, are investigated within the context of topics such as number theory and graph theory. Credit not given for both 52 and 54. Corequisite: Math 21.
054 Fund of Math of Computation Introduction to mathematical theory and techniques underlying computer science. Corequisite: 19 or 21.
095 Special Topics Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles. *Prerequisite:* Instructor's consent.
111 Technical Calculus III Calculus of functions of several variables, partial derivatives, gradient, divergence, curl, multiple integrals. *Prerequisites:* 12 or 22; associates degree in engineering. Dual credit not given for 111 and 121.

121 Calculus III Vectors, vector-valued functions. Calculus of functions of several variables: partial derivatives, gradient, divergence, curl, multiple integrals, line integrals, Stokes' and Green's theorems. *Prerequisite:* 22.

124 Linear Algebra Matrices, linear dependence, vector spaces, linear transformations, characteristic equations and applications. Prerequistes: 22 or instructor's permission. Corequisite: MATH 121 recommended but not required.

141 Real Analysis in One Variable Principles of analysis in one variable. Heine-Borel and Bolzano-Weierstrass theorems; rigorous development of differential and integral calculus infinite sequences and series of functions. *Prerequisite:* 52.

151 Groups and Rings An introduction to the basic concepts of abstract algebra emphasizing examples, including modular arithmetic, symmetric groups, cyclic groups, polynomial rings, homomorphisms, and isomorphisms. *Prerequisite:* 52.

161 Development of Mathematics Historical development of mathematical sciences emphasizing interrelations among them. Individual assignments correspond to background and interests of students. *Prerequisite:* Nine hours of college mathematics.

162 Geometry El&Mid School Teacher An informal, investigative approach to geometry. Extensive use of discovery experiences through inductive procedures as opposed to the traditional emphasis on deductive process found in high school geometry. Credit not given for Math. majors in EM. *Prerequisite:* 15 or a teaching certificate.

167 Physical Chemistry Preparation Review of relevant mathematical and physical concepts as applied to physical chemistry. Credit cannot be obtained for both MATH 167 and MATH 121. Not available for credit for E&M students. *Prerequisites:* 22; CHEM 32 or 36. (Cross-listing: Chem. 167.)

173 Basic Combinatorial Theory Introduction to basic combinatorial principles emphasizing problem-solving techniques. Enumeration, Generating Functions, Fibonacci Numbers, Pigeonhole Principle, Inclusion-Exclusion, and Graph Theory. *Prerequisite:* 52 or 54.

179 Teaching Secondary School Math Contemporary secondary school mathematics curricula, their content from an advanced standpoint, unifying mathematical concepts and their implications at various levels, and introduction of selected mathematical topics. Intended only for students with an interest in teaching secondary school mathematics. Not acceptable as part of any mathematics requirement for a degree. *Prerequisites:* Education 178, acceptance to teacher education, or instructor's permission.

191 Special Topics An approved project under guidance of a staff member and culminating in a written report. Involvement with off-campus groups permitted. *Prerequisites:* Junior or senior standing, approval of department chairperson.

192 Special Topics An approved project under guidance of a staff member and culminating in a written report. Involvement with off-campus groups permitted. *Prerequisites:* Junior or senior standing, approval of department chairperson.

193, 194 College Honors

195 Special Topics

207 Probability Theory (Same as Statistics 251.)

221 Deterministic Modls Oper Rsch The linear programming problem. Simplex algorithm, dual problem, sensitivity analysis, goal programming. Dynamic programming and network problems. *Prerequisites:* 124; 121 desirable.

222 Stochastic Models in Oper Rsch Development and solution of some typical stochastic models. Markov chains, queueing problems, inventory models, and dynamic programming under uncertainty. *Prerequisite:* 207 or Statistics 151, or instructor's permission.

224 Analysis of Algorithms (Same as Computer Science 224.)

230 Ordinary Differential Equation Solutions of linear ordinary differential equations, the Laplace transformation, and series solutions of differential equations. *Prerequisite:* 121. Corequisite: 124 or instructor's permission. Credit not granted for more than one of the courses Math. 230 or 271.

236 Calculus of Variations Necessary conditions of Euler, Legendre, Weierstrass, and Jacobi for minimizing integrals. Sufficiency proofs. Variation and eigenvalue problems. Hamilton-Jacobi equations. *Prerequisite:* 230. Alternate years, 1997-98.

237 Intro to Numerical Analysis Error analysis, root-finding, interpolation, least squares, quadrature, linear equations, numerical solution of ordinary differential equations. *Prerequisites:* 121; 124 or 271; knowledge of computer programming.

238 Applied Computational Methods Direct and iterative methods for solving linear systems; numerical solution of ordinary and partial differential equations. Focus will be on application of numerical methods. *Prerequisite:* MATH 121, either MATH 124 or 271.

240 Fourier Series&Integral Trans Fourier series, orthogonal functions, integral transforms and boundary value problems. *Prerequisite:* 230 or 271.

241 Anyl in Several Real Vars I Properties of the real numbers, metric spaces, infinite sequences and series, continuity. *Prerequisites:* 52, 121, 124 or instructor's permission.

242 Anyl Several Real Variables II Differentiation in Rn, Riemann-Stieltjes integral, uniform convergence of functions, Inverse and Implicit Function Theorems. *Prerequisite:* 241.

243 Theory of Computation (Same as Computer Science 243.)

251 Abstract Algebra I Basic theory of groups, rings, fields, homomorphisms, and isomorphisms. *Prerequisites:* 52, 124 or instructor's permission.

252 Abstract Algebra II Modules, vector spaces, linear transformations, rational and Jordan canonical forms. Finite fields, field extensions, and Galois theory leading to the insolvability of quintic equations. *Prerequisite:* 251.

255 Elem entary Number Theory Divisibility, prime numbers, Diophantine equations, congruence of numbers, and methods of solving congruences. *Prerequisite:* 52 or 54.

257 Topics in Group Theory Topics may include abstract group theory, representation theory, classical groups, Lie groups. *Prerequisite:* 251. Alternate years, 2000-01.

260 Foundations of Geometry Geometry as an axiomatic science; various non-Euclidean geometries; relationships existing between Euclidean plane geometry and other geometries; invariant properties. *Prerequisite:* 52 or 54.

264 Vector Analysis Gradient, curl and divergence, Green, Gauss, and Stokes Theorems, applications to physics, tensor analysis. *Prerequisite:* 121, 124 or 271.

266 Chaos,Fractals&Dynamical Syst Discrete and continuous dynamical systems, Julia sets, the Mandelbrot set, period doubling, renormalization, Henon map, phase plane analysis and Lorenz equations. Corequisite: 271 or 230 or instructor's permission.

268 Mathematical Biology&Ecology Mathematical modeling in the life sciences. Topics include population modeling, dynamics of infectious diseases, reaction kinetics, wave phenomena in biology, and biological pattern formation. *Prerequisites:* 124, 230; or instructor's permission.

271 Appl Math for Engr&Scientists Matrix theory, linear ordinary differential equations. Emphasis on methods of solution, including numerical methods. Co-requisite: 121. No credit for mathematics majors. Credit not granted for more than one of the courses Math. 230 and Math. 271.

272 Applied Analysis Partial Differential Equations of Mathematical Physics, Calculus of Variations, Functions of a Complex Variable, Cauchy's Theorem, integral formula. Conformal mapping. *Prerequisite:* 230 or 271.

273 Combinatorial Graph Theory Paths and trees, connectivity, Eulerian and Hamiltonian cycles, matchings, edge and vertex colorings, planar graphs, Euler's formula

and the Four Color Theorem, networks. *Prerequisite:* 52 or 54 or instructor's permission.

274 Numerical Linear Algebra Direct and iterative methods for solving linear equations, least square factorization methods, eigenvalue computations, ill-conditioning and stability. *Prerequisite:* 237.

275 Advanced Engineer Analysis I (Same as Mechanical Engineering 304, 305; Civil Engineering 304, 305.) *Prerequisites:* 271 or 230; 275 for 276.

276 Adv Engineering Analysis II (Same as Mechanical Engineering 304, 305; Civil Engineering 304, 305.) *Prerequisites:* 271 or 230; 275 for 276.

278 Intro Wavelets & Filter Banks Continuous and discrete-time signal processing. Continuos wavelet transform. Series expansion of continuous and discrete-time signals. Perfect reconstruction, orthogonal and biorthogonal filter banks. Wavelets from filter. *Pre/Co-requisites:* 171, or instructor permission. Cross-listing: EE 274.

283 Junior-Senior Seminar Students required to give presentations on selected topics. *Prerequisite:* Instructor's permission.

293, 294 Undergraduate Honors Thesis Program of reading and research culminating in written thesis and oral presentation. Honors notation appears on transcript and Commencement Program. Contact department chairperson for procedures. (Not offered for graduate credit.)

295 Special Topics For advanced students in the indicated fields. Lectures, reports, and directed readings on advanced topics. *Prerequisite:* Instructor's permission. Credit as arranged. Offered as occasion warrants.

MECHANICAL ENGINEERING (ME)

001 First-Year Design Experience Introduction to the engineering profession and design. Hands-on experiences that emphasize interdisciplinary teamwork, technical communications, and project design methodologies. Cross-listings: EE 1.

012 Dynamics Kinematics and kinetics of particles and rigid bodies in two and three dimensions. Computer-aided analysis. *Prerequisites:* Civil Engineering 1, Math. 121.

014 Mechanics of Solids (Same as Civil Engineering 100.) Stress, strain, temperature relationships, torsion, bending stresses and deflections. Columns, joints, thin-walled cylinders. Combined stresses and Mohr's circle. *Prerequisites:* Civil Engineering 1, Math. 121, ME 12 or concurrent enrollment.

040 Thermodynamics Principles of engineering thermodynamics; applications of these principles to thermodynamic cycles. Credit not allowed for both 40 and 41. *Prerequisite:* Math 22, Physics 31 with 21.

042 Engineering Thermodynamics Properties and processes of fluids; perfect gases, and approximate relationships for real gases; applications of thermodynamics, principles of combustion, mixtures, power cycles, gas compression, and refrigeration. *Prerequisite:* 40.

044 Heat Transfer Introductory treatment of heat transfer by conduction, convection, and radiation. Corequisite: 40.

082 Mech Engineering Lab I Computer methods in mechanical engineering. Introduction to scientific programming; solids modeling and stress analysis. Pre/corequisite: CE 1.

095 Special Topics One to three hours with instructor's approval.

101 Engineering Materials I Atomic structure, crystalline structure, mechanical properties of metals; testing of materials, multicomponent systems, phase equilibria, processing metals, polymers, composite materials, ceramics and glass corrosion. *Prerequisite:* 14.

111 System Dynamics Modeling of systems with mechanical, electrical, fluid, and thermal elements. Linear systems analysis. Response of vibratory and feedback systems. Computer simulation. *Prerequisite:* 12.

114 Intro Engineering Mechanics Introduction to statics, dynamics, fluid mechanics, strength of materials, thermodynamics. *Prerequisite:* Junior standing in engineering or physical sciences.

123 Mechanical Engineering Lab II Engineering measurements, data analysis and theory of experimentation. Experiments with fluids and material testing machines and instrumentation for dynamic measurements. Corequisite: 143.

124 Mechanical Engineering Lab III Engineering measurements, data analysis and theory of experimentation. Experiments with fluids and material testing machines and instrumentation for dynamic measurements. Corequisite: 143.

143 Fluid Mechanics Fluid pressure distributions; integral control volume systems; differential relations for a fluid particle; dimensional similarity; viscous flow in ducts; boundary layer flows; inviscid incompressible flows. *Prerequisites:* 12, 42.

144 Heat Transfer One- and two-dimensional steady and unsteady thermal conduction; natural and forced internal and external convection; thermal radiation; heat exchangers; boiling and condensation heat transfer. *Prerequisite:* 143.

150 The Engineering Profession Professional practice of engineering. Laws, ethics, engineering economy, liability, insurance, and contracts. *Prerequisite:* Senior standing or instructor's permission.

161 Modern Manufacturing Processes Product development, product design, concurrent engineering, rapid prototyping, semiconductor manufacturing, metal and plastic products manufacturing, EDM, ECM, laser, ultrasonic and high energy forming methods, biotechnology. *Prerequisite:* Senior standing in ME

162 Modern Manufacturing Systems Concepts and benefits of CIM, design for manufacturability, computer-aided design, engineering, process planning, enterprise resource planning and system integration, quality engineering and human resources. *Prerequisite:* Senior standing in ME.

170 Mechanical Design I Advanced mechanics of materials, stress strain, bending and torsion of slender members, energy methods, finite element modeling, and CAD topics including parametric and solid modeling. *Prerequisite:* 101.

171 Design of Elements Mechanical fatigue criteria, fatigue analysis and design of springs, bolted/welded joints, gearing, shafts, bearings, power transmission. Computer-aided design and analysis. *Prerequisites:* Junior standing, 14.

172 Design of Systems Design synthesis and optimization; probabilistic aspects in design; expert systems in design. *Prerequisite:* 171.

174 Industrial Design Project Design projects from industry. *Prerequisite:* 171.

185 Senior Project An engineering study designed to the interests of the students, utilizing and synthesizing the student's total mechanical engineering educational experience. *Prerequisite:* Senior standing.

186 Senior Project An engineering study designed to the interests of the students, utilizing and synthesizing the student's total mechanical engineering educational experience. *Prerequisite:* Senior standing.

191 Senior Thesis Investigation of a research or design project under supervision of assigned staff member culminating in acceptable thesis. *Prerequisites:* Senior standing,departmental permission.

193, 194 College Honors

195 Special Topics *Prerequisite:* Senior standing in Civil or Mechanical Engineering.

203 Machinery Analysis & Synthesis Kinematic and kinetic analysis of two- and three-dimensional machines; kinematic synthesis, electromechanical and servo mechanisms; application to robotic mechanisms. *Prerequisite:* Senior standing in ME.

207 Biomechanics I Introduction to the structure and mechanics of the musculoskeletal system. Application of mechanics to bone, tendon, ligaments, and other biological materials. *Prerequisite:* Senior or graduate standing in ME, or instructor permission.

208 Biomechanics II Introduction to biomaterials and the mechanical behavior of bioviscoelastic fluids or solids. *Prerequisite:* 207 or instructor permission.

209 Biofluid Dynamics Fluid dynamics of human physiology. Circulatory and respiratory mechanics, steady and unsteady laminar flow, pulse wave reflections, curved and collapsible tube flow, turbulence. *Prerequisite:* 143 or equivalent.

234 Mechanical Vibrations Analysis, measurement, and control of mechanical vibrations; SDOF, MDOF, and rotating systems, forced, free, and random vibrations. *Prerequisites:* 111, or senior or graduate standing in engineering or physical sciences.

235 Turbomach Vibration Anyl / Tstng Vibration in rotating machines; vibration measurement techniques; machinery condition and degradation; condition monitoring and predictive maintenance; industrial vibration techniques including proximity probes, accelerometers, FFT analyzer. *Prerequisite:* 244.

240 Gas Dynamics Theory of compressible flow. Normal and oblique shocks; expansion waves; unsteady wave motion; method of characteristics; linearized external flows; conical and 3D flows. *Prerequisite:* ME 143 or equivalent

241 Combustion Processes Combustion thermodynamics; chemical kinetics; laminar flames, premixed and diffusion; turbulent flames; ignition, explosion, and detonation; droplet combustion; flame spread; large scale fires; rocket combustion. *Prerequisite:* Senior or graduate standing.

242 Adv Engr Thermodynamics I Foundations of statistical mechanics. Gases and crystals. Chemical equilibrium. Irreversible processes. *Prerequisites:* Senior or graduate standing or permission.

243 Inviscid Flow Eulerian and Lagrangian descriptions of motion. Potential flow. Thin-airfoil theory and numerical methods. Linear wave theory. Flow stability. Linearized subsonic and supersonic flow. *Prerequisite:* 143.

244 Intro to Turbomachinery Anyl Fundamental turbomachinery principles of fluid mechanics, thermodynamics, and structural analysis; basic equations and computational techniques for analysis and design to model and evaluate turbomachinery. *Prerequisite:* 243, Math. 271.

245 Advanced Heat Transfer I Transient heat conduction; integral methods; convection; formulation and solution; boiling, condensation; radiant heat exchange in enclosures and with emitting-absorbing gases, advanced view factors. *Prerequisite:* Senior standing in ME or instructor's permission.

246 Centrifugal Compressors Fluid dynamic and thermodynamic principles of centrifugal compressor design and design practice; limits of stable operation and instability prediction and control. *Prerequisite:* 244.

247 Centrifugal Pumps Centrifugal pump design principles and practice; performance limits; cavitation; design tools and pump design optimization. *Prerequisite:* 244.

248 Turbomachinery Special Topics Content in axial fans / compressors; axial, radial, or steam turbines; CFD, dynamics / rotordynamics, or materials for turbo-machinery; power plant or refrigeration cycle developments; turbocharged and compound IC-engines. *Prerequisite:* 244.

249 Computational Fluids Engr Computational methods for solving the Navier-Stokes equations and combined thermo-fluid flows; finite- differences and finite-volume techniques; use of standard commercial CFD software. *Prerequisites:* 143 or equivalent. Undergraduate / graduate credit.

252 Mechanical Behavior Materials Isotropic and anisotropic elasticity; theory of plasticity; deformation mechanisms in crystalline solids; dislocation theory; creep behavior; advanced fatigue and fracture mechanisms. *Prerequisite:* 101, permission. Credit given for 252 or 272, not both.

253 Corrosion of Materials Corrosion principles: electrochemical, environmental, and metallurgical aspects. Corrosion testing. Corrosion prevention. Seawater corrosion. Biological corrosion. Material selection. *Prerequisite:* 101. Credit given for 253 or 273, not both.

255 Adv Engineering Materials Advanced material processing; physical and mechanical principles of high-temperature alloys, light-weight materials, thin films, nanomaterials, and biomedical materials; elements of computational materials design. *Prerequisites:* Senior or graduate standing, or instructor's permission.

257 Composite Materials Fibers, matrices. Unidirectional and short fiber composites. Experimental characterization. *Prerequisite:* 101. Credit given for 257 or 277, not both.

265 Integrated Product Developmnt (See Business Administration 293.) *Prerequisite:* Senior standing.

270 Structural Dynamics Virbrations, matrices, earthquake engineering, stability and wave propagation. *Prerequisites:* Senior or graduate standing in engineering or physical sciences, or instructor permission. Cross-listed with CE 272.

281, 282 Seminar Presentation and discussion of advanced mechanical engineering problems and current developments. *Prerequisite:* Senior or graduate engineering enrollment.

283 Lab Techniques Turbomach Dev Instruments and transducers for performance, flow, and structural measurements in turbo-machinery; the role of test data in design and development; experimental data acquisition and processing. *Prerequisite:* 244.

285 Biomedical Engineering Seminar Presentation and discussion of advanced biomedical engineering problems and current research developments. *Prerequisites:* Senior or graduate engineering enrollment.

295 Special Topics Content is dictated by expanding professional interest in newly developing, or recently developed, technical areas in which there is particular need or opportunity. *Prerequisite:* Senior or graduate standing.

MEDICAL LABORATORY & RADIATION SCIENCE (MLRS)

001 First Year Seminar Discussion of relevant issues in the Biomedical Sciences. Topics include public health, cancer prevention, radiation science, and health and well-being. S / U grading.

003 Medical Terminology Terminology related to medical science and hospital services

034 Human Blood Cell Biology Lecture and laboratory experiences in cells of the blood, their quantitation, physiology, and alterations in disease.

054 Principles of Microbiology Lectues and laboratory experiences dealing with the structure, physiology, and control of microorganisms, in particular those of medical importance.

095, 096 Special Topics

110 Phlebotomy I Basic techniques in blood collection, including choice of anticoagulants, equipment, sterility, and protection from blood-borne pathogens.

111 Phlebotomy II Advanced techniques in blood collection, including choice of anticoagulants, equipment, sterility, and protection from blood-borne pathogens. *Pre / Co-requisites:* MLRS 110.

123 Instrumental Analysis Lectures and laboratory experiences introduce basic principles in the quantitative analysis; test results are correlated with clinical case studies. *Pre / Co-requisites:* CHEM 23 or 31 and 32.

140 Radiation Science Intorduction to ionizing radiation, emphasizing its interaction with matter, its effect on the human body, and methods of protecting patients and technologists. *Pre / Co-requisites:* MATH 10 or 19.

195, 196 Special Topics

242 Immunology Lecture dealing with cellular and humoral immunity, B cells and T cells, autoimmunity, immunodeficiency. *Pre / Co-requisites:* One Semester of Biochemistry.

244 Immunology Lab Laboratory experience dealing

with cellular and humoral immunity, B cells and T cells, autoimmunity, immunodeficiency. Laboratory covers immunological techniques and applications. *Pre/Co-requisites:* One Semester Biochemistry.

281 Applied Molecular Biology Lecture and laboratory course focused on application of molecular biology techniques to diagnostic testing and biotechnology. *Pre/Co-requisites:* CHEM 42 or 141.

289 Research Writing & Design Creating written research papers on selected topics and presenting the results to the class in a seminar format.

291, 292 Honors:Med Lab & Radiation Sci Contact the Department for specific requirements.

295 Prin of Education & Management Introduction to theories of education and management. UG only. *Pre/Co-requisites:* 3rd Year Standing.

299 Special Topics Courses or seminars beyond scope of existing departmental offerings. *Prerequisite:* Departmental permission. UG only.

MEDICAL LABORATORY SCIENCE (MLS)

220 Clinical Internship: Chemistry Experiences in an approved clinical laboratory education site in the area of clinical chemistry. *Prerequisite:* MLS seniors only.

222 Clinical Chemistry Lecture course detailing testing medical lab techniques and focusing on the pathophysiology of diseases when abnormal chemistry test results are present. Lab focuses on troubleshooting and problem solving. *Prerequisite:* MLS seniors only.

230 Clinical Internship:Hematology Experiences in approved clinical laboratory education site in the area of clinical hematology. *Prerequisite:* MLS seniors only

231 Hematology Advanced theory and analysis of blood cell physiology and related pathology. Concepts of hemostasis and clinical assessment methods. Fall.

250 Clin Internship:Microbiology Experiences in an approved clinical laboratory education site in the area of clinical microbiology. *Prerequisite:* MLS seniors only.

255 Clinical Microbiology Advanced instruction in the study of clinically significant microorganisms, infectious disease process, and laboratory methods used for the isolation and identification of microorganisms from clinical specimens. Fall. *Prerequisite:* One semester of microbiology.

260 Clin Int:Immunohematology Experiences in an approved clinical laboratory education site in the area of clinical immunohematology. *Prerequisite:* MLS seniors only.

262 Immunohematology Advanced theory and experience related to human blood groups and transfusion practice. *Prerequisite:* MLS seniors only.

272 MDS Practicum Practical experiences in molecular diagnostic applications at various locations which include FAHC Laboratories, State of Vermont Health Department Laboratory and other UVM affiliate sites. MLS seniors only.

282 Public Hlth Lab Practicum Clinical or public health laboratory experiences under the direction of qualified clinical and public health scientists, performing the most current molecular methods for both clinical diagnostic purposes as well as public health purposes. MLS seniors.

292 Topics in Medical Lab Science Seminar on topics in the practice and profession of Medical Laboratory Science. MLS majors only.

MICROBIOLOGY & MOLECULAR GENETICS (MMG)

001 First Year Colloquium Colloquium is designed to enhance faculty-student interactions in Microbiology and Molecular Genetics and to inform first-year majors about the educational and research opportunities in MMG.

065 Microbiology & Pathogenesis Overview of microbiology, emphasizing the relationships between the structure, metabolism, and genetics of microorganisms and their roles in nature and in pathogenesis. *Prerequisite:* One semester chemistry. Not intended for students who have completed Biology 1 and 2 or equivalent. Fall.

095, 096 Special Topics

101 Biology of Microorganisms An introduction to the biology of microorganisms, encompassing their diversity, metabolism, pathogenesis, and ecology. *Prerequisites:* One semester of chemistry and biology, or equivalent, or instructor's permission. Fall.

104 Intro Recombinant DNA Tech Introduction to the basic principles and techniques used in recombinant DNA technology. *Pre/Co-requisites:* BCOR 11/12 and a Microbiology or Molecular Genetics major or minor restriction.

195, 196 Special Topics *Prerequisite:* Instructor's permission. Credits negotiable.

197, 198 Undergrad Research Undergraduate honors students accommodated in individual research projects sponsored by department member. Arrangement with individual department member and department chairperson approval. Credits negotiable.

201 Molecular Cloning Lab Intensive advanced laboratory course in the fundamentals of recombinant DNA technology through the isolation and characterization of a unique gene. *Prerequisite:* 102 or equivalent. Fall.

203 Mamm Cell Cult:Molecular Biol The basic principles and techniques of mammalian cell culture, as well as cell and mammalian molecular genetics. *Prerequisite:* Permission of coordinator. Alternate years, Spring.

205 Biochemistry I Introduction to chemistry and structure of biological macromolecules; examination of mechanisms of chemical processes in biological systems, including enzyme catalysis, biosynthesis, regulation, and information transfer. *Prerequisites:* CHEM 142 or 144. Crosslisted with BIOC 205 and CHEM 205. UG only. Fall.

206 Biochemistry II Continuation of Biochemistry I. Biochemistry of nucleic acids; nucleic acid based processes, such as replication and transcription; cellular information transfer, genomics, and proteomics. *Prerequisite:* 205. Crosslisted with BIOC 206 and CHEM 206. UG only. Spring.

207 Biochemistry Lab Introduction to biochemical tools, including spectrometry, chromatography, and electrophoresis; natural and recombinant enzyme isolation; assays of DNA-modifying enzymes; computer-based structure/function exercises. Corequisites: 205 or 206. Crosslisted with BIOC 207 and CHEM 207. UG only.

211 Prokaryotic Molecular Genetics The organization, replication, and expression of genes in prokaryotes, focusing on the genetics of Escherichia coli and its viruses. *Prerequisite:* Introductory microbiology, biochemistry, genetics, and/or cell biology courses. Fall.

220 Environmental Microbiology The activities of microorganisms, primarily bacteria, in air, soil, and water. *Prerequisite:* A previous course in microbiology. Alternate years.

222 Clinical Microbiology Comprehensive study of human pathogenic microorganisms and their disease states in humans, which includes pathogenic bacteriology, medical mycology, and virology. Laboratory sessions provide practical experience in handling and identifying these pathogens. *Prerequisite:* 65 or 101 or equivalent. Spring.

223 Immunology Analysis of the immune response with respect to structure and function of immunoglobulins and the T-cell receptor, tolerance, innate and adaptive immunity, the Major Histocompatibility Complex, hypersensitivity states, transplantation, cancer, and AIDS. *Prerequisite:* Instructor's permission. Alternate years. Fall.

225 Eukaryotic Virology An in-depth analysis of eukaryotic virus-mammalian cell interactions emphasizing mechanisms by which viruses modulate gene expression in infected cells. *Prerequisite:* 101 or 102 or equivalent. Alternate years. Fall.

231 Bioinformatics Introduction to current topics in bioinformatics. Applications may include sequence alignment, dynamic programming, hidden Markov models, phylogenetics trees, microarray data analysis, genomics, and proteomics. *Prerequisites:* Instructor's permission; STAT 151, CS 26, and MMG 102 desirable. (Cross-listed with CS 231). Fall.

240 Macromol Struct Prot&Nucl Acid Introduction to structural biology and macromolecular structure with an emphasis on protein-protein and protein-nucleic acids interactions. *Prerequisites:* Biology 1, 2; Organic Chemistry; Junior standing recommended; concentration in Physics. (Cross-listed with BIOC 240) Alternate years, not approved for graduate credit. Spring.

262 Nature of Sensing and Response Examination of signal transduction pathways in widely divergent organisms, the evolutionary conservation of these pathways, and how these systems are perturbed by mutation and disease. Cross-listed with BOT 262. *Prerequisites:* BCOR 101, and either concurrent or past BCOR 103 or BOT 104, or permission.

295, 296 Special Topics Supervised investigations in microbiology or molecular genetics. *Prerequisite:* Instructor's permission. Credit as arranged.

297 Advanced Undergrad Research Undergraduate students are involved in advanced individual research projects sponsored by department member. Arrangement with individual department member and Undergraduate Program Director approval. *Pre/Co-requisites:* MMG 197/198 or Advisor's Permission.

298 Advanced Undergrad Research Undergraduate students are involved in advanced individual research projects sponsored by department member. Arrangement with individual department member and Undergraduate Program Director approval. *Pre/Co-requisites:* MMG 297.

MOLECULAR PHYSIOLOGY & BIOPHYS (MPBP)

019 UG Human Anatomy & Physiology Two-semester course with credit given only upon completion of both semesters. Structure and function of human body using cadaver prosections, histological material, and physiological experiments. Required of Medical Technology, Nursing, Nutritional Sciences, Dental Hygiene, Radiologic Technology, and Physical Education; others with instructor's permission. *Prerequisite:* 19 for 20.

020 UG Human Anatomy & Physiology Two-semester course with credit given only upon completion of both semesters. Structure and function of human body using cadaver prosections, histological material, and physiological experiments. Required of Medical Technology, Nursing, Nutritional Sciences, Dental Hygiene, Radiologic Technology, and Physical Education; others with instructor's permission. *Prerequisite:* 19 for 20.

191, 192 Undergraduate Research Individual laboratory research under guidance of faculty member. *Prerequisite:* Departmental permission.

201 Human Physiology & Exercise A comprehensive, in-depth presentation of the scientific basis of human function. Primarily for Physical Therapy students; a limited number of others may be admitted with permission. *Prerequisites:* Chemistry 23 and 42 or equivalent, two semesters general physics, one semester mathematics, permission. UG only.

202 Human Physiology & Exercise A comprehensive, in-depth presentation of the scientific basis of human function. Primarily for Physical Therapy students; a limited number of others may be admitted with permission. *Prerequisites:* Chemistry 23 and 42 or equivalent, two semesters general physics, one semester mathematics, permission. UG only.

MILITARY STUDIES (MS)

011 Intro to ROTC & US Army Discussion of the customs, traditions, branches, organization, as well as the many changes in the roles and missions of the Army of the 21st century. Includes a non-credit laboratory to develop, practice and refine leadership skills in a variety of positions.

012 Intro Mil Skills&Followership Development of basic skills of an Army officer, including navigation and communications. Students are exposed to leadership development exercises during leadership laboratories.

014 Orienteering Basic practical skills such as maps, compass, and environmental awareness. Classroom participation, written exams, and completion of an orienteering course determine student grades. Open to all first-year and sophomore students. Cross-listed as PEAC 14. Fall/spring.

017 Military Fitness Develop individual potential to achieve physical and mental health. Vigorous workout three days a week designed to build both upper body strength and aerobic ability. Classroom participation and a final Army Physical Fitness Test determine student grades. Open to all first-year and sophomore students. Cross-listed as PEAC 17. Fall/spring.

019 Backpacking Techniques of planning and organizing a backpacking trip. Basic instruction includes clothing, equipment, and environmental awareness. Includes one overnight backcountry trek. Student grades determined by class participation and participation in the practical exercise. Open to all first-year and sophomore students. Cross-listed as PEAC 19. Fall/spring.

021 Leadership&Team Development Learning and application of ethics-based leadership skills that develop individual abilities and contribute to effective team building. Development of oral presentations, writing, and coordination of group efforts. Includes a non-credit laboratory to develop, practice, and refine leadership skills in a variety of positions.

022 Individual&Team Leading Techniques for training/counseling others as an aspect of continued leadership development. Includes safety and risk management assessments, and planning for individual and team safety. Includes a non-credit laboratory to develop, practice and refine leadership skills in a variety of positions.

131 Lead&Train Small Organizations Series of opportunities to lead small groups, receive personal assessments, and lead in complex situations. Plan and conduct training to develop leadership skills. *Prerequisite:* Completion of basic course program or basic camp. Includes a non-credit laboratory to develop, practice and refine leadership skills in a variety of positions. Fall.

132 Lead&Manage Small Organization Plan for and adapt to the unexpected in organizations under stress. Examine importance of ethical decisions in a positive climate that enhances team performance. Includes a non-credit laboratory to develop, practice and refine leadership skills in a variety of positions. *Prerequisite:* 131. Spring.

241 Ldrshp Challenges&Goal Setting Plan, conduct, and evaluate activities. Assess organizational cohesion and develop strategies for improvement. Develop confidence in skills to lead people and manage resources. Includes a non-credit laboratory to develop, practice and refine leadership skills in a variety of positions. *Prerequisite:* 132. Fall.

242 Lead Org Ethically&Competently Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law related to leading as an officer in the Army. Includes a non-credit laboratory to develop, practice and refine leadership skills in a variety of positions. *Prerequisite:* 241. Spring.

MUSIC (MU)

001 Intro to Classical Music A survey of musical styles from Medieval Gregorian chant to the present. No prerequisite. May not be counted toward the major/minor.

004 Sound, Sense, and Ideas A writing-intensive course, exploring topics in Western, non-Western, folk, art, or popular repertories. See Schedule of Courses for specific topics. Usually offered as a TAP course. No prerequisite. May not be counted toward the major/minor.

005 Introduction to Jazz History Survey of jazz from its roots in ragtime and blues of the late nineteenth century to contemporary styles. *Prerequisite:* Ability to read music, or permission of instructor.

006 American Music Survey of American music from the Pilgrims to the present. Folk, popular, and classical music. Vernacular and cultivated traditions. No prerequisites.

007 Intro to World Music Cultures Survey of Sub-Saharan, Indian, Indonesian, Latin and Native American, and Middle Eastern music through readings, recordings, and hands-on study of indigenous percussion instruments. No prerequisite.

021 Beginning Group Lessons Group lessons at beginning level in voice and various instruments. No prerequisites. May not be counted toward the major. May be repeated for credit.

022 Group Piano Intermediate group lessons in piano. *Prerequisite:* Ability to read music and proficiency on another instrument or voice. May not be repeated for credit.

023 Group Piano Advanced group lessons in piano. Scales, chords, sight-reading, chorales, and repertory. Course culminates in Piano Proficiency Exam. *Prerequisite:* 22, or instructor's permission. May be repeated for credit.

024 Group Jazz Piano I Introduction to jazz piano techniques, including rootless voicings, soloing, and comping, and covering basic chord progressions, blues, and standard tunes. *Prerequisites:* MU 022, MU/MUSE majors, minors, or instructor permission

025 Group Jazz Piano II Some review of concepts from MU 024. Exploration of topics including stride, modal comping, and chord substitution. *Prerequisites:* MU 024; MU/MUSE majors, minors or instructor permission

033, 034, 035, 036, 037, 038, 039, 040 Applied Lessons Private instruction in an instrument or voice for non-majors. Subject to availability of staff. Lab fee required. Contact department office for placement. Not open for credit to music majors/minors. Juried examinations generally every second semester of study.

051 Exploring Music Fundamentals of music notation, rhythm, melody, scales, and harmony. A course for non-majors or for students preparing to enter Music 53 and 55. May not be counted toward the major.

053 Harmony and Form I Study through writing and analysis of diatonic harmony, melodic elaboration and chromatic inflection, two-and three-partite forms, and variation procedures. With accompanying lab. *Prerequisite:* Basic piano and music reading facility, determined by placement test.

054 Harmony and Form Lab I Intensive study of solfege (music reading), elementary keyboard harmony, dictation. *Prerequisite:* Basic piano and music reading facility, determined by placement test.

055 Harmony and Form II Study of chromatic harmony (modulation, sequence, applied seventh chords), and variation, sonata, and rondo forms. With accompanying lab. *Prerequisite:* 53 and 54, or instructor's permission.

056 Harmony and Form Lab II Intensive study of solfege (music reading), intermediate keyboard harmony, dictation. *Prerequisite:* 54, or instructor's permission; piano skill equivalent to Music 23 (Group Piano).

060 Intro to Music Technology Survey of MIDI and digital audio sequencing, notation, accompaniment, and multimedia software for music composition/arranging, performance, and pedagogy, including survey of pedagogical music software. *Prerequisite:* Music 53, and permission of instructor.

076 Brass Methods Class instruction on trumpet, trombone, and horn including materials and procedures for teaching these instruments in elementary and secondary schools.

077 String Methods Develop basic technical proficiency on violin, viola, cello, and double bass. Emphasis on beginning pedagogy, and teaching string instruments in a classroom setting.

078 Woodwind Methods Class instruction on flute, clarinet, saxophone and oboe/bassoon including materials and procedures for teaching these instruments in elementary and secondary schools.

079 Percussion Methods Class instruction of various orchestral pitched and unpitched percussive instruments including materials and procedures for teaching these instruments in the elementary and secondary schools.

080 Vocal Pedagogy Foundation course in applied singing, and in teaching singing. Intended for students in music education, and students intending to teach private singing lessons or lead choirs.

085 Intro to Music Education Introduction to the issues of public school education. Emphasis on the development of instructional planning.

095, 096 Introductory Special Topics Courses on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles. No prerequisite. May be counted toward the major/minor with instructor's permission.

105 Introduction to Jazz History Survey of jazz from its roots in ragtime and blues of the late nineteenth century to contemporary styles. Includes research projects. *Prerequisite:* Ability to read music, or permission of instructor.

106 American Music Survey of American music from the Pilgrims to the present. Folk, popular, and classical music. Vernacular and cultivated traditions. Includes reserach projects.

107 Intro to World Music Cultures Survey of Sub-Saharan, Indian, Indonesian, Latin and Native American, and Middle Eastern music through readings, recordings, and hands-on study of indigenous percussion instruments. Includes research projects.

111 Music History & Literature I Survey of musical styles through the Baroque. *Prerequisite:* Music 053-056. (Music 001 is strongly recommended.) Majors/minors, or instructor's permission.

112 Music History & Literature II Survey of musical styles from 1750 to the present. *Prerequisite:* Music 053-056. (Music 001 is strongly recommended.) Majors/minors, or instructor's permission.

113 Seminar in Ethnomusicology See Schedule of Courses for specific topics. *Prerequisite:* 7/107, or instructor's permission.

121 Concert Band Concert Band is open to all students. Repertory is chosen from the standard literature as well as contemporary music. *Prerequisite:* Audition.

122 University Concert Choir Mixed SATB choir. Preforming choral masterworks from the baroque period to the present. Open to all students.

123 Orchestra Full orchestra comprising strings, woodwinds, brass, and percussion. All university students may audition. Several preformances each year.

124 University Jazz Ensemble Exploration of classic big band repertory and works of contemporary composers and arrangers. Performance in one major concert every semester and occasional appearances off campus. *Prerequisite:* Audition.

125 Vermont Wind Ensemble Vermont Wind Ensemble is a select group, open to all students. Repertory is chosen from the standard literature as well as contemporary music. *Prerequisite:* Concurrent enrollment in 121; audition.

126 Accompanying Lessons in piano accompanying for soloists, taught by piano and instrumental/vocal faculty. Juried preformance expected. **127 University Catamount Singers**
Mixed, select SATB chamber choir. Performing vocal music from the medieval period to the present. Open to all students. *Prerequisite:* Audition.
128 Opera Workshop Study and performance of scenes from the operatic and musical theater repertory for the stage actor/actress.
129 Percussion Ensemble Percussion ensemble is open to all students. Repertory is chosen from the standard literature as well as improvisatory traditions of percussion music.
130 Chamber Music Study and performance of masterworks for small groups. Attendance at all rehearsals and public performances required. Outside practice required.
131 A & B Jazz Combos Small groups (a rhythm section and three to five solo instruments) in which students improve their improvisational skills while learning jazz repertory.
133 Applied Lessons Private instruction in an instrument or voice for music majors/minors in the freshman and sophomore years. Lab fee required. Juried examinations generally every semester of study. 133-136 for junior and senior music history and music theory concentrators only. Music education and performance concentrators only. Music education and perfomance concentrators must continue with 141 - 144.
134, 135, 136, 137, 138, 139, 140 Applied Lessons Private instruction in an instrument or voice for music majors/minors in the freshman and sophomore years. Lab fee required. Juried examinations generally every semester of study. 133 - 136 for junior and senior music history and music theory concentrators only. Music education and performance concentrators must continue with 141 - 144.
141, 142, 143, 144 Applied Lessons Private instruction in an instrument or voice for majors (performance and music education concentrators) in the junior and senior years. Lab fee required. Juried examinations generally every semester of study.
149 Soph Recital/Performance Sem B.M. Candidates only.
150 Junior Recital B.M. Candidates only.
153 Harmony and Form III Advanced chromatic harmony, including altered subdominant and dominant functions; study of free forms, the art song, and the late 19th c. character piece. With accompanying lab. *Prerequisite:* 55 and 56, or instructor's permission.
154 Harmony and Form Lab III Intensive study of solfege (music reading), chromatic harmony at the keyboard, dictation and open-score reading. *Prerequisite:* 56, or instructor's permission.
155 Harm & Form IV:20th C Tech Writing and analysis: extended tonality, 12-tone techniques and neotonality.Examples drawn from seminal works of the 20th century. With accompanying lab. *Prerequisite:* 153 and 154, or instructor's permission.
156 Harmony and Form Lab IV Intensive study of solfege (music reading), extended tonality and atonality at the keyboard, dictation, and open-score reading. *Prerequisite:* 154, or instructor's permission.
157 Composition Preliminary studies in free composition and the mechanics of score preparation; composition of an extended work for one to five instruments or voices. *Prerequisite:* 153, or equivalent, with instructor's permission.
159 Theory/Prac Jazz Improv I Basic repertory, idiomatic usage, aural skills, theoretical constructs, and strategies for the jazz improvisor. *Prerequisite:* intermediate instrumental skill, ability to read music, previous study of traditional music theory.
176 Music for Elem Teachers Development of musical skills, understandings, and attitudes for teaching music in the elementary classroom. *Prerequisite:* Sophomore standing in elementary education, and early childhood majors only; or acceptance into licensure program.
181 Conducting Baton technique, score reading, and laboratory practice. Preparation and performance of selected scores, including rehearsal procedures. *Prerequisite:* 153, 154.
195, 196 Special Topics Courses on topics beyond the scope of existing departmental offerings. See schedule of courses for specific titles. *Prerequisite:* 53-56. Majors/minors or instructor's permission.
201 Composer Seminar Survey of the musical style of one or more composers. Context, history, legacy. Past offerings have included Bach, Beethoven, Stravinsky, and Ellington. See Schedule of Courses for specific topics.
203 Genre Seminar Survey of the musical style within a genre. Context, history, legacy. Past offerings have included piano literature, choral literature, and bebop. See Schedule of Courses for specific topics. *Prerequisites:* 53-56, and either 111 or 112.
205 Period Seminar Survey of music from a particular historical era. Context, composers, legacy. Past offerings have included music of the twentieth century, Baroque music, and twentieth century blues traditions. *Prerequisite:* 53-56, and either 111 or 112.
211 Senior Music History Project Directed readings and research. Research project. *Prerequisite:* 53-56, 153-56, and senior standing as a music history major.
221 Concert Band Concert Band is open to all students. Repertory is chosen from the standard literature as well as contemporary music.
222 University Concert Choir Mixed SATB choir. Performing choral masterworks from the baroque period to the present. Open to all students.
223 Orchestra Full orchestra comprising strings, woodwinds, brass, and precussion. All university students may audition. Several preformances each year.
224 University Jazz Ensemble Exploration of classic big band repertory and works of contemporary composers and arrangers. Preformance in one major concert every semester and occasional appearances off campus. *Prerequisites:* Audition and instructor permission
225 Vermont Wind Ensemble Vermont Wind Ensemble is a select group, open to all students. Repertory is chosen from the standard literature as well as contemporary music. *Prerequisite:* Concurrent enrollment in 121.
226 Accompanying Lessons in piano accompanying for soloists, taught by piano and instrumental/vocal faculty. Juried performance expected.
227 University Catamount Singers Mixed, select SATB chamber choir. Performing vocal music from the medieval period to the present. Open to all students.
228 Opera Workshop Study and performance of scenes from the operatic and musical theater repertory for the stage actor/actress.
229 Percussion Ensemble Percussion ensemble is open to all students. Reperatory is chosen from the standard literature as well as improvisatory traditions of percussion music.
230 Chamber Music Study and performance of masterworks for small groups. Attendance at all rehearsals and public performances required. Outside practice required.
231 A & B Jazz Combos Small groups (a rhythm section and three to five solo instruments) in which students improve their improvisational skills while learning jazz repertory.
250 Senior Recital
251 Advanced Theory:Counterpoint Contrapuntal forms and procedures: analysis and writing. Examples from 17th through 20th centuries. *Prerequisite:* 153, or instructor's permission.
253 Orchestration Characteristics of instruments; study of instrumental scores; arranging and transcribing for ensembles. *Prerequisite:* 153, or instructor's permission.
256 Advanced Composition Creative work in free com-

position leading, when possible, to public performance of the completed work on a departmental concert. *Prerequisite:* 157, or equivalent, with instructor's permission.

257 Jazz Composition and Arranging Introduction to concepts and techniques used in jazz arranging and composition through study of historic works. Final project is an arrangement for big band. *Prerequisite:* 53-56.

259 Thry & Prac of Jazz Improv II Chord substitution, re-harmonization, scale alteration, "free" improvisation, and other techniques in written assignments and classroom performance of modern jazz repertory. *Prerequisite:* 159, or instructor's permission.

260 Senior Music Theory Project Research paper; Topic chosen under direction of assigned staff member. *Prerequisite:* senior standing as theory major.

276, 277 Elem Music Educ Methods Methods and materials for teaching music in elementary schools. *Prerequisite:* Acceptance into licensure program and junior standing in Music Ed.

278, 279 Sec Music Educ Methods Methods and materials in the teaching of vocal and instrumental music in secondary schools. *Prerequisite:* Acceptance into licensure program and junior standing in Music Ed.

280 Hist / Phil Fnd Music Educ Special consideration of the function of music in schools and society; development of personal teaching philosophy.

281 Advanced Conducting Focus on advanced conducting techniques and score preparation. Exploration of instrumental and vocal conducting techniques. *Prerequisite:* 181.

290 Teaching Internship Supervised field work designed to give students experience in specialized areas for their professional development. *Prerequisite:* Senior standing.

295, 296 Special Topics

NUTRITION AND FOOD SCIENCES (NFS)

043 Fundamentals of Nutrition Comprehensive study of specific nutrients in terms of their availability, function, and utilization in mammalian species. *Prerequisites:* High school chemistry and biology. Fall / Spring.

044 Survey of the Field Nutrition and Food Sciences (1-0) Introduction to the professional field and career opportunities in dietetics, nutrition and food science. Required of all first-year and transfer students. Fall.

053 Basic Concepts of Foods Study of the scientific aspects of food with emphasis on reasons for procedures used and phenomena occurring in food preparation. Spring.

054 Basic Concepts of Foods Lab Developing comprehension of scientific principles of food preparation through modification of standard recipes, manipulation of ingredients and techniques, and evaluation using sensory and objective methods. *Prerequisite:* 53 or concurrent registration in 53 or permission. Spring, Department majors only.

063 Obesity,Weight Control&Fitness Introduction to the causes, consequences, and reputed cures of obesity which includes: evaluation of body composition and modification of eating and exercise behaviors in weight control. Fall / Spring.

095 Special Topics Introductory level special topics courses.

143 Nutrition in the Life Cycle Nutritional needs of people throughout the life cycle. Physiological and environmental factors which affect nutritional status. Designed for nutrition majors. *Prerequisites:* Nutrition 43. Fall.

153 Principles of Food Technology Food processing technologies and underlining principles of changes in microbiological quality and safety, chemicalcomposition and nutritional value, and interaction of functional additives and ingredients. *Prerequisites:* 43, 53, organic chemistry. Spring.

154 Principles Food Technology Lab Experiential learning of principles of major modern food processing and preservation technologies, essential skills of food quality and safety assurance, and new product development. *Prerequisites:* 54, 153 or concurrent enrollment in 153, organic chemistry. Department majors only.

163 Sports Nutrition Timing and composition of meals for training and pre- and post-competition. Pre-requisite: Instructor's permission. Fall and Spring.

165 Mgmt of Eating Disorders Examination of the causes, diagnosis, and treatment of body image disorder, anorexia nervosa, bulimia nervosa, binge eating, and obesity. Information is provided through readings, lecture, discussion, and speakers. Spring.

195 Special Topics Lectures, laboratories, readings, or projects relating to contemporary areas of study. Credits negotiable. Enrollment may be more than once, maximum of 12 hours in 195 and 295 combined. *Prerequisite:* Departmental permission.

196 Field Experience Professionally-oriented field experience under joint supervision by faculty and business or community representative. Credits negotiable, maximum of 15 hours in 196 and 296 combined. *Prerequisite:* Departmental permission.

197, 198 Undergraduate Research Individual laboratory or community research in food or nutritional sciences under the guidance of a faculty member. Arrangement with faculty member and department chairperson permission.

201 Fermented Dairy Foods Fundamental processes involved in the manufacture of domestic and imported cheese varieties and other cultured dairy foods. Acquired knowledge of manufacturing procedures applied at pilot plant level. *Prerequisites:* A course in organic chemistry, AGBI 201, or permission. Alternate years.

203 Food Microbiology Desirable and undesirable activities of bacteria in foods. Mechanisms of food-borne infection and intoxication. Laboratory methods to enumer-ate and identify microorganisms associated with food. *Prerequisites:* A course in biochemistry. Fall.

205 Functional Foods:Prncpl & Tech Examines the constituents that make food products functional and provides laboratory techniques needed to create a functional food. *Pre/Co-requisites:* NFS 153, 154 or instructor's permission.

208 Sensory Evaluation of Foods Nature of sensory responses to aroma, taste, and texture of foods; relation of sensory data to instrumental measurements; statistical analysis and interpretation of sensory data. *Prerequisite:* a course in Statistics. Alternate years.

223 Nutrition Educ & Counseling Use of appropriate education theory, techniques, and media in nutrition education and counseling theories and negotiation, interviewing and counseling skills in individual and group counseling. *Pre/Co-requisites:* NFS 43, 53, 54, 143.

243 Advanced Nutrition Study of nutrients and their specific functions in metabolic process integrating cellular physiology, biochemistry, and nutrition. *Prerequisites:* 43, AGBI 201 or equivalent, ANPS 19 or equivalent; Junior standing. Spring.

244 Nutr in Hlth & Disease Prevntn Examination of dietary planning, nutrition assessment, genetics, drug-nutrient interactions, CAM therapies and nutrition related to health and prevention of disease. *Pre/Co-requisites:* Chem 42, ANPS 20, NFS 53, 54, 143.

250 Foodservice Systems Emphasis on the foodservice system model for understanding quality control; food procurement, production, and marketing; management and evaluation
of foodservice facilities, human and financial resources. *Prerequisites:* BSAD 65 and 120

253 Food Safety & Regulation Comprehensive study of the relationships between food processing and preservation, food toxicology, and the scope, applicability, and limitations of U.S. food laws. *Prerequisites:* AGBI 201 or equiva-

lent. Spring.

260 Diet and Disease Examination of the physiologic, biochemical, and psychosocial basis of several disease states and the application of medical nutrition therapy in treatment. *Prerequisites:* 53, 143, 243, 244.

262 Community Nutrition Study of U.S. public health nutrition policies, programs and practices. Emphasis on community nutrition program planning including needs assessment, intervention development and evaluation. *Prerequisites:* 260 and senior standing. Spring.

263 Nutritional Biochemistry Comprehensive study of metabolism of carbohydrates, lipids, and protein emphasizing diet induced, hormone mediated alterations in metabolism (e.g. starvation and obesity). *Prerequisites:* 243 or instructor's permission. Spring.

274 Community Practicum Professional field experience in a community nutrition organization. Credit negotiable but not to exceed three per semester. Enrollment may be more than once, maximum of 6 credits. *Prerequisite:* Instructor's permission. (Not offered for graduate credit,)

295 Special Topics Lectures, laboratories, readings, or projects relating to contemporary areas of study. Credits negotiable. Enrollment may be more than once, maxi-mum of 12 hours in 195 and 295 combined. *Prerequisite:* Departmental permission.

296 Field Experience Professionally-oriented field experience under joint supervision of faculty and business or community representative. Credit negotiable. Maxi-mum of 15 hours in 196 and 296 combined. *Prerequisite:* Departmental permission.

NURSING & HEALTH SCIENCES (NH)

095 Special Topics

195 Special Topics Intermediate courses or seminars on topics beyond the scope of the normal departmental or college offerings. See Schedule of Courses for specific titles.

201 Hlth: Sex, Drugs & Fast Foods All Honors College Juniors within the CNHS will take this 5.course in fulfillment of the Honors College curriculum. The course will be an exploration into the determinants of health.

NUCLEAR MEDICINE TECHNOLOGY (NMT)

151 Prin of Nuclear Medicine Lecture and laboratory experiences to introduce the theories and practice of nuclear medicine technology. *Pre/Co-requisites:* MLRS 140.

152 Radiopharmaceuticals The radiopharmacological aspects of nuclear medicine technology, including radiation physics, safety, tracer principles, and dosimetry. *Pre/Co-requisites:* MLRS 151.

153 Nuclear Med Clin Procedures I Procedures I Principles of diagnostic imaging procedures emphasizing the nuclear medicine technologist's role in patient care and preparation, radiopharmaceutical selection, image acquisition, and data processing and analysis. *Prerequisite:* NMT 52.

154 Nuclear Med Clin Procedures II Procedures II Principles and technical considerations of in vivo and in vitro nuclear medicine diagnostic and therapeutic procedures. *Prerequisite:* NMT 153.

155 Instrumentation I Nuclear medicine instrumentation, with emphasis on planar imaging devices, computer, and quality control; introduction to SPECT camera systems. *Prerequisite:* NMT 152.

156 Instrumentation II Advanced nuclear medicine instrumentation with emphasis on state-of-the-art imaging devices. *Prerequisite:* NMT 155.

163 Nuclear Med Clin Practicum I Students observe and participate in Fletcher Allen Health Care's Nuclear Medicine Department. NMT majors only.

164 Nuclear Med Clin Practicum II Students participate in routine imaging procedures emphasizing patient care, positioning, and instrumentation. NMT majors only. *Prerequisite:* NMT 163.

175 Medical Imaging Introduction to the radiographic anatomy and the various imaging modalities presently used to include diagnostic imaging, computed tomography (CT), magnetic resonance imaging (MRI), and nuclear medicine. *Pre/Co-requisites:* ANPS 19, concurrent with ANPS 20, MLRS 140. Cross-listed with RADT 175.

263 Adv Nuclear Med Clin Pract III Experience in advanced clinical and pharmacological procedures. NMT majors only. *Prerequisite:* NMT 164.

264 Clinical Internship Full-time clinical experience at an affiliated institution. NMT majors only. *Prerequisite:* NMT 263.

NATURAL RESOURCES (NR)

001 Natural Hist & Field Ecology Introduction to the dynamics of the natural world. Basic concepts of biological, chemical, physical, and ecological sciences and the application and interpretation of quantitative measurements are presented within a natural history context.

002 Nature & Culture Introduction to natural resources and the environment from a social/cultural perspective. Emphasis on environmental history, values, and ethics with application to natural resource and environmental policy.

006 Race & Culture in NR Introduces the first-year student to issues of race and culture from a variety of disciplinary perspectives.

025 Measurements & Mapping Introduction to surveying, mapping, aerial photo measurements, and interpretation for natural resource planning and management. *Prerequisites:* A course in high school or college trigonometry; permission required of nonmajors.

051 Environ Aesthetics & Planning Examines historical changes in perceptions of natural and built landscapes, the issues involved in the appearance of landscapes today, and techniques for enhancing landscape beauty.

073 Understanding Water Quality Introduction to water quality and water pollution in streams, lakes, wetlands, and ground water. Provides foundation for knowledgeable citizen participation in management of public waters. Credit not allowed for both 73 and 102.

099 Aiken Scholars Seminar Seminar discussions on current environment issues. Guest speakers and field trips. *Prerequisites:* Open only to first-year Aiken Scholars.

102 Water as a Natural Resource Characteristics of water-sheds, lakes, rivers, and wetlands; discussion of the management of these ecosystems; effects of society on the water resource. *Prerequisites:* Biology 1; Zoology 9 or Botany 4 or equivalent; Chemistry 31, 23, 26, or 42 or equivalent.

103 Ecology, Ecosystems & Environ Major ecological concepts and their application. Analysis of form, structure, and function of organisms, populations, communities, ecosystems, and landscapes. *Prerequisites:* 1; concurrent enrollment in 104 and 105 required.

104 Social Proc & the Environment Social science theories and their application to environmental issues. Analysis of issues using theories of government, economics, and social movements. Emphasis on integrating frameworks to analyze environmental issues. *Prerequisite:* 2 and concurrent enrollment in 103 and 105 required.

105 Environmental Problem Analysis Examination of interdisciplinary dimensions of natural resource and environmental problems. Emphasis on social andecological aspects of environmental issues and interdisciplinary teamwork. *Prerequisites:* 1, 2 and concurrent enrollment in 103 and 104.

107 The Environment&Human Health Interdisciplinary understanding of the effects of anthropogenic factors

including pollution, reduced biodiversity, climate change, overpopulation, and resource depletion on the health of natural systems and human populations. *Pre/Co-requisites:* a college level science course and sophomore standing. (Crosslisted with NH 107).

130 Global Environmental Assessmnt (Cross-listed with Environmental Sciences 130.)

140 Natrl Resources Biostatistics Introduction to applied statistical methods for typical natural resources biological problems. Descriptive statistics, hypothesis testing, regression, and sampling design. Emphasis on problem formulation and solution. *Prerequisites:* Sophomore standing, two years of high school algebra.

143 Intro to Geog Info Systems Understanding and application of computer-based, geographically-referenced information systems. *Prerequisites:* Junior standing; Computer Science 3 or 11.

146 Remote Sensing of Natural Res (Cross-listed with Forestry 146, Geography 185.)

153 Intro Environmental Policy Introduction to policy aspects of environment and natural resources including policy processes, public governance, and citizen participation with applications to environmental issues. *Pre/Co-requisites:* NR 104 or POLS 21

155 Fluvial Geology (Cross-listed with Geology 155.)

170 Intro Dynamic Simulation Mdlg Elementary principles of dynamic simulation modeling and use of the STELLA II dynamic simulation software. Example simulations of natural environmental systems. *Prerequisite:* Sophomore standing.

176 Water Quality Analysis Selected aspects of elementary water chemistry and bioassay as related to surface and ground waters. Five laboratory experiences. *Prerequisite:* 176. (2.5 hours lecture per week and 20 hours lab per semester.)

185 Special Topics Special topics in natural resources beyond the scope of existing formal courses. Variable credit.

189 Student-Designed Course Work Student-taught course work beyond the scope of formal courses in natural resources. Developed according to RSENR guidelines with sponsorship by interested faculty. Variable credit.

199 Honors Seminar A discussion and readings seminar that features guest speakers, and is part of the SNR Spring Seminar Series. Focus of the seminars change annually. Can be repeated. *Prerequisites:* Sophomore standing; open only to SNR Honors Students.

205 Ecosys Mgt:Integ Sci,Soc & Pol Integration of natural and social science into ecosystem management and policy. Consideration of ecosystem integrity, ecosystem degradation, human needs and values, and the application of management principles within a holistic context. *Prerequisites:* 1, 2, 103, 104. (Not offered for graduate credit.)

206 Env Prob Sol & Impact Assessmt Group dynamics, impact assessment, risk assessment, and decision making. Emphasis on the process of solving complex environmental problems, interdisciplinary team work, and the National Environmental Policy Act. *Prerequisites:* 1, 2, 103, 104, 205, and statistics. (Not offered for graduate credit.)

220 Landscape Ecology Study of pattern, process, and dynamics in the landscape. Considers the role of landscape pattern in determining habitat quality and ecosystem function. *Prerequisites:* One biology, one ecology course; senior standing. Alternate years, 2002-03.

222 Pollution Ecology (Cross-listed with Environmental Sciences 222.)

224 Conservation Biology Conservation of biological diversity at genetic, species, ecosystem, and landscape levels. Emphasis on genetic diversity, population viability, endangered pecies, critical habitats, international implications. *Prerequisites:* Biology 1, 2; a 100-level ecology course. (Not offered for graduate credit.)

228 Ecosystem Ecology (Cross-listed with Forestry 228.) UG only.

235 Legal Aspects Envir Planning Comparison of environmental planning law at local, state, and national levels. Case studies in environmental and natural resource planning and land use controls. *Pre/Co-requisites:* Senior Standing.

236 Geochemistry (Cross-listed Geology 235.) UG only.

240 Wilderness & Wilderness Mgmt (Cross-listed with Recreation Management 240.)

244 Quantitative Assmnts of NR

245 Advanced Spatial Methods Advanced methods in Geographic Information Systems (GIS) and spatial analysis, including the integration of statistics, classical hypothesis testing, and GIS. *Pre/Co-requisites:* senior standing, 1 introductory GIS course, 1 statistics course

250 Limnology Ecology of lakes and reservoirs, including their origin, physics, chemistry and biology, and the effects of anthropogenic perturbations. Field and laboratory experience. *Prerequisites:* One year biology, one year chemistry, and ecology course.

252 Visual Resource Planning & Mgt Investigates the theories and principles of aesthetics related to landscape perception, and their applications to visual impact assessment and scenic resource planning. *Prerequisite:* Senior standing.

254 Adv Natural Resource Policy Advanced seminar in natural resource policy, emphasizing current issues in forest policy. *Prerequisites:* Graduate or advanced undergraduate standing; instructor's permission.

255 Field Mthds in Water Resources Techniques used in field assessment of water quality in rivers and lakes. Case studies on the LaPlatte River and Lake Champlain. Sampling strategies, field measurements, and data evaluation. Extensive field work. *Prerequisite:* 102 or equivalent basic course in water.

256 Ecology of a Large Lake A field exploration of the littoral zone and deep lake environments and human impacts on large lakes using Lake Champlain as the class laboratory. *Prerequisite:* 100-level ecology course.

260 Wetlands Ecology & Mgmt Structure, dynamics and values of natural and artificial wetlands; wetlands management and issues. *Prerequisites:* Biology 1 and 2, and an upper-level ecology course.

261 Wetlands Ecology Lab

262 Int'l Problems in NR Mgmt Discussion of problems associated with the management of natural resources which have international implications. Topics may include deforestation, desertification, fisheries, wildlife, refuges, fuelwood, pollution. *Prerequisites:* Senior standing, permission.

270 Toxic&Hzrds Subst in Srf Water The fate of toxic and hazardous pollutants, including trace elements and organics, in surface waters; effects on human health and aquatic biota. *Prerequisites:* Biology 1, Chemistry 23, 42; 102 or equivalent; senior standing.

275 NR Planning: Theory & Methods Investigates theoretical development of natural resource planning. Studies planning methods appropriate to protection and use of scenic, recreational, forest, agriculture, and historic resources and ecologically sensitive areas. *Prerequisite:* Senior standing.

276 Water Quality Anlys & Interp Selected aspects of water chemistry and bioassay as related to surface and ground waters. Laboratory analysis of water quality parameters and data interpretation. *Prerequisite:* One course in chemistry, calculus, statistics; senior standing.

278 Principles of Aquatic Systems Study of physical, chemical and biological principles as related to natural aquatic systems. Modelling dynamic behavior of aquatic systems using system simulation techniques. *Prerequisites:* Math. 19, Physics 11, Chemistry 23, 26 or equivalent, 170 or equivalent (or as a co-requisite) senior standing. lecture and three hours laboratory per week).

279 Watershed Management Hydrology Fundamental elements of hydrology and contaminant transport in watersheds. Application of dynamic simulation techniques. Discussion of new technologies for watershed management. *Prerequisites:* 170 or equivalent (or as a co-requisite), Math. 20, Physics 11, Chemistry 23, 26 or equivalent, senior standing.
280 Stream Ecology Ecology of streams including hydrodynamics, morphology, sediment transport, chemistry, biology and human impacts. Field and laboratory experience. *Prerequisites:* One year biology, one year chemistry, an ecology course. chemistry.
285 Advanced Special Topics Advanced special topics in natural resource planning beyond the scope of existing formal courses. *Prerequisites:* Graduate or senior standing, instructor's permission.
288 Ecol Design & Living Technol The course explores the potential for ecological design to shape a sustainable future. It analyses living technologies for food production, waste management and environmental restoration. *Pre/Co-requisites:* Jr/Sr standing; background in ecology/systems theory.
298 Honors 'Project' Planning Discussions leading to the development of an individual or group Senior Honors Project Proposal. *Prerequisites:* Junior standing; open only to SNR Honors Students. UG only.
299 Honors Honors project dealing with aquatic resources, terrestrial ecology, or integrated natural resources. *Prerequisite:* By application only; see program chair. UG only.

NURSING (NURS)

120 Pathophysiology This course is designed to provide the student with a comprehensive foundation in pathophysiology. The phenomena that result in dysfunction in human physiologic response will be examined. *Prerequisites:* ANPS 19,20. Recommended: MMG 65 or BMT 54.
135 Hlth Issues in Dev Countries Discussion of status and practice issues in developing countries including several Black African countries and Peoples' Republic of China. Historical, sociocultural, religious, political perspectives.
138 Critical Care Nursing Prepares the experienced registered nurse with the knowledge to competently manage the critically ill adult patient. Focuses on assessment, analysis, and nursing management strategies. *Pre/Co-requisites:* Registered Nurse status.
195, 196 Special Topics

OBSTETRICS & GYNECOLOGY (OBGY)

295 Special Topics Lectures, readings and discussion for advanced students within areas of expertise of faculty and staff. *Prerequisite:* Permission of instructor.

ORTHOPEDIC SURGERY (ORTH)

291 Rsch in Orth & Rehab Work on research problem under the direction of a faculty member. Review of literature, preparation of manuscript. *Prerequisite:* Permission. (in collaboration with clinical faculty of the Department).
292 Special Topics:Orthopaedics Work on research problem under the direction of a faculty member. Review of literature, preparation of manuscript. *Prerequisite:* Permission. (in collaboration with clinical faculty of the Department).

OVERSEAS STUDY PROGRAM (OSSP)

000 Overseas Study Program

PUBLIC ADMINISTRATION (PA)

206 Intro Cont Public Affairs Contemporary policy issues including government and the economy, the role of leadership, ethical and moral issues in public policy, and other contemporary issues impacting society. *Prerequisites:* Economics 11, 12, or equivalent recommended.
295, 296 Special Topics Current issues and new developments in public policy and public administration. *Prerequisite:* Permission.
299 Fund Quantitative & Econ Anyl

PATHOLOGY (PATH)

101 Intro to Human Disease Elementary course in human pathology designed for Allied Health students. First portion deals with general mechanisms of disease, followed by disorders of specific organs. *Prerequisites:* College biology, anatomy, and physiology.
295 Special Topics

PHYSICAL EDUCATION (PEAC)

000 Varsity Sports
001 Remedial Physical Education
002 Conditioning 1-4
003 Ski Conditioning
004 Weight Training 1-4
005 Club Sports
006 Fitness Assessment
007 Weight Reduction
008 Fitness & Weight Control 1-4
009 Run For Fitness
010 Fitness & Aging
013 Wilderness Survival
014 Orienteering 1-2
015 Rappelling
016 Gymnastics 1-4
017 Military Fitness
019 Backpacking
020 Triathlon Training
021 Walking for Fitness 1-4
022 Stretch & Relaxation
023 Cross Training
024 Stress Reduction 1-4
025 Orienteering
028 Conditioning Act
031 Aerobic Exercise 1-4
033 Aquatic Aerobics 1-2
034 Aerobic Dance
035 Low Impact Aerobics 1-4
036 Swimming 1-3
038 Swimming 3-4
039 Swim for Fitness
040 Advanced Lifesaving
041 Lifeguard Training
042 Emergency Water Safety
043 WSI-Crossover
045 Intermediate Sailing
047 Scuba
049 Learn to Sail
050 Individual Sports
051 Advanced Sailing
052 Hatha Yoga
053 Archery 1-4
054 Archery 2
056 Badminton 1-2
057 Badminton 2
058 Badminton 3-4
059 Fencing

060 Badminton 4
061 Bowling 1-4
062 Bowling 3-4
063 Horseback Riding 1-4
064 Skating 1
065 Figure Skating 1-4
066 Inter Skating
070 Racquet Sports
071 Handball 1-2
075 Judo 1-4
077 Judo 3-4
079 Racquetball 1-4
081 Racquetball 3-4
085 Telemarking 1-4
086 Snowboarding 1-4
087 Downhill Skiing 1-4
088 Ski Instructors
089 X-Country Skiing 1-4
091 Intermediate X-C Skiing 3-4
092 Squash 1-2
096 Tennis 1-2
098 Tennis 3-4
100 Tennis 5-6
105 Outdoor Recreation
108 Moo Gong Do 1-2
110 Moo Gong Do 3-4
111 Golf 1
112 Golf 2
113 Golf 1-4
114 Mountain Biking
117 Racquetball 5-6
125 Team Sports 1
126 Team Sports 2
136 Team Handball
143 Volleyball 1
144 Volleyball 2
145 Volleyball 3-4
146 Volleyball 4
147 Volleyball 5-6
150 Introduction to Dance
155 Tap Dance 1-4
161 Modern Jazz 1-2
163 Modern Jazz 3-4
165 Jazz Aerobics 1-2
166 Ballet 1-2
168 Ballet 3-4
169 Ballet 4
170 Ballet 3-6
171 Modern Dance 1-2
179 Folk & Square Dancing 1-2
183 Ballet 5-6
185 Ballet 5-6
187 Ballroom Dance 1-2
188 Orchesis Dancers
189 Social Dance:International
190 Dance for Majors
192 Jazz 5+
199 Physical Education Activities

PHILOSOPHY (PHIL)

001 Intro Phil: Selected Problems Introduction to philosophy through such fundamental problems as the existence of God, the basis of morality, and the possibility of knowledge. Contemporary and historical readings. Credit not given for more than one of 1, 3, and 4.

003 Intro Philosophy: East & West Introduction to the historical dialetic of philosophy by comparisons and contrasts between Chinese and Western traditions of philosophy. Credit not given for more than one of 1, 3, and 4. Offered every semester.

004 Intro to Philosophy: Ethics Introduction to philosophy through an analysis of the principal problems and theories of ethics. Credit not given for more than one of 1, 3, and 4.Offered every semester.

013 Introduction to Logic Study of the basic principles of deductive inference.

095, 096 Special Topics See Schedule of Courses for specific titles.

101 History of Ancient Philosophy Study of the works of the Pre-Socratics, Plato, Aristotle, and their successors. *Prerequisite:* 1, 3, 4, 95, 96. Fall.

102 History of Modern Philosophy Study of works of the major philosophers of the 17th and 18th centuries: Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, Kant, and others. *Prerequisite:* 1, 3, 4, 95, 96.Spring.

105 History of Medieval Philosophy Study of works of such major philosophical figures as Augustine, Anselm, Abelard, Aquinas, Duns Scotus, and William of Ockham. *Prerequisite:* 101 is recommended.

107 19th Century Philosophy Study of works of such philosophers as Hegel, Fichte, Schopenhauer, J. S. Mill, Kierkegaard, Nietzsche, and Marx. *Prerequisite:* 102 is recommended.

108 Plato (See Classics 161.) *Prerequisites:* 1 course in Philosophy or in Classics (Greek Culture or Greek).

111 Philosophy of Mind Inquiry into such topics as consciousness, the relation between the mental (beliefs, sensations, etc.) and the physical (chemicals, neurons, etc.) and how minds represent things. *Pre/Co-requisites:* One of 1, 3, 4, 95, or 96 or one course in psychology.

112 Philosophy of Science Introduction to major philosophical problems raised by science. Typical topics: the nature of scientific inference, the structure of theories, causation, explanation, and scientific change. *Prerequisite:* One course in philosophy or one course in history of science or six hours in any natural science. Fall.

118 Metaphysics A study of such topics as vagueness, the nature of time, persistence of objects and people through change and whether numbers or properties exist. *Pre/Co-requisites:* One of 1, 3, 4, 95, 96 or permission.

120 Phil of Cognitive Science An examination of philosophical issues concerning the nature of the human mind raised by the cognitive sciences (psychology, computer science, linguistics, and neuroscience. *Pre/Co-requisites:* One of Phil 1, 3, 4, 95 or 96, or permission

121 Chinese Philosophy I Study of the Classical Schools of Chinese thought, including Confucianism, Taoism, Mohism, and Legalism. *Prerequisite:* One course in philosophy, religion, or Asian studies. Offered two out of every three semesters.

122 Chinese Philosophy II Chinese thought from the Han Dynasty to Mao Zedong's thought. *Prerequisite:* 121. Alternate years.

130 Phil Foundations of Education Critical examination of the aims of education and the most appropriate means of achieving those aims. Readings from historical and contemporary sources. *Prerequisite:* 1, 3, 4, 95, 96. Alternate years.

135 Philosophy of Religion Typical topics: the nature of religion, the concept of God, the grounds for belief in God, mortality, truth, and revelation. Historical and contemporary sources. *Prerequisite:* 1, 3, 4, 95, 96. Offered once a year.

140 Social & Political Philosophy Analysis of such fundamental theories and problems in social and political thought as political obligation, rights, and justice. *Prerequisite:* 1, 3, 4, 95, 96. Offered once a year.

142 Philosophy of Law I (Same as Political Science 143.) Analysis of the nature of law, the relation between law and morality, obligation to obey the law, the judicial decision, responsibility in law, legal ethics. *Prerequisite:* 1, 3, 4, 95, 96 or Political Science 41. Offered once a year. (Political Science).

143 Philosophy of Law II (Same as Political Science

144.) Problems of liberty, e.g. freedom of expression, privacy, paternalism; scope and limits of the criminal law; philosophy of punishment; selected problems in criminal justice, e.g. plea bargaining; preventive detention. *Prerequisite:* 1, 3, 4, 95, 96 or Political Science 41. Offered once a year. (Political Science).

144 Philosophical Prob Medicine Critical and intensive examination of such problems as abortion, euthanasia, dying and death, the ethics of organ transplantation, and the ethics of genetic engineering.*Prerequisite:* 1, 3, 4, 95, 96. Offered once a year.

147 Marxism A survey of the philosophy of Karl Marx and the Marxist radition. Contemporary Marxist perspectives will also be considered. *Pre/Co-requisites:* One of 1, 3, 4, 95, 96 or permission.

151 Phil Ideas in Literature Philosophical themes as exemplified in literature. *Prerequisite:* 1,3,4,95,96. Alternate years.

152 Philosophy of Art A consideration of some leading theories of art, and their application to problems of art as they appear in music, literature, painting, and in the general criticism of the arts. *Prerequisite:* 1, 3, 4, 95, 96. Offered once a year.

153 Philosophy and Film An examination of style in film from the perspective of philosophical aesthetics, and of the ways film style can be used to express philosophical themes. *Prerequisite:* 1, 3, 4, 95. 96.

160 Continental Philosophy An explanation of such movements in Continental philosophy as phenomenology, existentialism, and structuralism and such figures as Husserl, Heidegger, Sartre, and Foucault. *Prerequisites:* One of 1, 3, 4, 95, 96 or instructor's permission.

170 Feminism:Theories and Issues Theories of libertarianism, liberalism, and egalitarianism; application to the analysis and evaluation of social issues of contemporary interest, such as abortion and affirmative action. *Prerequisite:* One course in philosophy.

195 Special Topics See Schedule of Courses for specific titles.

196 Intermediate Special Topics See Schedule of Courses for specific titles.

197, 198 Readings & Research

205 Seminar:Maj Phil Author/School Study of major philosophical texts by a single author or school of thought. May be repeated for credit when different authors are studied. *Pre/Co-requisites:* One philosophy course at 100-level.

208 Kant An examination of issues in the philosophy of Immanuel Kant. *Pre/Co-requisites:* One philosophy course at the 100-level.

211 Phil of Mind:Advanced Topics In-depth study of topics like consciousness, the relation between the mental (belief, sensations, etc.) and the physical (chemicals, neurons, etc.) and how minds represent things. *Pre/Co-requisites:* One philosophy course at the 100-level.

215 Free Will In this course we will explore whether we have genuine free will, and, if not, how this should affect our views about morality, justice and the meaning of life. *Pre/Co-requisites:* One philosophy course at the 100-level.

216 The Self An examination of the nature of the self. We will explore the implications of divided consciousness and ask what makes one the same person over time. *Pre/Co-requisites:* One philosophy course at 100-level.

217 Philosophy of Language Philosophical study of the nature of language. *Prerequisite:* Linguistics 101, 102. Alternate years.

218 Metaphysics:Advanced Topics In-depth study of such topics as vagueness, the nature of time, persistence of objects and people through change, and whether numbers of properties exist. *Pre/Co-requisites:* One philosophy course at the 100-level.

219 Epistemology:Advanced Topics In-depth study of select topics concerning theories of knowledge and related concepts such as belief, truth, rationality, evidence, perception, and memory. *Pre/Co-requisites:* One philosophy course at the 100-level

221 Topics in Chinese Philosophy Detailed examination of a classical Chinese philosophical text or school. *Prerequisite:* 121 or 122. Alternate years.

235 Topics in Philosophy of Rel Advanced study of such issues as the metaphysics of religion, the epistemology of religious belief, philosophy and faith, religion and science, and religion and ethics. (May be repeated for credit when topic is significantly different and with departmental approval.) *Prerequisites:* 101, 102 or 135.

240 Contemporary Ethical Theory Analysis of the ideas of contemporary moral philosophers in normative ethics and metaethics. *Prerequisite:* 140, 142, 143 or 144. Alternate years.

241 Cont Social & Political Phil An analysis of the ideas of contemporary philosophers in social and political philosophy. *Prerequisite:* 140, 142, 143, or 144.Alternate years.

242 Justice & Equality (Same as Political Science 241.) An examination of contemporary normative theories of distributive justice and equality. *Prerequisite:* 140, 142, 143, or 144. Offered once a year. (Political Science).

244 Phil of Medicine:Adv Topics In-depth study of issues in contemporary medical ethics such as genetic engineering, cloning, embryonic stem cell research, abortion and physician-assisted suicide. *Pre/Co-requisites:* One philosophy course at 100-level.

260 Topics in Continental Phil Study of a central issue in current continental philosophy, e.g. social theory, psychoanalysis, or aesthetics. Readings from Nietzsche, Heidegger, Gadamer, Ricoeur, Habermas, Derrida, and Foucault. *Prerequisites:* Any course in philosophy at the 100 level or above, or instructor's permission. (May be repeated for credit when topic is significantly different.) Alternate years.

265 American Philosophy The thought of such leading American philosophers as Peirce, James, Royce, Santayana, Dewey, and Whitehead. *Prerequisites:* 101, 102. Alternate years.

295, 296 Adv Special Topics See Schedule of Courses for specific titles.

297, 298 Adv Readings & Research Independent study with an instructor on a specific philosopher or philosophical problem. *Prerequisite:* An appropriate 200-level course in philosophy.

PHARMACOLOGY (PHRM)

201 Introduction to Pharmacology This course will focus on biochemical and physiological actions of prototype drugs used in the treatment and prevention of human diseases. *Prerequisites:* Introductory courses in Biology and Organic Chemistry.

272 Toxicology The biology of environmental intoxicants and of drug abuse. Ecologic and physiologic consequences of the dissemination of agricultural, industrial, and medicinal chemicals. *Prerequisites:* Organic chemistry, background in biology.

290 Topics Molecular&Cell Pharm Focuses on basic principles, drug interactions with receptors, membranes, synapses, neurotransmitters, macromoles, cytoskeleton, ion channels and pumps, and mechanisms of drug resistance. *Prerequisites:* Introductory course in organic chemistry, background in physiology or health sciences.

PHYSICS (PHYS)

011 Elementary Physics Algebra-based survey of mechanics, oscillations, waves and thermal physics. Appropriate for students in health and life sciences. Accompanying lab: PHYS 021. *Prerequisites:* High-school algebra and trigonometry. and trigonometry.

012 Elementary Physics Algebra-based survey of electricity, magnetism, optics and modern physics. Appropriate

for students in health and life sciences. Accompanying lab: PHYS 022. *Prerequisites:* High-school algebra and trigonometry. PHYS 011 or 031.

021 Introductory Lab I *Prerequisite:* Concurrent enrollment or credit in 11 or 31.

022 Introductory Lab II *Prerequisite:* Concurrent enrollment or credit in 12 or 42.

031 Introductory Physics Mechanics including oscillations, waves, heat, and kinetic theory. Recommended for students in engineering, natural sciences, premedical programs. Accompanying lab: 21. *Prerequisites:* Math. 21, secondary school trigonometry.

042 Electromagnetism & Modern Phys Electricity, magnetism, optics, modern physics. Recommended for students in engineering, natural sciences, premedical programs. Accompanying lab: 22. *Prerequisite:* 31, Math. 22.

044 The Physics of Music Basic physical principles underlying the production, transmission and perception of musical sound. Vibrations, waves, elementary acoustics with applications to a wide range of musical topics. Pre-requisites: High School Algebra.

095, 096 Special Topics

128 Waves and Quanta Classical and electromagnetic waves, physical optics, wave-particle phenomenology, wave mechanics, and applications of the Schrodinger equation. *Prerequisites:* 42, Math. 121.

130 Introductory Laboratory III *Prerequisite:* Concurrent enrollment or credit in 128.

195, 196 Intermediate Special Topics See Schedule of Courses for specific titles. *Prerequisite:* 128, department permission.

197, 198 Readings & Research *Prerequisite:* 128, department permission.

201, 202 Experimental Physics Experiments in classical and modern physics. May be entered at beginning of either semester and repeated for credit up to a maximum of four semesters. *Prerequisites:* 42 or 128, Math. 121, junior standing.

211 Mechanics Newtonian dynamics of particles and systems of particles, with applications to problems of special importance, such as driven and coupled harmonic oscillators and central field trajectories. *Prerequisites:* 42, Math. 121.

213 Electricity & Magnetism Fundamental principles of electricity and magnetism; electrostatic fields, and magnetic fields of steady currents. Electric and magnetic properties of matter and electromagnetic energy. *Prerequisites:* 42, Math. 121. Credit not given for more than one of 213 or Electrical Engineering 141.

214 Electromagnetism Introduction to time dependent electromagnetic fields. Maxwell's equations in vacuum and in matter. Electromagnetic waves and radiation. *Prerequisite:* 213. Credit not given for more than one of 214 or Electrical Engineering 142.

222 Biological Physics Physical laws, processes, and interactions pertaining to biological systems. *Prerequisites:* 12 or 42, Math. 121.

242 Intro to Solid State Physics Introduction to crystal structures, reciprocal lattices, lattice vibrations. Thermal properties of solids and free electron theory of metals and semiconductors. Elementary band theory and introduction to electronic transport theory. *Prerequisite:* 128.

257 Modern Astrophysics (Same as ASTR 257.) Stellar structure and evolution, compact objects, the interstellar medium, galactic structure, gravitational theory, and cosmology, the formation of our solar system and terrestrial life. *Prerequisite:* One 100-level course in physical science or engineering.

258 Relativity Development of Einstein's theory of special relativity. Lorentz transformation, time dilation, length contraction, mass variation, relative velocities. Introduction to four-dimensional space. Concepts of general relativity. Applications selected from astrophysics, elementary particles, etc. *Prerequisite:* 128.

264 Nuclear & Elem Particle Physic Introduction to theoretical and experimental aspects of nuclear and elementary particle physics. *Prerequisites:* 128, junior standing.

265 Thermal Physics Thermodynamics, kinetic theory, statistical mechanics. *Prerequisites:* 42; Math. 121.

273 Quantum Mechanics I Introduction to nonrelativistic quantum mechanics. Schrodinger equation and applications to simple systems. *Prerequisites:* 128, 211.

274 Applictns of Quantum Mechanics Applications of Quantum Mechanics including Quantum Statistical Mechanics, Time-Independent and Time-Dependent Perturbation Theory, WKB Approximation, Variational Principle and Scattering. *Pre/Co-requisites:* PHYS 273

295, 296 Advanced Special Topics See Schedule of Courses for specific titles.

POLITICAL SCIENCE (POLS)

021 American Political System Institutions, processes, and problems of American government.

029 American Civil Rights Movemnts Examination of American racial discrimination; emphasis on strategies and actions of NAACP, SCLC, SNCC, Black Panthers, Nation of Islam, to end racial discrimination.

041 Intro Prob Political Thought Examination of basic problems in political philosophy, e.g. morality and law; punishment; freedom; equality; obligation and disobedience.

051 Intro International Relations Examination of the basic theoretical concepts in international relations. Introduces the student to systemic, domestic, and individual levels of analysis for assessing foreign policy decisions.

071 Comparative Political Systems Examination of political behavior, political structures, and political processes from a cross-national perspective.

095, 096 Special Topics Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

121 Law & Politics Examination of the U.S. courts focusing on the legal and political factors that influence court action, and judicial action that affects public policy. *Prerequisite:* 21.

122 Constitutional Law:Gov Powers Emphasis on developing skills of legal analysis. Historical origins and general principles of constitutionalism. *Prerequisite:* 21.

123 The Vermont Political System Analysis of the political processes and institutions of governance in Vermont in the context of the federal system and other American states. *Prerequisite:* 21.

124 The Presidency The functions and activities of the president and staff. *Prerequisite:* 21.

125 Political Parties & Elections Analysis of U.S. political parties and elections, including partisan realignments throughout history, campaign technology, and voting for president and Congress. *Prerequisite:* POLS 21.

127 The Congressional Process Organization, procedure, and behavior of the chambers of the U.S. Congress. *Prerequisite:* 21.

129 Const Law:Civil Rights America Critical examination of role of judiciary in enforcing 14th Amend-ment's "Equal Protection Clause." *Prerequisite:* 21.

131 Political Leadership Methods of identifying leaders, their relationships with nonleaders and with one another, their impact on public policy, and their personalities and social backgrounds. *Prerequisite:* 21.

132 US Supreme Court:Proc&Policy The U.S. Supreme Court as one of the three major political institutions, including the selection process, intracourt politics, and dynamics of court decision making. *Prerequisite:* 21.

133 Public Opinion/Political Part Theories and the empirical study of public opinion and political participation. Topics include: public opinion polling methodology, the origins of political outlooks, ideology, authoritarianism, generational politics, public opinion on race, voting behavior.

Prerequisite: 21.

137 Politics and The Media The role of the media in politics, including how media presentation and interpretation of events affect public opinion, political institutions, and public policy. *Prerequisites:* 21.

138 Const Law: Civil Liberties Investigation of the Supreme Court's interpretation of the First Amendment, rights of the accused, and the right to privacy. *Prerequisite:* 21.

139 Public Policy:Tools&Processes Examination of public policy process with particular focus on tools used to fashion public policy such as contracts, regulations, legislation, and presidential orders. *Pre/Co-requisites:* POLS 21.

141 History of Political Thought Development of Western political thought from Plato to Aquinas.*Prerequisite:* 41.

142 History of Political Thought Modern political thought from Machiavelli to Nietzsche. *Prerequisite:* 41.

143 Philosophy of Law I (Same as Philosophy 142.) Analysis of the nature of law, the relation between law and morality, obligation to obey the law, the judicial decision, responsibility in law, legal ethics. *Prerequisite:* 41 or Philosophy 1 or 3 or 4.

144 Philosophy of Law II (Same as Philosophy 143.) Problems of liberty, e.g. freedom of expression, privacy, paternalism; scope and limits of the criminal law; philosophy of punishment; selected problems in criminal justice. *Prerequisite:* 41 or Philosophy 1 or 3 or 4.

147 20thC Political Thought This course examines selected major works by the leading political thinkers of the twentieth century. *Pre/Co-requisites:* POLS 41

149 Intermediate Political Theory Intermediate courses on topics in political theory beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles. *Prerequisite:* 41 or instructor's permission.

151 American Foreign Policy Overview of the United States' involvement with the world. Focuses on the domestic political, institutional, and ideological influences on the formation of policy. *Prerequisite:* 51.

153 International Organization Theory and practice in supranational institutions. *Prerequisite*: 51. Three hours.

157 Internatl Politics Middle East Formation and operation of the state system in the 20th century Middle East. Emphasis on Great Power involvement, Arab-Israeli issues, regional conflict, transitional ideologies. *Prerequisite:* 51.

161 Political Geography (See Geography 177.) *Prerequisite:* 51 or 71 or Geography 1 or 73.)

168 Middle East Politics State formation in the Middle East and problems it has occasioned. Review of modern history and examination of contemporary politics of several countries. *Prerequisite:* 71.

171 Western European Political Sys A comparative examination of the British, German, and French political systems. *Prerequisite:* 71.

172 Politic&Society in Russian Fed Examines the nature of politics and the development of post-Soviet social and economic institutions in Russia. *Prerequisite:* 71.

173 Canadian Political System Institutions, process, and problems of the Canadian polity. *Prerequisite:* 71.

174 Latin American Politics Comparative examination of selected Latin American political systems. *Prerequisite:* 71.

175 Govt & Politics of China Institutions, processes, and problems of government of China. *Prerequisite:* 71.

176 Govt & Politics of Japan Institutions, processes, and problems of government of Japan. *Prerequisite:* 71.

177 Pol Systs of Tropical Africa Development of differing political systems in African countries located south of the Sahara and north of South Africa. *Prerequisite:* 71, or one course in African Studies.

181 Fund of Social Research (Same as Sociology 100.) Introduction to research methods in social science. Includes examination of research design, measurement, data collection, data analysis, and the presentation and theoretical interpretation of research findings. *Prerequisite:* One core course.

191, 192 Internships

195, 196 Special Topics See Schedule of Courses for specific titles.

197, 198 Readings & Research

220 Topics in Law In-depth analysis of selected topics in law. May repeat for credit with different content. *Prerequisite:* POLS 21, 3 hours at 100-level

222 Constitutional Law II Selected topics in constitutional law. *Prerequisite:* 122.

225 Intergovernmental Relations Problems of the federal system. National-state-local cooperative administration of selected public functions. *Prerequisites:* 21, three hours at 100 level.

226 Topics on the Presidency Further study of the exec-utive branch and its operations. Selected topics, e.g. presidential decision making. White house staffing and opera-tions, congressional-executive relations. *Prerequisite:* 124.

228 Congress & Foreign Policy Congress's role in foreign policy making, emphasizing congressional action in the post-Vietnam period. *Prerequisites:* 21, three hours at 100 level.

229 Seminar in American Politics

232 Comparative State Politics Politics, policy, and institutions of state governments of the U.S.; techniques for comparative analysis of these aspects of politics. *Prerequisite:* 21, three hours at 100 level.

234 Topics in Public Opinion This course will examine the quality and sophistication of public attitudes, and the motivations that underlie political participation and electoral choice.*Pre/Co-requisites:* POLS 21; 3 hours at 100 level; juniors and seniors only.

238 Law & Public Policy Examination of courts as policymakers, relationships with other actors in the policy process, fields in which courts play policy roles, and difficulties facing judges. *Pre/Co-requisites:* POLS 21, three hours at 100 level.

241 Justice & Equality (Same as Philosophy 242.) Examination of contemporary normative theories of distributive justice and equality. *Prerequisites:* 41, or Philosophy 1 or 3 or 4, three hours at 100 level.

242 American Political Thought American political thought from the colonial period to recent times. *Prerequisites:* 41, three hours at 100 level. Background in American history recommended.

243 Democratic Theory The nature of democracy. Both contemporary debates within democratic theory and the classical sources of democratic theory are examined. *Prerequisites:* 41, three hours at 100 level.

244 Liberalism and its Critics This course examines the works of leading contemporary liberal political theorists, and also works representing various theoretical approaches critical of liberalism. *Pre/Co-requisites:* POLS 41; 3 hours at 100 level.

249 Seminar in Political Theory

251 Foreign Pol Newly Indep States Examines the development of foreign relations of post-Soviet states, with a special focus on Russia and the post-Communist era. *Prerequisites:* 51, or three hours at 100 level.

257 Pol of European Integration Survey of the European Union including historical development, public opinion, governmental institutions, internal policies, external relations, and future prospects. *Prerequisites:* 51, or 71 plus three hours at the 100 level; or appropriate International Studies background.

258 Causes of War Examination of various theories explaining the outbreak of war, with applications to historical cases. *Prerequisites:* 51, three hours at the 150 level.

259 Sem in International Relations

260 War, Strategy and Politics The domestic, international, and geopolitical factors determining states' choice of strategies and tactics in interstate conflicts and confrontations. Contemporary and historical examples. *Prerequisites:* 51, three hours at the 150 level.

261 Topics American Foreign Policy In-depth ex-

amination of selected topics related to the making and implementation of U.S. foreign policy. *Prerequisites:* 51, three hours at the 150 level.

263 Third World Foreign Policy The particular security and political economic challenges facing states in the process of nation-building in Latin America, Africa, Middle East, South Asia, Southeast Asia. *Prerequisites:* 51, three hours at the 150 level.

264 US-China Relations Examination of the historical context and various causes of the recurring tensions and unresolved issues in U.S.-China relations since 1945. *Prerequisites:* 51, one 100-level course.

265 East Asian Political Economy Examination of the historical, political, economic, and international factors for the rise of East Asia since the Second World War. *Prerequisites:* 51 or 71, one 100-level course.

266 Politics of the Persian Gulf Covers the political systems of the states bordering the Persian Gulf, the role of oil in regional politics and the international relations of the region. *Prerequisite:* POLS 157 or POLS 168 or permission of the instructor

270 Mexican Politics An in-depth examination of the Mexican political system. Topics will include an overview of Mexican history, one-party authoritarian rule, democratization, and political economy. Prerequisites; POLS 71, 174

272 Eastern European Pol Systems Examination of Eastern European political systems with emphasis on the role of ethnic conflict and Marxist-Leninist ideology. *Prerequisites:* 71, three hours at 100 level.

276 British Politics Topics include the role of the citizenry; the character of political and governmental institutions; and policy making in particular fields. Northern Ireland is also overed. *Prerequisites:* 71 plus three hours at the 100 level; or appropriate International Studies background.

277 Comparative Ethno-Nationalism Ethnicity and nationalism in Europe, Asia, and Africa. Political, historical, social, and economic factors are examined comparatively. *Prerequisites:* 71, three hours at the 100 level.

279 Sem in Comparative Politics

284 Public Opinion:Thry & Rsch I (Same as Sociology 241.)* *Prerequisite:* 181 or Sociology 100.

285 Public Opinion:Thry & Rsch II (Same as Sociology 242.)* *Prerequisite:* 284 (Sociology 241).

293 Senior Honors Seminar I Examination of major contemporary research topics in political science. *Prerequisite:* Admission by invitation only. (Not offered for graduate credit.)

295, 296 Advanced Special Topics Advanced courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

297, 298 Advanced Readings & Research For advanced undergraduate and graduate students.

PROFESSIONAL NURSING (PRNU)

050 First Year Nursing Seminar This course begins the socialization process of undergraduate nursing students as members of a profession and will introduce the historical foundations, evolution, and contemporary characteristics of nursing.

060 Trans to Cntmp Prof Nursing This course bridges students into the RN-BS-MS program. An emphasis is placed on nursing theory, holistic nursing practice, contemporary issues in nursing and ethical decision-making. *Prerequisite:* Admission to program (NAT majors).

110 Art & Science of Nursing Ways of knowing that contribute to the professional nurse's understanding of the human experience of health are explored within the context of environment and culture. *Prerequisites:* Sociology, Psychology 1, English 1; Pre/corequisite: PRNU 50; Recommended: One of the following: ENVS 1, 2 or 7; ENSC 1 or 130; NR 2 or NR 107/NH 107.

111 Research in Nursing Provides an introduction to nursing research and its relationship to nursing theory and practice. Knowledge and skills essential for the critique and utilization of nursing research are presented. *Prerequisites:* PRNU 110,STAT 111 or 141.

113 Assess of Hlth:Indiv&Fam/Comm Through classroom and practicum, students learn to holistically assess and differentiate healthy from at-risk findings of clients in a variety of settings. *Prerequisites:* ANPS 19, NFS 43, HDFS 5; Pre/Corequisites:PRNU 110, 111, ANPS 20, MMG 65 or BMT 54.

127 Hlth Promotion Across Lifespan This course focuses on health promotion and disease prevention across the lifespan. Varied practicum experiences provide students the opportunity to assess, plan, implement and evaluate care. *Prerequisites:*PRNU 050, 110, 111, 113; Pre/corequisite: one of the following ENVS 1,2,or 7, ENSC 1 or 130; NR 2 or NR 107/NHS 107; Recommended: PRNU 128, NURS 120.

128 Nurs Implications Drug Therapy Examination and application of knowledge of pharmacotherapeutic principles to nursing practice. *Prerequisites:*PRNU 50,110,111,113, CHEM 26, ANPS 20; Pre/corequisite: NURS 120.

129 Fam Care/Chldbrg Women&Newborn This course focuses on the human experiences of child- bearing. Students will have opportunities to care for childbearing women, neonates and their families in a variety of settings. *Prerequisites:* PRNU 50,110,111,113; Pre/corequisites: PRNU 127,128,NURS 120.

130 Prof Nursing&HealthCare System This course focuses on the historic and contemporary role of the professional nurse within the health care system. The organization and financing of health care is examined from multiple perspectives. *Prerequisites:* 50, 110, 111.

131 Exp of Alterations in Health I Focus on the human experience of alterations in health for individuals and their families. Content addresses individual and family responses to disease processes from a holistic perspective. *Prerequisites:* 127, 128, NURS 120.

132 Caring for Child W/Alter Hlth Focus on children experiencing alterations in health. Through classroom and practicum students learn to holistically care for children experiencing alterations within the context of family, in a variety of settings. *Prerequisites:* PRNU 127, 128, 129, 130, NURS 120; Pre/corequisite: PRNU 131.

134 Care Adult/Elders W/Alt Hlth Focus on adults and elders experiencing alterations in health. Through classroom and practicum students learn to holistically care for adults and elders experiencingalterations within the context of family, in a variety of settings. *Prerequisites:*NURS 120,PRNU 127,128,129,130; Pre/corequisite: PRNU 131.

196 Special Topics Refer to course schedule for specific title. *Prerequisites:* Majors only; senior standing.

197 Independent Study An independent study is an educational experience taken for credit that occurs separate from a group class. The student develops a plan specific to their learning needs and interests and works under the guidance of a faculty member to achieve the predetermined objectives. *Prerequisites:* Agreement from a faculty sponsor and approval by the Baccalaureate Education Committee.

231 Experience:Alteration:Hlth II This course focuses on individual and family responses to alterations in health. A holistic and lifespan approach will be used in examining the nursing care of these clients. *Prerequisites:* NURS 120, PRNU 127, 128; Pre/corequisite: PRNU 130.

234 Care Adlts/Elders w/Alt HlthII The second course of a two-course sequence focusing on adults and elders experiencing alterations in health. Through classroom and practicum students learn to holistically care for adults and elders experiencing alterations within the context of family. *Prerequisites:* PRNU 131, 134; Pre/corequisites: PRNU 132, 231, 235.

235 Care Indv w/Alt in Mental Hlth Focus on individuals experiencing alterations in mental health. Through classroom and practicum students learn to holistically care for individuals experiencing alterations in mental health in a variety of settings. *Prerequisites:* PSYC 152, NURS 120; PRNU 127,128,129,130; Pre/corequisite: PRNU 131.

238 Caring For Select Populations This course provides students with the opportunity to focus on a clinical specialty area of their interest. *Prerequisites:* PRNU 129, 132 for OB/ped specialty; PRNU 234, 235 for Adult Health/psych/ICU/ED/OR/PACU specialty.

240 Contemp Iss&Ldrshp Prof Nursng Current issues and leadership in the nursing profession. Prominent issues in nursing are explored from a historical, political, and futuristic perspective. Strategies dealing with issues are formulated using theories of change and leadership. *Prerequisites:* PRNU 50, 110, 111, 113; NURS 120; PRNU 127, 128, 129, 130, 131, 132, 134, 234, 235; Corequisites: PRNU 241, 244.

241 Cmty/Public Health Nursing This course focuses on population health and community partnerships. Students will provide care to a defined community within their clinical groups and will work in collaboration with professionals in a variety of settings.*Prerequisites:*PRNU 50,110,111,113;NURS120;PRNU 127,128,129,130, 131, 132, 134, 231, 234,235; Corequisites: PRNU 240, 244.

244 Senior Practicum Provides students with the opportunity to focus on a clinical area of interest. Settings include health clinics, homes, hospitals, and long term care facilities. *Prerequisites:* PRNU 50, 110, 111, 113; NURS 120; PRNU 127, 128, 129, 130, 131, 132, 134, 234, 235; Corequisites: PRNU 240, 241.

263 Professional Nursing Practice Course will focus on health promotion for individuals, families, and groups recognized as marginalized within our society. Clinical settings used will focus on meeting the needs of people in marginalized groups. *Prerequisites:* PRNU 60, 111, 113.

PLANT & SOIL SCIENCE (PSS)

010 Home & Garden Horticulture Planning, selecting, and maintaining shrubs, trees, flowers, lawns, fruits, and vegetables around the home. Suitable for students in any major.

011 Principles of Plant Science Principles and practices involved in the culture, management, and utilization of economically important horticulture and agronomic crops.

021 Introduction to Ecological Agr Ecological concepts as applied to agriculture including farm visits. *Prerequisites:* Must be enrolled in the Ecological Agriculture major or permission.

095, 096 Special Topics Courses or seminars on topics beyond the scope of existing department offerings.

106 Entomology & Pest Mgmt Survey of the major insect orders, and methods for controlling injurious species. *Prerequisite:* 11.

107 Forest Entomology Ecology and population dynamics of insects affecting forests and forest products. Insect control by silvicultural, biotic, and chemical means. *Prerequisite:* Junior standing in Forestry or Sustainable Landscape Horticulture or permission. Cross-listed with FOR 133.

117 Plant Pathology Introduction to the causes of plant disease including the relationship of the plant, pathogen, and environment in disease development and disease management. *Prerequisites:* BOT 4 or BIOL 1,2 or PSS 11. Alternate years.

121 Indoor Plants Indoor flowers, culture, related topics such as design. *Prerequisite:* PSS 10 or 11 or Botany 4 or permission. Alternate years.

123 Garden Flowers Outdoor flowers, culture, related topics. *Prerequisite:* PSS 10 or 11 or Botany 4 or permission. Alternate years.

124 Vegetable Crop Production Principles and practices of commercial vegetable fruit and root crop production, including seed production, propagation, tillage, cultural practices, and nutrition value. (Alternate years) *Pre/Co-requisites:* PSS 11

125 Woody Landscape Plants Identification, climatic requirements, cultural management, and use of ornamental plant materials in landscape planting. *Prerequisite:* 11 or Botany 4 or permission.

127 Greenhouse Operations & Mgmt Principles and practices of commercial greenhouse management including construction, heating, cooling, container media, watering, fertilization, light and temperature, growth regulators, integrated pest management and disease control. *Prerequisite:* PSS 11. Alternate years.

131 Landscape Design 1 A studio course emphasizing theory of landscape design and its application to actual landscape design problems. Graphic communication techniques included. *Prerequisite:* PSS 11 or permission.

132 Landscape Design 2 Advanced techniques in landscape design. Grading, construction details, graphic techniques, site analysis as well as various design problems. *Prerequisite:* PSS 125 or 131, or Recreation Management 138 or permission.

138 Commercial Plant Propagation Principles and practices involved in propagating herbaceous and woody plants by seeds, division, layering, cuttings, budding, grafting, and aseptic culture. *Prerequisite:* PSS 11 or permission.

143 Forage Crop Management Identification, establishment, and management of crops grown for hay, pasture, and silage. *Prerequisite:* PSS 11 or 3 credits in Biology or Botany or permission. Cross-listing: ASCI 143. Alternate years.

145 Turfgrass Management Establishment, maintenance, and utilization of turf for aesthetic, athletic and utility functions. *Prerequisite:* PSS 11 or 3 credits in Botany or permission. (Alternate years)

152 Agroecology An ecosystem approach to agriculture. Ecological thinking in agriculture, plant/soil ecosystems, ecological design principles and specific sustainable systems (permaculture, biodynamics, agroforestry, organic). *Prerequisite:* Three credits in a basic biological or ecological science or permission. Alternate years.

154 Composting Ecology & Mgmt Examines ecological, physical and chemical principles, the practical management of the composting process, and benefits of using compost in plant and soil ecosystems. *Prerequisite:* 3 credits in basic biological or ecological science or permission. Alternate years.

156 Permaculture Design of agriculturally productive environments that have the diversity, stability, and resilience of the natural biosphere to harmoniously integrate landscape and people. *Prerequisite:* Three credits in a basic biological or ecological science, or permission. Cross-listed with ENVS 156.

158 Internship:Eco Ag/Lndscape Hrt Academically oriented hands-on experience in agriculture and horticulture under the joint supervision of instructor and host. *Pre/Co-requisites:* Must be a senior in the Ecological Agriculture Major or the Sustainable Landscape Horticulture Major or permission.

161 Fundamentals of Soil Science Biological, chemical, and physical properties of the dynamic soil system as related to plant growth and environmental problems. *Prerequisite:* Inorganic chemistry or permission.

162 Soil Fertility & Management An agroecological analysis of soil fertility management including nutrient supply and uptake, rhizosphere-microbial interactions, fertility evaluations, and management techniques. *Prerequisite:* PSS 161 or permission.

195, 196 Undergrad Special Topics Courses or seminars on topics beyond the scope of existing department offerings. *Prerequisite:* permission.

197, 198 Undergrad Independent Study Individual projects under direction of a faculty member. Project may

involve original research, readings, internship, or assisting in teaching. *Prerequisite:* permission. More than a total of 6 credits per semester requires the chair's permission.

212 Ecological Farm Mgmt Applying basic ecological concepts and principles for practical farm management. Will cover integrated strategies for building healty soils, integrated pest management and advanced agroecology concepts. *Pre/Co-requisites:* Senior in the Ecological Agriculture Major or Graduate Student. Pss 21, 106, 117, 161, 215 or permission.

215 Weed/Crop Ecology Weed identification, reproduction, ecological relationships with crops, and integrated management. *Prerequisites:* PSS 161 or permission. Alternate years.

217 Ecol & Mgmt of Grazing Systems Physiological and ecological relationships of pasture plants with grazing livestock; economic and ecological impact of grazing systems. (Alternate years) *Prerequisites:* PSS 11 and 143 or permission.

223 Sustainable Fruit Production Principles, theory and practice of fruit production and commercial fruit science. Propogation, culture, management and harvesting, and nutrition and cultural responses to various management practices. (Alternate years) *Pre/Co-requisites:* PSS 10 or 11 and 161 or permission.

261 Soil Morph Class & Land Use Field techniques that describe soil properties, formation, and classification. The principles and processes of soil genesis, land use classification systems, and land use challenges. *Prerequisite:* PSS 161 or permission. Alternate years.

264 Chemistry of Soil & Water An environmentally oriented study of the colloidal chemistry of soil and its interfaces with roots, water, and air. *Prerequisites:* PSS 161, two semesters chemistry or permission. Alternate years.

266 Soil Water Movement Mathematical modeling and physical principles of the soil-water-plant interaction and its relationship to environmental and agricultural issues. *Prerequisites:* PSS 161, one semester of physics or permission. Alternate years.

268 Soil Ecology Underlying concepts and theory of modern soil ecology will be reviewed including spatial and temporal distributions, sampling methods, biogeochemical cycles, and ecological functions of soil. *Pre/Co-requisites:* BCOR 102 or NR 103, PSS 161. Cross-listed with NR 268.

269 Soil/Water Pollution/Bioremed Examines key issues in pollution of soil and water. Topics include type of pollutants, their reactions in soil and water, pollution prevention and bioremediation. Alternate years.

281 Sr Seminar:Eco Ag/Lndscp Hrt Assessment of students' skills and activities designed to improve them. Including: writing, presentations, problem solving, critical thinking, management, leadership, conflict resolution and career and professional development. *Pre/Co-requisites:* Must be a senior in the Ecological Agriculture Major or the Sustainable Landscape Horticulture Major or permission.

295, 296 Advanced Special Topics Lectures, laboratories, readings, field projects, surveys, or research designed to provide specialized experience in horticulture, agronomy, soils, entomology, and integrated pest management. Prerequisite: Permission.

297, 298 Advanced Independent Study Individual projects under direction of a faculty member. Project may involve original research, readings, internship, or assisting in teaching. *Prerequisite:* Permission. More than a total of 6 credits per semester requires the chair's permission.

PUBLIC SERVICE TECH GEN (PSTG)

004 Chem Lab
010 Prep for Elem College Algebra
015 Transition:College
017 Comp/Writing Tool
019 Library Research
021 Creating Success
096 Sign Language
101 Career Planning: Part 1
102 Career Planning: Part 2
185 Lake Champlain
23 Preparing for GRE
25 Race Relations & Cultural Div
299 Visiting Grad

PSYCHOLOGY (PSYC)

001 General Psychology Introduction to the entire field, emphasizing the behavior of the normal adult human being.

015 Improv Memory,Motiv&Cog Skills Theory and research on learning and memory, motivation, and cognitive skills. Emphasis on the application of principles to everyday life. *Prerequisite:* 1 or instructor's permission.

095, 096 Special Topics

104 Learning, Cognition & Behavior Behavioral and cognitive principles underlying learning, memory, and action inside and outside the laboratory. Includes conditioning, motivation, biological constraints, and mechanism of remembering and forgetting. *Pre/Co-requisites:* PSYS 001

109 Psychology Research Methods I Basic course in principles of research methodology, including design, statistical procedures, and reporting. Prepares students to understand and evaluate psychological research in a variety of areas of psychology. *Prerequisite:* 1.

110 Psychology Research Methods II More advanced methodology course for majors in psychology. Prepares students to conduct and report research in psychology, with special attention to experimental procedures in learning and cognition. Laboratory experiences. *Prerequisite:* 109.

111 Psychology of Decision Making Introduction to the study of individual and group decisions. Focus on "how," "how best," and "how reasonably" to decide. Attention to tricks and traps in the process. *Prerequisite:* 1. Summer only.

119 History of Psychology Review of major theoretical and empirical developments in psychology, including schools of psychology that have influenced contemporary models of psychology. *Prerequisites:* 1, junior or senior standing.

121 Biopsychology Biological bases of behavior: classical and contemporary issues, including introduction to nervous system, behavioral effects of drugs, chemical bases of behavioral disorders. *Prerequisite:* 1 or Biology 1.

130 Social Psychology An introduction to concepts and methods used to study the behavior of individuals in various social situations. *Prerequisite:* 1.

152 Abnormal Psychology Describing and defining abnormal behavior; models of etiology; research evidence for biological and social models; methods of intervention and prevention. *Prerequisite:* 1.

161 Developmental Psyc:Childhood Survey of research and theories on child development from conception to adolescence emphasizing experimental analyses of early social and cognitive development. *Prerequisite:* 1.

163 Psychology Mass Communication Survey of theory and research concerning mass media effects in children's socialization, information diffusion, and in shaping values, behaviors regarding health, politics, consumer choices, and environment. *Prerequisite:* 1 or instructor's permission.

195, 196 Special Topics Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

197, 198 Independent Study Individual research under staff direction. *Prerequisite:* Departmental permission.

205 Learning Analysis of theory and research on the basic learning process and behavior. *Prerequisite:* 109.

206 Motivation Theory and research on motives, including hunger, fear, sex drive, and addiction, their influence on behavior, relationship to other psychological processes, and biological correlates. *Prerequisite:* 109.

207 Thinking Survey of cognitive psychology, examining theory and research on perception, memory, language, cognition, and their interactions. *Prerequisites:* 109.

208 Cognition & Language (See Communication Sciences 208.)

215 Cognition & Aging (See Communication Sciences 215.)

220 Animal Behavior Behavior of animals under controlled experimental conditions and in their natural environments. Consideration of evolution, development, function, and control of behavior. *Prerequisite:* 109 or Biology 102.

221 Physiological Psychology I Structure and function of mammalian nervous system, emphasizing neurological correlates of sensory experience and perception. Individual laboratory experience. *Prerequisite:* 109.

222 Sel Topics Behavioral Neurosci Selected topics examining the role of the central nervous system in determining behavior, including innate behaviors, arousal, motivation, learning, and memory. *Prerequisite:* 121 or 221.

223 Psychopharmacology Effects of drugs (both medical and recreation) on behavior. Topics such as drug effects on learning, memory, motivation, perception, emotions, and aggression. *Prerequisites:* 109, 121 or 222.

230 Advanced Social Psychology Advanced survey of current research on the behavior of individuals in social situations. *Prerequisite:* 109 or 130.

231 Psychology of Women Psychological theories about women and research on women's roles. Biological, personality, cognitive, and developmental factors considered. *Prerequisite:* One psychology course at the 100 level.

233 Experience & Creativity Explores psychological processes for developing creative thinking and for enhancing the quality of conscious experience. Emphasizes personal growth as well as theoretical understanding. *Prerequisite:* Advanced background in at least one relevant field (such as psychology, environmental studies, art, or education).

235 Psychology of Art Exploration of key psychological processes involved in creating and experiencing all forms of art; participants also conduct a research project in an area of interest. *Prerequisite:* Strong background in Psychology and/or Art. UG only.

236 Theories of Human Comm Study of the role of perception, human information processing, language, nonverbal codes, meaning, cognition, and interpersonal and sociocultural context in human communication process. *Prerequisite:* 109 or 130.

237 Cross-Cultural Communication Study of cultural factors, cognitive processes, communication patterns, and problems in cross-cultural communication; role of communication in development and social change in third world countries. *Prerequisites:* 109 or 130 or 230; other advanced background in education or a social science.

239 Adv Soc Psyc Appl&Facilitation Explores psychological foundations of approach used in 130 for applying academic content. Involves research and readings beyond work for 139. *Prerequisite:* 139, or 12 hours of psychology and department permission. Intended for 130 group facilitators with advanced psychology background. (Not offered for graduate credit.)

240 Organizational Psychology Study of the psychological impact of macro and micro features of organizations upon leadership, decision making, workforce diversity, group process, conflict, and organizational performances. *Prerequisites:* 109, or instructor's permission.

241 Org Psyc:Glob/Cultrl/Loc Force Study of global, cultural, and local dynamics upon organizational culture, leadership, workforce diversity, ethics and justice at work, and conflict resolution. Conduct applied organizational cultural analysis. *Prerequisites:* 109, or instructor's permission.

250 Intro to Clinical Psychology Study of basic principles of interviewing, testing, assessment from life situations, and report writing. Examination of the most common approaches to psychotherapy. *Prerequisites:* 109, 152.

251 Behav Disorders of Childhood An overview of theory, research, and practice in developmental psychopathology from infancy through adolescence. The major disorders of social and emotional development reviewed. *Prerequisite:* 109 or 161 (109 may be taken concurrently).

253 Advanced Behavior Modification Application of techniques for the modification of human behavior in a variety of educational and social situations involving the collection and analysis of behavioral data. *Prerequisites:* 109, 152.

254 Prim Prevent&Mental Hlth Promo An examination of empirical approaches to prevention of mental and emotional disorders; history of public health methods; sources of support and opposition to prevention efforts. *Prerequisites:* 109, 152. UG only.

255 Intro to Health Psychology Psychology of the cause, treatment, and prevention of physical illness and disability. Topics include: stress, health behavior, medical compliance, patient-provider relationships, coping with illness. *Prerequisite:* 109 or advanced standing in Allied Health Sciences. UG only.

261 Cognitive Development Examination of research and theory concerning developmental changes in the human processing of information from infancy to adulthood centered around the work of Piaget. *Prerequisite:* 109 or 161 (109 may be taken concurrently).

262 Social Development Examination of theory and research concerning interpersonal development in humans from infancy through adulthood. Relationships between language, cognition, and social development emphasized. *Prerequisite:* 109 or 161 (109 may be taken concurrently).

263 Disabilities of Learning & Dev Seminar in etiology, treatments, prevention of developmental and learning disabilities within framework of current service and educational practices. Effectiveness, ethical, legal, psychological issues examined. *Prerequisite:* One 100-level psychology course or advanced standing in Psychology, Education, or Physical Therapy.

265 Infant Development Biological, cognitive, and social aspects of infant development in context; opportunities to evaluate and design research and apply knowledge to parenting, prevention, and social policy. *Prerequisites:* 109, 161 (may be taken concurrently), or comparable.

266 Communication & Children Study of the role of communication, especially television, in cognitive and social development from preschool to adolescence. Relationship between television violence and abnormal behavior examined. *Prerequisite:* 109 or 161 or 163.

268 Psychology Adult Dev & Aging Psychological development in the final third of the life span emphasizing theory and research concerning social, cognitive, perceptual, and mental health transitions and support interventions. *Prerequisites:* 1, and Sociology/Nursing/Early Childhood and Human Dev. 20 or Early Childhood and Human Dev. 195/295 or permission.

269 Cross-Cultural Psyc:Clin Persp Introduction to issues posed for psychologists in their work with ALANA (African, Latino/a, Native and Asian American) and international populations. Critical appraisal of readings, research and case studies. *Prerequisites:* PSYC 1,109. (Same as ALANA 269).

295, 296 Advanced Special Topics See Schedule of Courses for specific titles.

PHYSICAL THERAPY (PT)

095 Special Topics

201 Clinical Science&Practice Sem A comprehensive in-depth presentation of the scientific basis of human function. Primarily for physical therapy students; a limited number of others may be admitted with permission. *Prerequisites:* CHEM 23 and 42 or equivalent, two semesters general physics, one semester mathematics, permission. *Co-requisites:* 211, 221.

202 Clinic Science&Practice Sem II Forum to learn, analyze and discuss scientific , clinical and professional issues related to individuals with non-complex conditions involving the cardiopulmonary system and spinal musculoskeletal problems. *Prerequiste:* 201. *Co-requisites:* 212, 222, 232.

211 Clinical Skills Laboratory I Laboratory experiences in which students will learn foundational biomechanical principles, kinesiology of joints and practice observational, verbal, written, manual and intellectual skills involved in PT examination, evaluation, and management of patients with non-complex conditions of the peripheral joints of the musculoskeletal system. *Co-requisites:* 201, 221.

212 Clinical Skills Labs II Laboratory to practice skills in PT examination, evaluation, and management of patients with non-complex conditions involving primarily peripheral and spinal musculoskeletal problems. *Prerequisites:* ANNB 201; MPBP 201; PT 210, 211, 221. *Co-requisites:* PT 202,222,232; MPBP 202.

221 Tutorial I-Clin Care Issues I Tutorials to investigate, apply and integrate relevant basic and social sciences applied to persons with non-complex conditions involving primarily peripheral joint problems of the neuromusculoskeletal system. *Co-requisites:* 201, 211.

222 Tutorials II Tutorials where students investigate, apply and integrate foundational sciences as applied to patients with non-complex conditions involving the cardiopulmonary system and spinal musculoskeletal problems. Prerequisite 221. *Co-requisites:* 202, 212, 232.

232 Clinical Education I Clinical experience to understand the role of the physical therapist. Practice specific skills of examination, evaluation and intervention in primarily outpatient musculo-skeletal settings. Pre-requisites: PT 201, 211, 221; *Co-requisites:* PT 202, 212, 222.

255 Prof Abilities Assessment Assessment of students' professional behaviors by faculty, based upon generic abilities and the expected stage of development, examined within all courses during the semester.

RADIATION THERAPY (RADT)

144 Seminar:Patient Care Issues Topics will include new treatment modalities, outreach programs, coping with disease, etc. RADT majors only. *Prerequisite:* Junior standing in Radiation Therapy. S/U grading.

152 Prin of Radiation Therapy Introduction to the practice and theory of radiation therapy through lectures and discussions. *Pre/Co-requisites:* MLRS 140.

173 Intro to Clinical Practice Introduction to the clinical environment through activities which include patient care issues, treatment unit operations and manipulations and direct patient case. Includes a clinical practicum. Pre-requisite: RADT 52

174 Clinical Practicum Students participate and observe in the Fletcher Allen Health Care Radiation Therapy Department. RADT majors only. *Prerequisite:* RADT 173. Spring.

175 Medical Imaging Introduction to the radiographic anatomy and the various imaging modalities presently used to include diagnostic imaging, computed tomography (CT), magnetic resonance imaging (MRI), and nuclear medicine. *Pre/Co-requisites:* ANPS 19, concurrent with ANPS 20, BMT 4. Cross-listed with NMT 175.

176 Clinical Radiation Oncology The various types of neoplasms, methods of diagnosis of treatment, and elementary pathology are presented. RADT majors only. *Prerequisites:* Anatomy and Physiology 19-20, concurrent enrollment in RADT 174. Spring.

223 Clin Pract: Radiation Therapy A continuation of RADT 174 emphasizing increasing clinical capabilities. RADT majors only. *Prerequisite:* 174. Fall.

274 Clin Intern:Radiation Therapy Students are assigned to approved clinical education sites to observe and increase their participation in the clinical environment. Evaluations based on defined clinical objectives and competencies to be completed by the clinical and University faculty. RADT majors only. *Prerequisites:* Successful completion of all previous required major courses and concurrent enrollment in RADT 280. Spring.

275 Dosimetry Treatment plan verification using three-dimensional computer models, simulation data, and knowledge of treatment unit capabilities. RADT majors only. *Prerequisites:* RADT Senior Standing.

277 Techniques Radiation Therapy Instructs students in the theory and clinical application of radiotherapeutic techniques. RADT majors only. *Prerequisites:* Concurrent enrollment in 275 and 223. Fall.

280 Qual Assurance&Treatment Plan The integration of clinical oncology, radiobiology, dosimetry, and treatment planning, and how they affect patient outcomes. RADT majors only. Spring.

RELIGION (REL)

020 Intro Rel:Comparative Comparison of diverse practices and beliefs from selected religious traditions and cultures.

021 Intro Rel:Asian Traditions Study of the Hindu, Buddhist, and East Asian religious traditions as expressed in their basic symbolisms, writings, practices, and cultural forms.

022 Intro Rel:Western Traditions Study of the basic motifs, mythic patterns, and historical transformations in religious life from the ancient Near East to the modern West.

023 Intro Rel:Bible Study of religious expressions as exemplified in biblical and related texts.

024 Intro:Ethnic Rel Traditions US A study of ethnically-based religious traditions in the U.S. today as examples of non-textual, non-traditional religious systems.

027 Integr Humanities Study of religious and philosophical thought in Western culture from Hebraic and Greek antiquity to present. *Prerequisites:* Concurrent enrollment in Integrated
Humanities Program, English 27, 28 and History 27, 28.

028 Integrated Humanities Study of religious and philosophical thought in Western culture from Hebraic and Greek antiquity to present. *Prerequisites:* Concurrent enrollment in Integrated Humanities Program, English 27, 28 and History 27, 28.

080 Religion & Race in America Historical survey of forms of African-American religion in the U.S. in their relation to slavery, segregation, and civil rights; current issues in education and cultural diversity.

095, 096 Intro Special Topics See Schedule of Courses for specific titles.

100 Interpretation of Religion Examination of major theories and methods used in studying and interpreting religious phenomena. *Prerequisite:* Three hours in religion.

101 Social Dimension Rel Life Comparative study of communal forms of religious life, such as cosmic state, monasticism, sect, caste and denomination, from a variety of cultures-Eastern, Western, tribal, and modern-with a concern for their meanings as fundamental forms of religious expression. *Prerequisite:* Three hours in religion or sociology.

104 Mysticism,Shamanism & Possessn Compara-

tive study of ways in which the inward dimension of religious life finds expression. *Prerequisite:* Three hours in religion.

108 Myth, Symbol & Ritual Study of patterns and significance of myth and ritual as they appear in cross-cultural perspective, with referenceto contemporary interpretations of symbol and language. *Prerequisite:* Three hours in religion.

109 Ritualization:Rel,Body,Culture A cross-cultural examination of ritual strategies for integrating personal and social experience, with attention to various theories and types of religious ritual. *Prerequisites:* Three hours in religion.

111 Western Religious Thought Study of ways in which Western religious thinkers-in both Greek and Biblical traditions-have expressed and responded to philosophical-theological questions about human existence, world, and God. *Prerequisite:* Three hours in religion.

114 Hebrew Scriptures Study of the history and writings of the Hebraic-Judaic religion to the first century B.C. *Prerequisite:* Three hours in religion.

116 Judaism Investigation of sustaining rituals, customs, institutions, and beliefs of normative Judaism. *Prerequisite:* Three hours in religion.

122 Christian Origins Historical study of the first four centuries of Christianity in its sociocultural context, including consideration of New Testament texts. *Prerequisite:* Three hours in religion.

124 Christianity Historical study of the Christian tradition examining major religious movements of early, medieval, and Reformation Christianity, and the spirituality of Christians during these periods. *Prerequisite:* Three hours in religion.

128 Religion in America Study of the relationship between religion, the cultural ethos, and identity in America. *Prerequisite:* Three hours in religion.

130 Islam Overview examining doctrines and practices of Muslims and their religious institutions from the rise of Islam to the present. *Prerequisite:* Three hours in Religion.

131 Studies in Hindu Tradition Selected writings, rituals, and developments in the Hindu tradition with reference to cultural assumptions of India. *Prerequisite:* Three hours in religion.

132 Buddhist Traditions A survey of Buddhist beliefs and practices in a diversity of cultures, including some modern developments. *Prerequisite:* Three hours in religion.

141 Religion in Japan An examination of Japanese values as expressed in folk, Shinto, and Buddhist traditions, and in social structures, aesthetic pursuits, or business practices. *Prerequisite:* Three hours in religion.

145 Religion in China Examination of Classical, Confucian and Taoist thought through texts in translation, developments in these traditions, and interactions with folk religion and Buddhism in the premodern period. *Prerequisite:* Three hours in religion.

151 Sacred Space & Environment Study of spiritual systems and cultural identities built around places on the land, environmental philosophies, and relationships with specific environments. Focus on Native American traditions. *Prerequisite:* 3 credits in Religion

168 Contemporary Spiritual Life Study of human involvement with the spiritual as manifested in contemporary religious groups, or in modern theory and practice of meditation. *Prerequisite:* Three hours in religion.

173 Studies in Gender & Religion Selected topics focusing on the social and religious construction of gender and the shape of women's religious lives. Religious traditions studied vary by semester. *Prerequisite:* Three hours in religion. May be repeated up to six hours.

180 Moral&Rel Persp on Holocaust A study of the Holocaust in relation to questions of moral responsibility, justice, guilt, and human suffering, focusing on Jewish responses. *Prerequisites:* 3 hours in REL or HST 190 or permission of instructor.

195, 196 Intermediate Special Topics Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

197, 198 Readings & Research Variable credit.

201 Senior Seminar Selected contemporary issues in theory and interpretation; preparation and presentation of individual senior projects. *Prerequisites:* Twelve hours in religion, including 100 and six hours at the intermediate level, senior standing. UG only.

214 Studies in Judaica Selected topics of concentration emerging out of and related to the study of normative Judaism, e.g. the prophetic faith, Rabbinic Judaism, Hasidism, and Jewish mysticism. *Prerequisite:* Nine hours in religion, with three hours at the intermediate level (116 recommended). May be repeated up to six hours. (Not offered for graduate credit.)

224 Studies in Christianity Examination of selected issues, movements, periods, or individuals within the Christian tradition. *Prerequisites:* Nine hours in religion (122, 124, or 173 recommended). May be repeated up to six hours. UG only.

226 Studies in Hellenistic Rel Study of religion in the Mediterranean area during the period from the 4th century B.C. though the 4th century A.D. including Christian origins. *Prerequisite:* Nine hours in religion, with three hours at the intermediate level. (Not offered for graduate credit.)

228 Studies in Western Rel Thought Important figures, issues, movements, or texts examined. *Prerequisite:* Nine hours in religion, with three hours at the intermediate level. May be repeated up to six hours. (Not offered for graduate credit.)

230 Studies in Islam Topics varying by semester such as Women and Islam, Sufi (mystical) traditions, Shi'ite Islam, Islam and the West, and South Asian Muslim Cultures. *Prerequisites:* Nine hours in Religion, with three hours at the intermediate level (130 recommended). UG only.

234 Buddhism in Sri Lanka An examination of Theravada Buddhist belief and practice in the context of Sri Lankan culture, with attention to lay and monastic interaction. *Prerequisites:* Nine hours in religion with three hours at the intermediate level; or REL 132.

240 Studies in Asian Religions Concentrated studies in the history, life, or thought of a selected Asian religious tradition. *Prerequisite:* Three hours in religion at intermediate level in the same religious traditions. UG only.

259 Religion and Secular Culture Comparison of religious and secular systems of meaning, value, and practice. *Prerequisite:* Nine hours in religion, with three hours at the intermediate level. (Not offered for graduate credit.)

280 Symbol & Archetype Study of the work of C.G. Jung and the Jungian circle as it bears upon the interpretation of religion and as it represents a 20th century religious quest. *Prerequisite:* Nine hours in religion, with six hours at the intermediate level.(Not offered for graduate credit.)

291 Tpcs in Hist & Phenom of Rel *Prerequisites:* Nine hours in religion, with six hours at the intermediate level, junior standing. May be repeated up to six hours.

292 Tpcs in Hist & Phenom of Rel *Prerequisites:* Nine hours in religion, with six hours at the intermediate level, junior standing. May be repeated up to six hours.

297, 298 Interdisciplinary Seminar Student-faculty workshop on a topic of current interest, employing resources from various disciplines. *Prerequisites:* Nine hours in religion, with six hours at the intermediate level, junior standing, instructor's permission. (Not offered for graduate credit.)

RECREATION MANAGEMENT (RM)

001 Intro to Recreation Management Introduction to the broad field of outdoor recreation and tourism, including history, philosophy, current issues, career opportunities, and the Recreation Management Program.

030 US National Parks The natural beauty and unique phenomena of our National Parks are emphasized. Historical development and current problems are cited. Credit not

granted for both 30 and Natural Resources 2.
050 Tourism Planning Examination of tourism including its economic, environmental, and social effects. Emphasis on planning to maintain the integrity of tourist regions.
138 Park & Recreation Design Recreation design methodology applied to the design of public and private recreational facilities.
152 Forest Resource Values Cross-listed with Forestry 152.
153 Recreation Admin & Operations Administration and operation of outdoor recreation agencies and businesses. Special emphasis on recreation administrative structures, personnel management, and maintenance of parks and outdoor recreation areas. *Prerequisites:* Junior or senior standing.
157 Ski Area Management An analysis of current management problems affecting private ski areas in Vermont and the Northeast. *Prerequisites:* Junior or senior standing. Alternate years.
158 Resort Mgmt & Marketing Study of the management of year-round resort facilities. Emphasis on resort marketing, internal support functions, and associated recreational facilities. *Prerequisites:* Junior or senior standing.
160 Parks & People I A Living/Learning Center Program. Consideration of impacts of recreation on the environment. Discussion of the operation of the Vermont State Park System. Credit for 160 will not be granted until 161 has been successfully completed.
161 Parks & People II A Living/Learning Center Program. Consideration of impacts of recreation on the environment. Discussion of the operation of the Vermont State Park System. Credit for 160 will not be granted until 161 has been successfully completed.
188 Special Topics Independent study. *Prerequisites:* Junior standing, permission.
191 Rec Management Practicum Supervised field experience in national, state, urban, or private park and recreation operations. *Prerequisite:* Junior or senior standing in Recreation Management.
230 Ecotourism Study of nature-based travel emphasizing international destinations. Examination of ecotourism as a tool for preservation and economic development. *Prerequisites:* Junior or senior standing (Not offered for graduate credit.)
235 Outdoor Recreation Planning Planning large land areas for outdoor recreation use. Emphasis on the planning process relative to the leisure time use of natural resources. *Prerequisites:* Advanced standing in Recreation Management or permission. UG only.
240 Park and Wilderness Management History, philosophy, and management of wilderness, national parks, and related areas. *Prerequisite:* Junior or senior standing in Recreation Management.
255 Environmental Interpretation Philosophy, principles, and techniques of communicating environmental values, natural history processes, and cultural features to recreation visitors through the use of interpretive media. *Prerequisite:* Advanced standing in Recreation Management or permission.
258 Entrepreneurship Rec&Tourism Study of entrepreneurial theories, concepts, and practices and their application to recreation and tourism. Emphasis on preparation of individual business plans. *Prerequisites:* Junior or senior standing in Recreation Management or permission. (Not offered for graduate credit.)
299 Recreation Management Honors Honors project dealing with management of outdoor recreation and tourism. *Prerequisite:* By application only; see program chair. UG only.

RESOURCE ECONOMICS (RSEC)

121 Resource Economics
152 Forest Resource Values
222 Natural Resouces Evaluation
255, 256 Special Topics
289 Environmental Economics
299 Resource Economics Honors

RUSSIAN (RUSS)

001 Elementary Russian An introduction to all aspects of contemporary standard Russian: speaking, listening, reading, writing. Cultural components include topics such as music, art, literature, and current events. No previous knowledge of Russian needed for 1.
002 Elementary Russian An introduction to all aspects of contemporary standard Russian: speaking, listening, reading, writing. Culturalcomponents include topics such as music, art, literature, and current events. *Prerequisite:* RUSS 1 or equivalent.
051, 052 Intermediate Russian Continued practical work in all language skills (speaking, listening, reading, writing), with more analysis of the structure of Russian. Continuation of cultural components. *Prerequisite:* 1, 2.
095 , 096 Introductory Special Topics See Schedule of Courses for specific titles.
101 Phonology Practical work on Russian intonation, element order, and phonetics, using primarily Russian materials. Classroom and language laboratory work. May be taken together with 52. *Prerequisite:* 52 or concurrent enrollment in 52.
121, 122 Composition & Conversation Continued practical work on all four language skills. Emphasis on oral and written self-expression. Presentations and compositions based on Russian-language media and literature. *Prerequisite:* 52
141 Reading Comprehension Development of contextual strategies for reading authentic texts on a number of content areas, primarily expository texts from Russian newspapers, magazines, historical and scientific documents. *Prerequisite:* 52.
142 Listening Comprehension Intensive directed aural work with authentic Russian-language media (especially television, radio, and films), supplemented by work on vocabulary development and listening strategies. *Prerequisite:* 52.
161 Russian Lexicology Study of Russian word roots and derivational morphology to increase vocabulary recognition and retention, building on correspondences with English/Latinic equivalent roots where possible. *Prerequisite:* 52.
195, 196 Intermediate Special Topics See Schedule of Courses for specific titles.
197, 198 Readings & Research
201 Survey of Russian Literature Readings and discussions about Russian literature to the rise of modernism. Particular attention to the social and historical context of the 19th century novel. *Prerequisites:* 52, WLIT 118 recommended.
202 Survey 20th Century Russ Lit Readings and discussions about Russian literature from the rise of modernism to present. Particular attention to function of literature in Soviet society. *Prerequisites:* 52, WLIT 118 recommended.
221 Cult & Civ to 1905 Revolution Social, cultural, and political institutions from the time of Peter the Great to the 1905 revolution. Particular attention to Russian music, art, and literature. *Prerequisite:* 52.
222 Cult & Civ in the 20th Century Social, cultural, and political institutions from the 1905 revolution to the present. Particular attention to tensions between official and unofficial culture during the Soviet period. *Prerequisite:* 52.
251 Russian News Media Analysis of journalistic style and content in news coverage of contemporary events as reported in Russian newspapers and radio and television broadcasts. *Prerequisites:* 52, 141 or 142 recommended.
271 Slavic Linguistics The linguistic prehistory of Slavic. Linguistic history of the Russian language: introduction to Old Church Slavic and Old Russian, tracing Slavic declensional development. *Prerequisite:* One 100-level Russian course or instructor's permission.
281 Sem on Sel Lit Genre or Period Study of a literary

genre or period through close readings of representative texts supplemented by lectures and reports on sociocultural context. May be repeated. *Prerequisite:* One 100-level Russian course.
282 Seminar on Selected Author(s) Study of author(s) through close readings of representative texts supplemented by lectures and reports on the works' sociocultural context. May be repeated. *Prerequisite:* One 100-level Russian course.
295, 296 Advanced Readings & Research See Schedule of Courses for specific titles.

SOCIOLOGY (SOC)

001 Introduction to Sociology Fundamental principles and problems in the sociological analysis of the structure and dynamics of modern society.
011 Social Problems Introduction to sociology through detailed examination of a selected number of major structural problems characteristic of contemporary societies. Problems treated may vary.
014 Deviance & Social Control Analysis of the causes and consequences of social behavior that violates norms. Examines patterns of deviant socialization and social organization and forms of deviance control.
019 Race Relations in the US Analysis of racial prejudice, discrimination, and other dominant group practices directed toward Native, Asian-, and African-Americans and their social movements for integration, accommodation, and separatism.
020 Aging: Change & Adaptation Individual and social meanings of aging and old age; physical, physiological, psychological, and sociological changes accompanying aging; individual, family, community, and societal adaptations to aging. Crosslists: Nursing 20 and Early Childhood and Human Development 20/Education.
029 Sex, Marriage & Family Description and analysis of contemporary patterns in American sexual, marital, and familial behavior; their historical development, variants, and the evolving alternatives to traditional normative forms.
032 Social Inequality Introduction to structured class inequality in the U.S., causes and consequences. Focus on wealth, prestige, and power. Inequalities of age, gender, and ethnicity also examined.
043 Survey of Mass Communication The historical development of the socioeconomic, political, educational, and religious impacts of the press, film, radio, and television in American society.
057 Drugs & Society Patterns of illicit drug distribution, use, abuse, and control in contemporary society. Examines the interaction of cultural, social, psychological, and physiological factors in prohibited drug-taking.
095, 096 Introductory Special Topics See Schedule of Courses for specific titles.
100 Fund of Social Research Introduction to research methods in social science. Includes examination of research design, measurement, data collection, data analysis, and the presentation and theoretical interpretation of research findings. *Prerequisite:* Three hours of sociology or six hours in a related social science. Crosslist: Political Science 181.
101 Developm't Sociological Theory Classical sociological theory including Marx, Weber, Durkheim, and Mead, as well as DuBois and early female theorists such as Martineau. Reading and writing intensive. *Prerequisites:* Six hours of sociology or equivalent preparation in another social science with instructor's permission.
102 Population, Environment & Soc Analysis of the causes and consequences of varying relationships among population size, distribution and composition, social organization, technology, and resource base. *Prerequisite:* Three hours of sociology.
103 Environ Crises Modern Society Examines global, national, and local ecological crises both empirically and theoretically. Emphasis on economic processes, political/legal aspects, and social activism. *Prerequisite:* Three hours of sociology.
105 The Community Comparative examination of patterns of social interaction in social groups with common territorial bases in contemporary societies and the analysis of community structure and dynamics. *Prerequisite:* Three hours of sociology.
109 The Self & Social Interaction Analysis of the roles of sociocultural and situational factors in individual behavior and experience and the social genesis, development, and functioning of human personality. *Prerequisite:* Three hours of sociology or Psychology 1.
114 Sociology of Punishment This course explores the concept of punishment from sociological perspective. Focus is on analysis of formal and informal punishment, and the ironies of punishment/social control. *Prerequisite:* 3 credits sociology
115 Crime Analysis of the nature and types of behavior that violates law, the mechanisms for defining such behaviors as criminal and their causes and consequences. *Prerequisite:* Three hours of sociology.
118 Race, Crime&Criminal Justice A comprehensive examination of race, gender, and class on racial minorities' participation in criminal activities and how individuals are treated by the criminal justice system. *Prerequisite:* Three hours of sociology.
119 Race & Ethnicity (Same as Anthropology 187.) Description and analysis of ethnic, racial, and religious groups in the U.S. Examination of social/cultural patterns in the larger society and in these groups themselves. *Prerequisite:* Three hours of sociology.
120 Aging in Modern Society Analysis of contemporary needs and problems of the elderly, including discrimination, poverty, health care, and loneliness, and the evaluation of services and programs for the elderly. *Prerequisite:* Three hours of sociology or professional experience working with the elderly.
122 Women & Society Analysis of the changes in the role of women in contemporary society and their consequences for female socialization, the family, and the other major social institutions. *Prerequisite:* Three hours of sociology. Crosslist: WGST 101.
128 Sociology of Childhood Examination of sociohistorical changes in the construction of childhood and experiences of children; applications of interpretive approaches in contemporary sociology to analyze children's peer cultures. *Prerequisites:*three hours Sociology.
130 Sociology of Heterosexuality Examination of heterosexuality as cultural production with attention to how heterosexuality works along side other forms of social power expecially gender, race, and class. *Pre/Co-requisites:* Three hours of Sociology, preferably Sociology 1 or WGST 73 or 75. Crosslist: WGST 130.
132 Affluence & Poverty in Mod Soc Examination of structured social inequality in contemporary American society with special attention to the distribution of wealth and its relationship to power, prestige, and opportunity. *Prerequisite:* Three hours of sociology.
145 Youth and Popular Culture Examination of the historical and contemporary development of children's popular culture, its sociocultural significance, and children's perspectives on various cultural forms. *Prerequisites:* three hours of Sociology.
150 Popular Culture Analysis of social significance of a selected range of contemporary non-elite cultural forms in the U.S., such as rock music, television programming, and popular literature. *Prerequisite:* Three hours of sociology.
151 Sociology of Religion&Ideology Beliefs and value systems and their institutional arrangements, focusing on relationships between these systems and the larger social structure, in cross-cultural and historical perspective. *Prereq-*

uisites: Three hours of sociology or six hours of religion.

154 Social Org of Death & Dying Comparative examination of sociocultural adaptations to mortality with special attention to family, medical, legal, religious, and economic responses to fatal illness and death in contemporary society. *Prerequisite:* Three hours of sociology.

155 Culture, Health and Healing Introduction to medical anthropology. Social and cultural perspectives on health and illness experiences, doctor-patient interactions, healing practices, and access to health and health care. *Prerequisites:* three hours of Socialogy or ANTH 21. Crosslist: ANTH 174.

156 Sociology of Freakishness This course considers how American popular culture was born of the display of racial, cultural, sexual and bodily "freaks." *Prerequisite:* Three hours of sociology

161 Sociology of Leisure Analysis of the sociocultural organization of nonwork activity, emphasizing the relationships of class, life style, education, and work to contemporary recreation and leisure use patterns. *Prerequisite:* Three hours of sociology.

171 Soc Chng&Dev Persp in 3rd Wrld perspectives on development in the Third World. *Prerequisite:* Three hours in sociology.

195, 196 Intermediate Special Topics See Schedule of Courses for specific titles.

197, 198 Readings & Research

202 Population Dynamics Analysis of the factors affecting human population growth and distribution, migration patterns, and the relationship between economic activity and population trends. *Prerequisite:* Six hours of sociology including 1 and 100, or 1 and 101, or instructor permission.

203 Adv Environmental Sociology Examination of theoretical interpretations of environmental problems, sources, and solutions, focusing on the social conditions under which problems arise. Emphasis on writing and individual research projects. *Prerequisite:* Six hours of sociology including 1 and 100, or 1 and 101, or instructor permission. (not offered for Graduate credit)

205 Rural Communities in Mod Soc The changing structure and dynamics of rural social organization in context of modernization and urbanization. Emphasis on rural communities in the U.S. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101 or instructor permission. Crosslist: CDAE 205.

206 Urban Communities in Mod Soc The changing structure and dynamics of urban social organization in context of modernization and urbanization. Emphasis on cities and metropolitan areas in the U.S. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

207 Community Org & Development Communities as changing sociocultural organizational complexes within modern society. Special attention given to problems of formulation and implementation of alternative change strategies. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission. Cross-list: CDAE 218

209 Small Groups Examination of the structure and dynamics of small groups and the interpersonal, informal network of relations that characterize the interaction of members. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

211 Soc Movements&Collective Behav Examination of origins, development, structure, and consequences of crowds, riots, crazes, rumors, panics, and political and religious movements and their relationships to cultural and social change. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, orinstructor permission.

213 Women in Dev in 3rd World An examination of the meaning and measurement of development, sociodemographic characteristics, sex stratification, and effects of Colonialism and Westernization on women's issues in the third world. *Prerequisites:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission. Crosslist: WGST 205.

214 Delinquency Analysis of the nature and type of juvenile behavior that violates law, the mechanisms for defining such behaviors as delinquent, and their causes and consequences. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

216 Criminal Justice Analysis of the social structures and processes involved in the identification and labeling of individuals as criminal offenders: criminal law, its enforcement and the courts. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

217 Corrections Analysis of the social structures and processes involved with individuals designated as offenders of criminal law: probation, prison, parole, and programs of prevention and rehabilitation. *Prerequisite:* Six hours of Sociology, including 1 and 100 or 1 and 101, or instructor permission.

219 Race Relations Examination of American racial subordination in social and historical perspective. Analysis of interracial contacts, racial subcultures and social structures, and responses to racial prejudice and discrimination. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

220 Internship in Gerontology Supervised service or research internship integrating theoretical and practical gerontological issues. *Prerequisites:* 6 hours of Sociology including 1 and 100, or 1 and 101 or instructor permission or 20, 120; 221 or 222; or equivalent gerontological preparation (Not offered for graduate credit.)

222 Aging & Ethical Issues Analysis of selected ethical issues posed by an aging society and faced by older persons, their families, health care and service providers, and researchers. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

223 Sociology of Reproduction Examines reproduction of cultural values in relation to social conduct of reproduction of human life (childbearing) under advanced capitalism. *Prerequisite:* Six hours of Sociology to include one of 29, 122, or 229. Crosslist: WGST 201. (not for Graduate credit)

225 Organizations in Mod Society Examination of basic classical and contemporary theory and research on the human relations, internal structures, environments, types, and general properties of complex organizations and bureaucracies. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

229 Family as Social Institution Examination of the institution of the American family in cross-cultural and historical perspective. Theories and research on family continuity, change, and institutional relationships explored. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

232 Social Class & Mobility Comparative and historical analysis of causes, forms, and consequences of structured social inequality in societies. Examination of selected problems in contemporary stratification theory and research. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

240 Political Sociology Examination of the social organizations of power and authority in modern societies and the dynamics and institutional relationships of political institutions, interest groups, parties, and publics. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

243 Mass Media in Modern Society Intensive examination of selected topics in the structure of media organizations and their relationships to and impacts upon the major institutions and publics of contemporary issues. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or

instructor permission.

250 Sociology of Culture The relations of cultural forms and subjective experience to social structure and power; in-depth applications of interpretive approaches in contemporary sociology. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

252 Sociology of Emotions Studies the theoretical premises of a sociocultural explanation of emotions; examines specific emotions such as respect, shame, hatred, love and compassion in humans; and explores the existence of emotions in non-human animals. *Prerequisites:* 3 hours Sociology including 1 and 100, or 1 and 101, or instructor permission.

254 Sociology of Health & Medicine The social organization and institutional relationships of medicine in society and the role of sociocultural factors in the etiology, definition, identification, and treatment of illness. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

255 Soc of Mental Health Analysis of the social structures and processes involved in the identification, definition, and treatment of mental illness and its sociocultural etiology and consequences. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

258 Sociology of Law Analysis of the sociocultural structure of the legal institution and its relationships to other institutions: the social organization of the legal profession, lawmaking, and the courts. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

272 Soc of African Societies Current social, cultural, political, and economic changes occurring in African societies, including issues of development, the state and civil society, social class, ethnonationalism, and democratization. *Prerequisite:* Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

274 Research Seminar Principles of research design, data gathering, ethics, measurement, data analysis, and data presentation. Students will complete a research project. *Prerequisites:* 6 hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

275 Meth of Data Anyl in Soc Rsch Quantitative analysis of sociological data; includes table, regression, and path analysis, scaling and factor analysis, and the analysis of variance emphasizing multivariate techniques. *Prerequisite:* 6 hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

279 Contemporary Sociological Thry Critical examination of contemporary functional, conflict, exchange, interactionist, and structural theoretical approaches. A number of other theoretical approaches selected by seminar participants also examined. *Prerequisite:* 6 hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

281, 282 Seminar Presentation and discussion of advanced problems in sociological analysis. *Prerequisites:* Twelve hours of sociology, instructor's permission.

285, 286 Internship *Prerequisite:* Twelve hours of sociology including at least one 200-level course in substantive area relevant to field placement, departmental permission. UG only.

288, 289 Rsch Meth Teaching Sociology The development and evaluation of the teaching of sociology. *Prerequisites:* Twelve hours of sociology, permission of department. Open only to students who serve concurrently as teaching assistants in the Department.

295, 296 Advanced Special Topics See Schedule of Courses for specific titles. *Prerequisites:* 6 hours of Sociology including 1 and 100, or 1 and 100, or instructor permission.

297, 298 Readings & Research *Prerequisites:* 6 hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.

SPANISH (SPAN)

001 Elementary I Fundamentals of Spanish composition, comprehension, pronunciation, speaking, reading, writing. Structure of the basic Spanish sentence. No prior knowledge expected.

002 Elementary II Continuation of 1. *Prerequisite:* 1 or equivalent.

009 Basic Spanish Grammar Review Thorough review of Spanish grammar in preparation for intermediate level. Considerable emphasis on written exercises.

051 Intermediate Language Study I Significant review of grammar, proceeding from basic knowledge of Spanish to increased proficiency in understanding, speaking, reading and writing. Compositions, oral practice, reading. *Prerequisites:* 02 or 09 or equivalent (Placement Exam, 2-3 years in high school, consultation).

052 Intermediate Language Study II Continues building on the skills developed in Spanish 51. More emphasis on accurate language usage and more extensive readings. *Prerequisite:* 51 or equivalent (Placement Exam, 3-4 years in high school, consulation).

095, 096 Introductory Special Topics Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

101 Composition & Conversation Writing practice, sentence structure, correct expression, and guided discussions in Spanish of assigned topics. A good command of basic grammar expected. *Prerequisite:* 52 or permission.

105 Phonetics & Phonology The sound system of Spanish: Spanish / English pronunciation contrasted; vowels, consonants, rhythms, intonation. Counts as major / minor elective, not for A&S language requirement. *Prerequisite:* 52 or permission.

109 Spanish Grammar An intensive study of Spanish grammar. Topical approach. *Prerequisite:* 52 or permission.

140 Analyzing Hispanic Literatures Introduction to basic genres of Hispanic literatures (narrative, poetry, drama, essay); development of analytical and critical reading / discussion skills. Short analytical papers and ample class discussion. *Prerequisite:* 101 or concurrent enrollment (with permission).

141 Intro To Literature of Spain An introductory survey of major developments in Spanish peninsular literature. Readings and discussions focus on textual analysis, and historical and cultural contexts. *Prerequisites:* 140 pre-or co-requisite.

142 Intro To Lit Spanish America Readings and discussion focus on textual analysis, and historical and cultural contexts. *Prerequisites:* 140 pre- or co-requisite.

195, 196 Intermediate Special Topics See Schedule of Courses for specific titles. *Prerequisite:* 140.

197, 198 Readings & Research Permission of chair required. *Prerequisite:* 140.

201 Adv Composition & Conversation To improve both written and oral proficiency. Textbook supplemented by panel discussions, debates, translation, and a weekly composition. *Prerequisite:* 101 or permission. (Not offered for graduate credit).

202 Topics in Spanish Lang Study Varied topics devoted to a special area such as translation, creative writing, Spanish for the professions (medicine, business, journalism, law), etc. *Prerequisite:* 101 or permission. (Not offered for graduate credit).

211 History of Spanish Language The evolution of the Spanish language from its origins to the present. *Prerequisites:* 140.

236 Poetic Voices / Cultural Change A topical approach to exploration of self and society in Spain's poetic voices before 1700. Verses range from humorous to amorous, from satirical to political. *Prerequisite:* 140.

237 Issues in Early Spanish Lit An exploration of topics on Spain's richly diverse literature written before 1700. Prose and / or theatre texts from this highpoint of cultural evelopment are the focus. *Prerequisite:* 140.

246 Reading Cervantes A topical approach to the study of Cervantes, author of Don Quijote de la Mancha, and his

works' significance as a reflection of/on Spain's literary-cultural landscape. *Prerequisite:* 140.

250 Dilemmas of Mdrnty in Span Lit How Spanish writers since the Enlightenment have responded to the changes accompanying the arrival of "modernity". Topics may include questions of identity, democracy, traditional beliefs. *Prerequisite:* 140

252 Span Lit:Dictatorshp-Democracy Literature in Spain from the Franco dictatorship to the present. Topics to include censorship and dissidence, writing-in-exile, and contemporary trends. *Prerequisite:* 140. UG only.

260 Gender in Hispanic Literatures A topical exploration of how Hispanic women writers and literary representations of gender-related issues reflect, expand and question literary and cultural norms. *Prerequisite:* 140.

261 Hispanic Writing from Margins Exploration of writers and communities at the margins of mainstream Latin-America and/or Spanish culture. Topics may include indigenous, Afro-Hispanic, regionalist authors; testimonial literatures; censorship. *Prerequisite:* 140

264 Border Literatures Introduction to border literatures of the Hispanic worlds. These texts partake of two or more cultural spheres, challenging traditional notions of linguistic, literary, cultural hegemony. *Prerequisite:* 140.

274 Latin-American Poetry A topical exploration of Latin-American poetry. Possibilities include the innovations of modernismo, recent hypertextual trends and more. *Prerequisite:* 140.

279 Act Out:Perf Cult'l Pol Lat Am A study of the relationship between Latin-American performance and its political contexts. Emphasis is placed on works particularly concerned with reshaping culture, politics, and aesthetics. *Prerequisite:* 140.

281 Contemp Spanish-Amer Fiction A study of representative works by major authors tracing the development of narrative forms from their roots in the last century to the present. *Prerequisite:* 140.

286 Writing Revolution-Latin Amer Topics may include early uprising against Spain, representation of revolutional figures (Simon Bolivar, Pancho Villa, etc.), contemporary resistance to imperialism, among others. *Prerequisite:* 140.

287 Early Span Narratives Americas Readings and analysis of late 15th and 16th century narratives. Discussion of European and Native American perspectives, religious disputes, and the "Leyenda Negra" (Black Legend). *Prerequisite:* 140.

290 Hispanic Films in Context Approaching film as reflection and shaper of Hispanic cultures through comparison with texts relevant to cultural context. Includes study of film terminology and analysis. *Prerequisite:* 140.

291 Early Cultures of Spain A study of the Spanish cultures from earliest times through 1700, emphasizing major intellectual, political, and artistic developments. *Prerequisite:* 140.

292 Modern Cultures of Spain A study of the cultures of Spain from the Enlightenment to the present, emphasizing the major intellectual, political, and artistic developments. *Prerequisite:* 140.

293 Early Latin-American Cultures A study of colonial Latin American cultures from pre-Hispanic times through Independence. Emphasis on major intellectual, artistic, and cultural developments. *Prerequisite:* 140.

294 Modern Latin-American Cultures An overview of the cultures of Latin America with a multidisciplinary approach to understanding cultural constructions. Themes included: the city, nationhood, subjectivity, marginality. *Prerequisite:* 140.

295, 296 Advanced Special Topics See Schedule of Courses for specific titles. *Prerequisite:* 140.

297, 298 Advanced Readings & Research Permission of chair required. *Prerequisite:* 140.

299 Topics in Hispanic Cultures Focus on a particular cultural topic in the Hispanic world. Study might emphasize regional studies, current conflicts on ecology, ethnicity, and gender. *Prerequisite:* 140.

SPEECH (SPCH)

011 Effective Speaking Fundamentals course in effective, informative, and persuasive public speaking and critical listening. Includes theory and practice.

095 Special Topics See Schedule of Courses for specific titles. Credits: 1-3. Fall only.

096 Special Topics See Schedule of Courses for specific titles. Credits: 1-3. Spring only.

111 Persuasion Human motivation, attitudes, emotion, stereotypes, attention and audience psychology as applied in the speaking situation. *Prerequisite:* 11.

112 Argument & Decision Inductive, deductive, causal, and analogical reasoning as applied to the speaking situation. *Prerequisite:* 11.

214 Issues in Public Address Each semester emphasizes analysis of specific speakers, movements, theses, and strategies encompassed by a selected topic of public address. *Prerequisite:* Nine hours of related courses, of which three must be at the 100 level.

283 Seminar Seminar topics include: Nonverbal Communication, Rhetorical Criticism, Advanced Argumentation, Advanced Persuasion, Debate, Interpersonal Communication in Group Interaction, Communication in Conflict Management. *Prerequisite:* Six hours of speech, of which at least three hours must be at the 100 level. Credits: 3. Fall only.

284 Seminar Seminar topics include: Nonverbal Communication, Rhetorical Criticism, Advanced Argumentation, Advanced Persuasion, Debate, Interpersonal Communication in Group Interaction, Communication in Conflict Management. *Prerequisite:* Six hours of speech, of which at least three hours must be at the 100 level. Credits: 3. Spring only.

STATISTICS (STAT)

011 Intro to Stats via Microcomp Various study designs considered. Graphical and analytic techniques for presenting results. Wide variety of applications surveyed. PC-based software used. Experience gained in sample survey work. *Prerequisite:* High school algebra.

051 Probability With Statistics Introduction to probabilistic and statistical reasoning, including probability distribution models and applications to current scientific/social issues. Roles of probability, study design, and exploratory/confirmatory data analysis. *Prerequisites:* Two years H.S. algebra. No credit for sophomores, juniors, or seniors in the mathematical and engineering sciences.

095 Special Topics Lectures, reports, and directed readings at an introductory level. *Prerequisite:* As listed in course schedule.

111 Elements of Statistics Basic statistical concepts, methods, and applications, including correlation, regression, confidence intervals, and hypothesis tests. *Prerequisites:* Two years of high school algebra, sophomore standing.

140 Natural Resource Biostatistics (See Natural Resources 140.)

141 Basic Statistical Methods Foundational course for students taking further quantitative courses. Exploratory data analysis, probability distributions, estimation, hypothesis testing. Introductory regression, experimentation, contingency tables, and nonparametrics. Computer software used. *Prerequisites:* Math. 11, 13, 19 or 21, sophomore standing.

143 Statistics for Engineering Data analysis, probability models, parameter estimation, hypothesis testing. Multifactor experimental design and regression analysis. Quality control, SPC, reliability. Engineering cases and project. Statistical analysis software. *Prerequisites:* Math. 12, 14, 20 or 22,

sophomore standing.

151 Applied Probability Foundations of probability, conditioning, and independence. Business, computing, biological, engineering reliability, and quality control applications. Classical discrete and continuous models. Pseudo-random number generation. *Prerequisites:* Math. 12,14,20 or 22.

153 Prob & Stat for Cmptr Sci Foundations of probability, conditioning, independence, expectation and variance. Discrete and continuous probability distributions. Computer simulation examples. Introductory descriptive and inferential statistics. Simple regression analysis. *Pre/Co-requisites:* Math 20 or 22.

191 Special Projects Student-designed special project under supervision of a staff member culminating in a report. *Prerequisites:* Junior standing, permission of Program Director.

195 Special Topics Lectures, reports, and directed readings. *Prerequisite:* As listed in course schedule.

200 Med Biostatistics&Epidemiology (Same as Biostatistics 200.) Introductory design and analysis of medical studies. Epidemiological concepts, case-control and cohort studies. Clinical trials. Students evaluate statistical aspects of published health science studies.*Prerequisite:*141 or143; or 211.

201 Stat Analysis Via Computers (Same as Biostatistics 201.) Intensive coverage of computer-based data processing and analysis using statistical packages, subroutine libraries, and user-supplied programs. Students analyze real data and prepare a comprehensive report. *Prerequisites:* 111 with instructor's permission, or 141, or corequisite 211.

211 Statistical Methods I (Same as Biostatistics 211.) Fundamental concepts for data nalysis and experimental design. Descriptive and inferential statistics, including classical and nonparametric methods, regression, correlation, and analysis of variance. Statistical software. *Prerequisite:* Junior standing.

221 Statistical Methods II (Same as Biostatistics 221.) Multiple regression and correlation. Basic experimental design. Analysis of variance (fixed, random, and mixed models). Analysis of covariance. Computer software usage. *Prerequisites:* 141 or 143; or 211.

223 Applied Multivariate Analysis (Same as Biostatistics 223.) Multivariate normal distribution. Inference for mean vectors and covariance matrices. Multivariate analysis of variance (MANOVA), discrimination and classification, principal components, factor analysis. *Prerequisites:* Any 200-level Statistics course, 221 or 225 recommended, matrix algebra ecommended.

224 Stats for Quality&Productivity (Same as Biostatistics 224.) Statistical process control; Shewhart, cusum and other control charts; process capability studies. Total Quality Management. Acceptance, continuous, sequential sampling. Process design and improvement. Case studies. *Prerequisites:* 141 or 143; or 211.

225 Applied Regression Analysis (Same as Biostatistics 225.) Simple linear and multiple regression models; least squares estimates, correlation, prediction, forecasting. Problems of multicollinearity and influential data (outliers).

227 Adv Statistical Methods II (Same as Psychology 341.) *Prerequisite:* 211 with computer experience or Psychology 340.

229 Survival Analysis (Same as Biostatistics 229.) Probabilistic models and inference for time-to-event data. Censored data, life tables, Kaplan-Meier estimation, logrank tests,proportional hazards regression. Specialized applications (e.g. clinical trials, reliability). *Prerequisites:* Any 200-level Statistics course, one year of calculus.

231 Experimental Design (Same as Biostatistics 231.) Randomization, complete and incomplete blocks, cross-overs, Latin squares, covariance analysis, factorial experiments, confounding, fractional factorials, nesting, split plots, repeated measures, mixed models, response surface optimization. *Prerequisites:* 211; 221 recommended.

233 Survey Sampling (Same as Biostatistics 233.) Design and data analysis for sample surveys. Simple random, stratified, systematic, cluster, multistage sampling. Practical issues in planning and conducting surveys. *Prerequisites:* 211; or 141 or 143 with instructor's permission.

235 Categorical Data Analysis (Same as Biostatistics 235.) Measures of association and inference for categorical and ordinal data in multiway contingency tables. Log linear and logistic regression models. *Prerequisite:* 211.

237 Nonparametric Statistical Mthd (Same as Biostatistics 237.) Nonparametric and distribution free methods; categorical, ordinal, and quantitative data; confidence intervals; rank and chi-square hypothesis tests; computer-intensive procedures (bootstrap, exact tests). *Prerequisites:* 211; or 141 or 143 with instructor's permission.

241 Statistical Inference (Same as Biostatistics 241.) Introduction to statistical theory: related probability fundamentals, derivation of statistical principles, and methodology for parameter estimation and hypothesis testing. *Prerequisites:* 151 or 153 or 251; 141 or equivalent; Math. 121.

251 Probability Theory (Same as Math. 207.) Distributions of random variables and functions of random variables. Expectations, stochastic independence, sampling and limiting distributions (central limit theorems). Concepts of random number generation. *Prerequisite:* Math 121; Stat 151 or 153 recommended.

252 Appl Discr Stochas Proc Models Markov chain models for biological, social, and behavioral systems models. Random walks, transition and steady-state probabilities, passage and recurrence times. *Prerequisite:* STAT 151 or STAT 153 or STAT 251

253 Appl Time Series & Forecasting (Same as Biostatistics 253.) Autoregressive moving average (Box-Jenkins) models, autocorrelation, partial correlation, differencing for nonstationarity, computer modeling. Forecasting, seasonal or cyclic variation, transfer function and intervention analysis, spectral analysis. *Prerequisite:* 211 or 225; or 141 or 143 with instructor's permission.

254 Appl Cont Stoch Process Models Queueing models for operations research and computer science systems analysis. Birth-and-death processes with applications. Exponential, Erlang and Poisson distributions. Monte Carlo simulation. *Pre/Co-requisites:* STAT 151 or STAT 153 or 251

256 Neural Computation (See Computer Science 256.)

261 Statistical Theory I (Same as Biostatistics 261, 262.) Point and interval estimation, hypothesis testing, and decision theory. Application of general statistical principles to areas such as nonparametric tests, sequential analysis, and linear models. *Prerequisites:* STAT 251 or either STAT 151 or STAT 153 with instructor permission.

262 Statistical Theory II (Same as Biostatistics 261, 262.) Point and interval estimation, hypothesis testing, and decision theory. Application of general statistical principles to areas such as nonparametric tests, sequential analysis, and linear models. *Prerequisites:* For 261: 151 with instructor permission or 251; for 262: 241 with instructor permission or 261.

265 Integrated Product Development (Same as Business Administration 293.)

270 Stochastic Processes in EE (See Electrical Engineering 270.) *Prerequisites:* EE 171 and STAT 151.

271 Filtering of Time Series (See Electrical Engineering 271.)*Prerequisite:* EE 270.

281 Statistics Practicum Intensive experience in carrying out a complete statistical analysis for a research project in substantive area with close consultation with a project investigator. *Prerequisites:* Any one of 200, 201, 221 through 237; or 253; some statistical software experience. No credit for graduate students in Statistics or Biostatistics.

293, 294 Undergrad Honors Thesis A program of reading, research, design, and analysis culminating in a written thesis and oral defense. Honors notation appears on transcript and Commencement Program. Contact Statistics

Program Director for procedures.
295 Special Topics For advanced students. Lectures, reports, and directed readings on advanced topics. *Prerequisite:* As listed in course schedule.

SURGERY (SURG)

195 , 196 EMT - Basic
197, 198 EMT - Intermediate

SOCIAL WORK (SWSS)

002 Foundations of Social Work An introduction to the profession of social work, its functions, values, knowledge, and the problems it addresses. Includes a service-learning component.
003 Human Needs & Social Services Students provide volunteer service in a human service agency, relate observations to theory about clients, agency structure, programs, and operations, and assess their commitment to the profession of social work. *Prerequisite:* 2 or instructor's permission.
005 Biosociopolitical Issues SW Outlines human body organ systems and extrapolates from the biological into the socio-political. Bioethical dilemmas, environmental racism, and multiple chemical sensitivity studied from a social work perspective. *Prerequisite:* SW major or permission.
007 Quantitative Meth SW Research Introduction to statistics and social work research methods. This course introduces students to quantitative methodology in research and practice.
047 Human Beh in the Soc Envr I Introduction to lifespan development from birth to death. There is a primary focus on the individual. *Prerequisites:* 2, 3, or instructor's permission.
048 Human Beh in the Soc Envr II A systems approach to understanding various levels of social organization; for example, families, groups, organizations, and communities. *Prerequisite:* 47.
055 Special Topics Designed so that its content and structure may accommodate special issues not offered within the boundaries of an existing course. Open to first-year and sophomore students.
060 Racism & Contemporary Issues Study of perception, conceptualization, and comprehension of racism. Strategies, techniques, and procedures to identify and decrease many facets of racism.
150 Laboratory Experience Supervised practicum for advanced level students. Pre/co- requisites: Social Work major, permission, pre-arrangement.
160 Soc Wrk Pr:Chld,Fam&Youth Svc Explores persepctives relevant to child protection and family support. Emphasizes skills in writing reports, giving oral testimony, making referrals, interdisciplinary collaboration, ethical decision making, cultural competence. *Pre/Co-requisites:* Junior yr status in social work, SWSS 2, 3, 47, 48 or permission of instructor.
164 Intro Social Work Research Introduction to models and methods of social research from a social work perspective. *Prerequisites:* 2, 3, 47, 48 or permission.
165 Iss & Pol in Social Welfare I An introduction to economic, political, historical, and social forces that influence the development and implementation of social welfare policy. *Prerequisites:* 2, 3, 47, 48 or permission.
166 Iss & Pol in Social Welfare II In-depth examination of social welfare policy and accompanying social services in the U.S.; major policy analysis models presented and used. *Prerequisites:* 165 or permission.
168 Social Work Practice I Social work theory and practice methods employed by social workers in providing services to individuals, families, and small groups. *Prerequisite:* Social Work major, senior standing or permission.
169 Social Work Practice II Social work theory and practice methods employed by social workers in providing services to groups, organizations, and communities. *Prerequisites:* Social Work major, 168, senior standing or permission.
171 Field Experience Seminar I Weekly integrative seminar; discussion of practice within field agency. *Prerequisite:* Concurrent enrollment in 173.
172 Field Experience Seminar II Weekly integrative seminar; discussion of practice within field agency. *Prerequisite:* Concurrent enrollment in 174.
173 Field Experience I Supervised field-based learning of 15-20 hours per week. Students are placed in human service agencies and organizations and learn the application of social work, theory, ethics and skills. *Pre/Co-requisites:* Social work major, senior standing or permission, taken concurrently with SWSS 168 and 171.
174 Field Experience II Supervised field-based learning of 15-20 hours per week. Students are placed in human service agencies and organizations and learn the application of social work, theory, ethics and skills. *Pre/Co-requisites:* Social work major, senior standing or permission, 168 and 171, taken concurrently with SWSS 169 and 172.
197, 198 Readings & Research *Prerequisite:* Social Work major. Pre-arrangement only. Variable credit.
199 Laboratory Experience Supervised practicum for advanced level students. *Pre/Co-requisites:* Social work major, permission, pre-arrangement.
200 Contemporary Issues Content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. *Prerequisite:* Permission.
212 Social Work Practice I A comprehensive introduction to concepts and skills employed by social workers in interactions and interventions with individuals, families, and groups is provided. *Prerequisite:* MSW standing or permission.
213 Social Work Practice II Knowledge and skills of social work practice with organizations and communities is emphasized. *Prerequisite:* Completion of 212, MSW advanced standing or permission.
216 Th Found of Hum Beh&Soc Envr I This course introduces students to the biological, psychological, cultural/social, and economic forces that influence human behavior and their implication for social work practice. *Prerequisite:* MSW standing or permission.
217 Th Found Hum Beh&Soc Envr II Focus is on theories regarding the nature and functioning of human service organizations and communities in relation to meeting human needs. *Prerequisite:* 216 or permission.
220 Soc Welfare Pol & Services I An introduction to history and philosophy of social work and social welfare and the structure of service programs is provided. *Prerequisite:* MSW standing or permission.
221 Soc Welfare Pol & Services II Focus is on the analysis of the economic, political, and social forces that influence the development and implementation of social welfare policy. *Prerequisite:* 220 or permission.
224 Child Abuse & Neglect An MSW foundation elective that considers child abuse and neglect from historical, cultural, sociopolitical and psychological perspectives and examines professional social work responses to them. *Prerequisite:* Matriculation in the foundation year of graduate study in social work or instructor permission.
225 Transf Ourselves&Comm:SW Persp An MSW foundation elective that examines systems of oppression and social work strategies to decrease biased practices and create more equitable communities and institutions. *Prerequisite:* Matriculation in the foundation year of graduate study in social work or instructorpermission.
226 Assessment Theory Social Work An MSW foundation elective analyzing competing and complementary assessment theories and their implications in social work in health/mental health and with children and families. *Prereq-*

uisite: MSW standing or permission.

227 Found of Social Work Research An introduction to qualitative and quantitative methods of applied social research including program evaluation and the evaluation of practice and application to social work is taught. *Prerequisite:* MSW standing or permission.

228 Aging:A Strength&Hum Right Per An examination of aging for social work policy and practice from the perspectives of strengths, social justice, human rights and critical social constructionism.

290 Foundation Yr Field Practicum Supervised field-based learning of 15-20 hours per week. Students are placed in human service agencies and organizations and learn the purposeful application of generalist social work theory, ethics, and skills. *Prerequisite:* Permission of Coordinator of Field Education.

296 Social Work in Global Context Study of social work issues in different parts of the world. Located at the University of Lapland in Finland. *Prerequisites:* Background in human services or social work major or MSW standing and permission of instructor.

THEATRE (THE)

001 Introduction to Theatre Overview of general theatre practices and theories, emphasizing history, script analysis, character development, and communicative skills directed toward a modern audience.

005 Oral Interpretation of Lit Performance of literature that is traditionally non-dramatic. Summer.

010 Acting I: Intro to Acting Exercises to increase self-awareness and heighten perceptions of human behavior. Basics of script analysis and development of vocal and physical skills through practice and performance.

020 Fundamentals of Lighting Primary course in the area of stage lighting design and execution. Includes Lab.

030 Fundamentals of Scenery A hands-on introduction to the theory and practical application of the scenic elements involved in play production (drawing, building, and painting techniques). Includes Lab.

040 Fundamentals of Costuming Primary course in area of costume design and construction. Includes Lab. Fall

041 History of Costume Overview of period costume and its adaptation for the stage. Alternating Falls w/THE 042.

042 Fund Theatrical Make-up Focus on the development of drawing, painting, and sculpture skills as they relate to the creation of a dramatic character for the stage. Alternating Falls w/THE 041. *Pre/Co-requisites:* THE 040 or permission.

050 Dramatic Analysis Examination of structural characteristics of the basic forms and styles of drama and the manner in which they affect theatrical representation. Fall. *Prerequisite:* Sophomore standing & permission.

070 Playwriting Development of dramatic writing skills and broadened understanding of theatre/art by its creation. Study of published plays but focus on student writing. *Prerequisite:* Sophomore standing

095, 096 Special Topics See Schedule for specific titles. *Prerequisite:* permission.

110 Acting II:Cntmp Scene Study Continuation of Acting I. Development of acting techniques through intensive scene work: refining script analysis and performance skills using contemporary scenes. *Prerequisites:* THE 010 and permission

111 Acting III:Voice & Speech Study of the basics of voice production and Standard American Speech; exercises and practice focusing on freeing the voice and developing good vocal habits. Spring. *Prerequisites:* THE 010 and permission.

112 Acting IV: Movement Development of physical freedom and articulate physical expression through techniques promoting relaxation, flexibility, strength, creative spontaneity, and purposeful movement. Techniques applied to short movement performances. Fall. *Prerequisite:* THE 010 and permission.

120 Lighting Design Explores, through classroom instruction and projects, the development of lighting designs for a variety of live performance situations. *Prerequisite:* 20. Fall only.

130 Scene Design A practical application of the elements, principles, and styles of theatrical stage design through research, sketching, and rendering techniques. *Prerequisite:* 30. Spring only.

131 Scene Painting Concepts&Appl Lab course to study practical application of painting techniques used in theatre, trompe l'oeil. Develops skills introduced in THE 30. Alternating Falls w/THE 230. *Prerequisites:* THE 030 & either THE 020 or THE 040 or permission.

140 Costume Design Elements, principles, and styles of design applied to the visual creation of a dramatic character. *Prerequisites:* 40; 41 highly recommended. Spring only.

141 Adv Costume:Draping&Flat Pattn Explores the methods of creating period shapes. Students develop a sloper, fit it to a human body, create a researched and completed period costume. *Prerequisite:* 040. Alternating Springs w/THE 142, 143, & 144

142 Adv Cost Const:Per Undrgarmts Focuses on techniques for creating artificial understructures that support period silhouettes. Corsets, hoop skirts, petticoats, etc., are researched, fit on the human body, and constructed. *Prerequisite:* 040. Alternating Springs w/THE 141, 143, 144.

143 Adv Costume Constr:Millinery Explores methods of hat construction, including work in various media. Methods of shaping, covering, and trimming are researched, leading to the completion of hats. *Prerequisites:* 040. Alternating Springs w/THE 141,142,144.

144 Adv Costume Constr:Tailoring Explores traditional methods of tailoring as well as practical adaptations for the stage. Research, discussion, and demonstration lead to completion of a period suit. *Prerequisite:* 040. Alternating Springs w/THE 141,142,143.

150 Hist I:Class/Med/Ren Thtr A study of the theatrical rituals of Greece, Rome, and the Middle Ages leading to the reinvention of theatre in Renaissance Italy, England, and Spain. Spring. *Prerequisite:* THE 050

151 Hst II:Ren-Contemp Eur&US A study of the historical context, theatrical conventions, and the plays representations of Neoclassicism, Romanticism, Realism, and the revolts against Realism. Fall. *Prerequisite:* THE 150.

160 Stage Management Theory and practice for stage managing in the non-commercial theatre. Spring. *Prerequisites:* THE 010 & two of 020, 030, 040 or 050.

180 Eurotheatre Spring research and preparation for 2-week intensive study of theatre in Europe. Trip: May/June culminating in submission of journal and research paper. Alternating Spring *Prerequisite:* Interview with the professor required.

190 Theatre Practicum Students actively involved in current department productions may earn credit for work on stage or backstage. Project proposals must be approved by department faculty and be of significant scope to qualify for credit. *Prerequisite:* Permission. Repeatable up to 3 hours.

195, 196 Special Topics See Schedule of Courses for specific titles. Credits: 1-6. *Prerequisite:* Permission

197, 198 Readings & Research *Prerequisite:* Permission.

200 Professional Preparation Topics include preparing for auditions, portfolio reviews, interviews, and research papers for entrance into graduate schools or professional theatre venues. *Prerequisite:* Junior or senior standing and by permission only.

210 Acting V:Shakespeare Scne Stdy Refining and developing script analysis and performance skills using Shakespeare, ancient Greek, Moliere, or other stylized texts. *Prerequisite:* 010, 110 & 111 or permission. Fall.

230 Advanced Scene Design An in-depth study of the realization process for a stage design. A combination of script

analysis, sketching, model making, rendering, and paint elevations, all as forms of communication. *Prerequisites:* 030, 130. Alternating Falls w/THE 131.

250 Directing I Theory of theatrical directing, including script analysis; approaches to audition, rehearsal, and performance; coaching actors. *Prerequisites:* 010, 020, 030, 040, 050, 110, 150, either 120, 130, or 140. Senior standing & permission. Fall.

251 Directing II Development of skills and aesthetic values through the direction of a complete one act play. Not offered as performance opportunity. Enrolled students may not act in their own projects. *Prerequisites:* THE 250 and permission. Senior standing. Spring.

283 Seminar Credits: 3. Fall only.

284 Seminar Credits: 3. Spring only.

297 Senior Readings and Research Credits: 3. Fall only.

298 Senior Readings & Research Credits: 1-3. Spring only.

VERMONT STUDIES (VS)

052 Introduction to Vermont Survey of Vermont's geography, history, politics, social issues, ethnic populations, culture, and environment. Special emphasis on an interdisciplinary approach to the study of Vermont.

055 Environmental Geology (See Geology 55.)

064 Native Americans of Vermont (See Anthropology 64.)

092 Vermont Field Studies (See Geography 92.)

095, 096 Introductory Special Topics See schedule of courses for specific titles.

123 The Vermont Political System (See Political Science 123.) *Prerequisite:* POLS 21.

160 The Literature of Vermont (See English 178.)

162 Geography of Place Names (See Geography 162.) *Prerequisite:* three hours in Geography.

184 Vermont History (See History 184.) *Prerequisite:* Three hours in history (11 or 12 recommended).

191 Internships *Prerequisites:* Nine hours of Vermont Studies, permission of Director of Vermont Studies, junior or senior standing.

192 Vermont Field Studies (See Geography 192.) *Prerequisite:* Three hours in geography.

195, 196 Intermediate Special Topics See schedule of courses for specific titles.

197, 198 Readings & Research *Prerequisite:* Declared minor in Vermont Studies.

230 The Vermont Economy (See Economics 230, Seminar C.) *Prerequisites:* EC 170, 171, 172.

284 Seminar in Vermont History Topical approach to Vermont history through original research utilizing primary sources available at UVM, the Vermont Historical Society, and the Vermont State Archives. *Prerequisites:* Junior or senior standing, 12 hours of history, including 184 or permission. (Same as HST 284).

295, 296 Advanced Special Topics See schedule of courses for specific titles. *Prerequisite:* Advanced undergraduate or graduate standing.

297, 298 Readings & Research *Prerequisite:* Declared minor in Vermont Studies.

WILDLIFE & FISHERIES BIOLOGY (WFB)

074 Wildlife Conservation Historical and contemporary values of wildlife; impacts on habitats and populations; strategies for conservation, allocation, and use. Nonmajors only. *Prerequisite:* Basic understanding of biological terms and concepts.

130 Ornithology Taxonomy, classification, identification, morphology, physiology, behavior, and ecology of birds. *Prerequisites:* Biology 1, 2 or equivalent.

131 Field Ornithology Identification and field studies of birds, emphasizing resident species. Two weeks in summer. *Prerequisite:* 130; preference to WFB majors.

150 Wldlf Habitat & Pop Measrmnt Field methods for measuring habitat variables and estimating population parameters. One week in summer. *Prerequisites:* 131, Forestry 21 or Botany 109, Natural Resources 140.

161 Fisheries Biology & Management Introduction to freshwater fish, habitats, and life histories. Overview of fishery management techniques and principles, including sampling and assessment methods, tocking, population and habitat manipulation, and regulations. *Prerequisites:* Biology 1, 2 or equivalent.

174 Prin of Wildlife Management Application of ecology and sociology to the management of wildlife populations and habitat; integration of wildlife management with demands for other resources; consideration of game species, endangered species, and biological diversity. *Prerequisites:* Natural Resources 103 or Biology 102 or Botany 160.

175 Wildlife and Society Investigates how people's attitudes, institutions, policies, and behaviors have affected wildlife across the North American landscape. Alternate years.

176 Florida Ecology Field Trip Major ecosystems and associated wildlife, ranging from north Florida flatwoods to south Florida Everglades. Field trip over spring recess. *Prerequisites:* 130, 174; permission. Alternate years.

177 Texas Wildlife Field Trip Major ecosystems and associated wildlife of south Texas, including Gulf coast, coastal prairies, lower Rio Grande Valley, and Chihuahuan desert. Field trip over spring recess. *Prerequisites:* 130, permission. Alternate years.

185 ,186 Special Topics

187,188 Undergrad Special Projects Individual projects supervised by a faculty member. Projects may involve independent field, laboratory, or library investigations. Formal report required. *Prerequisites:* Junior standing, submission of a project prospectus for permission.

191 Wildlife & Fisheries Practicum Supervised work experience in the wildlife and fisheries area. *Prerequisite:* Instructor's permission. Credit as arranged.

232 Ichthyology Biology of fishes. Focus is on form and function, morphology, physiology, behavior, life history, and ecology of modern fishes. *Prerequisites:* Biology 1, 2 or equivalent; junior standing. Alternate years. Undergraduate/ graduate credit.

271 Wetlands Wildlife Breeding biology, behavior, habitat management, and population ecology of wetland wildlife with emphasis on waterfowl. *Prerequisites:* WFB 174, NR 103. Undergraduate/graduate credit.

272 Wetlands Wildlife Laboratory Laboratory and field assessment of the ecology and management of wetland habitats and their associated wildlife populations. *Prerequisites:* Previous or concurrent enrollment in WFB 271 or NR 260. Undergraduate/graduate credit.

273 Terrestrial Wildlife Integration of ecological principles, wildlife biology, land use, and human dimensions in wildlife. Emphasis on development and maintenance of terrestrial wildlife habitat, and population regulation of terrestrial species. *Prerequisite:* 174. Undergraduate/graduate credit.

274 Terrestrial Wildlife Lab Laboratory and field experience related to terrestrial species and management of their habitat. Field project required. *Prerequisite:* Previous or concurrent enrollment in 273. Undergraduate/graduate credit.

275 Wildlife Behavior Behavior and social organization of game and nongame species as they pertain to population management. *Prerequisites:* One year of biology, an ecology course, 74 or 174 recommended. Undergraduate/graduate credit.

279 Marine Ecology Structure and function of major marine communities, including open ocean, benthos, coral reefs, and estuaries. Emphasis on unique ecological insights

gained in the marine environment. *Prerequisites:* Biology 1 and 2, an ecology course, or instructor permission. Undergraduate/graduate credit.

285, 286, 287 Advanced Special Projects Advanced readings and discussions or special field and/or laboratory investigations dealing with a topic beyond the scope of existing formal courses. *Prerequisite:* Senior standing or permission. Credit arranged. (Not offered for graduate credit.)

288 Advanced Special Projects Advanced readings and discussions or special field and/or laboratory investigations dealing with a topic beyond the scope of existing formal courses. *Prerequisite:* Senior standing or permission. Credit arranged. (Not offered for graduate credit.)

299 Wildlife & Fisheries Honors Honors project dealing with wildlife or fisheries biology. *Prerequisite:* By application only; see program chair. UG only.

WOMEN'S & GENDER STUDIES (WGST)

073 Intro to Women's Studies Survey of feminist theory and its application to specific areas of inquiry, including analysis of the intersections among race, class, and gender.

075 Intro Sexuality/Gender Identy Oveview of the history, development, and contemporary literature on lesbian, gay, bisexual, transgender, questioning, queer, ally identities as explored through different academic and cultural lenses.

076 Women in Literature (See English 42.)

078 History of Costume (See Theatre 41.)

084 Mothers and Daughters Interdisciplinary exploration of historical, social, and cultural definitions of the mother/daughter experience informed by contemporary feminist perspectives.

095, 096 Introductory Special Topics See Schedule of Courses for specific titles.

101 Women and Society (See Sociology 122.) *Prerequisite:* 73 or three hours of sociology.

111 Wmns Spirit:Challenge Inst Rel Women's experience of the sacred and the self in Eastern and Western religious traditions. Analysis of political and cultural structures alienating women from their experience.

115 Studies in Gender & Religion (See Religion 173.) *Prerequisite:* Three hours in religion or instructor's permission.

121 Lit Genre:Wmn Writing Autobiog (See English 181.) *Prerequisite:* Three hours in English or Women's & Gender Studies.

122 19th Century Women's Writing (See English 147.) *Prerequisite:* Three hours in English or Women's & Gender Studies.

130 Sociology of Heterosexuality (See Sociology 130). *Prerequisites:* Three hours of Sociology, preferably Sociology 1, or WGST 73 or 75.

131 Contemporary Feminist Art

141 Gender and Law Feminist jurisprudence and legal theory. Topics include economic consequences of reproduction, sexuality, divorce, custody; sexual harassment, employment discrimination; surrogate motherhood, domestic violence, rape, pornography, prostitution.

151 Feminism:Theories and Issues (See Philosophy 170.) *Prerequisite:* One course in philosophy or instructor's permission.

157 Greek Feminism (See Classics 157.)

161 History of Women in U.S. (See History 182.) *Prerequisite:* History 11 or 12, or three hours in Women's & Gender Studies.

165 Women, Society and Culture (See Anthropology 172.) *Prerequisite:* Anthropology 21 or instructor's permission.

170 Gender,Space & Environment (See Geography 178.) *Prerequisite:* Six hours in geography or Women's & Gender Studies, or instructor's permission.

172 Women and Depression The exploration of the impact of gender socialization, sexual oppression, discrimination, self-esteem, and body image on women's mental health in our society.

174 Women, Science & Nature The position of women in relation both to science and nature is considered historically, culturally, and in terms of current feminist perspectives.

179 Ecofeminism (See Environmental Studies 179.) *Prerequisite:* 73 or Environmental Studies 1,2. Sophomore standing.

181 Women in American Politics (See Political Science 135.) *Prerequisite:* Political Science 21 or three hours in Women's & Gender Studies.

182 Women and Development (See Political Science 197.) *Prerequisite:* Political Science 71 or Women's & Gender Studies 73.

185 Economics of Gender (See Economics 156.) *Prerequisites:* EC 11,12 or instructor's permission.

191, 192 Internship Approved programs of learning outside the classroom. Students work at local women's agencies, in consultation with faculty sponsors. *Prerequisites:* A contract must be obtained from and returned to the Women's & Gender Studies Program office during registration; permission of Director of Women's & Gender Studies.

195, 196 Intermediate Special Topics See Schedule of Courses for specific titles.

201 Sociology of Reproduction (See Sociology 223.) *Prerequisite:* Six hours of sociology to include one of 29, 122, or 129; or instructor's permission.

205 Women Dev Third Wrld Countries (See Sociology 213.) *Prerequisite:* Six hours of sociology or instructor's permission.

271 Psychology of Women (See Psychology 231.) *Prerequisite:* One psychology course at the 100 level or instructor's permission.

273 Seminar in Feminist Theory An interdisciplinary examination of theories accounting for women's position in culture and society. Special emphasis on the relationship between gender, race, class, ethnicity, and sexuality. *Prerequisites:* 73, six additional hours in Women's & Gender Studeis, and admission to the Women's & Gender Studies major or minor program.

295, 296 Advanced Special Topics See Schedule of Course for specific titles. UG only.

297, 298 Independent Study Selection and development of topic for investigation using assigned faculty member as preceptor. *Prerequisites:* 73, approval of Director of Women's & Gender Studies.

WORLD LITERATURE (WLIT)

011 French Lit in Translation Selected topics in French literature. Readings and discussion of representative works in English translation. No knowledge of French required.

012 Francophone Lit in Translation Selected topics in the literature of the French-speaking world (excluding France). Readings and discussion of representative works in English translation. No knowledge of French required.

013 Italian Lit in Translation Selected topics in the literature of Italy. Readings and discussion of representational work in English translation. No knowledge of Italian is necessary.

014 Spanish Lit in Translation Selected topics in Spanish literature. Readings and discussion of representative works in English translation. No knowledge of Spanish required.

015 Span-Amer Lit in Translation Selected topics in Spanish-American literature. Readings and discussion of representative works in English translation. No knowledge of Spanish required.

016 Latino Writers US:Contemp Pers Study of texts written by Latinos since the 1960s. Topics: construction of

"ethnic identities," representation of race/gender relations; writers and their communities.

017 German Lit in Translation Topics such as German author(s), genre, literary movement, or theme such as Goethe, proverbs, Expressionism, Faust, Holocaust, or the German film.

018 Russian Lit in Translation Topics such as Russian author(s) (e.g. Dostoevsky, Tolstoy), genre (e.g. the Russian novel), literary school (e.g. Russian Formalism), or period (19th or 20th century literature).

024 Myths & Legends of Trojan War (See Classics 24.)

035 The End of the Roman Republic (See Classics 35.)

037 Early Roman Emp:Lit&Translat'n Literature in Translation (See Classics 37.)

042 Mythology (See Classics 42.)

095, 096 Special Topics Special topics in literary studies. Individual courses might include comparative study of particular literary genres, periods, authors or works from varied international literatures.

110 Classical Chinese Lit in Trans Selected topics in Chinese Literature. Reading and discussion are in English. No knowledge of Chinese language is required.

111 French Lit in Translation

112 Francophone Lit in Translation Selected topics in the literature of the French-speaking world (excluding France). Readings and discussion of representative works in English translation. No knowledge of French required. *Prerequisite:* Sophomore standing or instructor permission.

113 Italian Lit in Translation Readings and discussion of represen-ational work in English translation. No knowledge of Italian is necessary. *Prerequisite:* Sophomore standing or instructor permission.

114 Spanish Lit in Translation Selected topics in Spanish literature. Readings and discussion of representative works in English translation. No knowledge of Spanish required. *Prerequisite:* Sophomore standing or instructor permission.

115 Span-Amer Lit in Translation Selected topics in Spanish-American literature. Readings and discussion of representative works in English translation. No knowledge of Spanish required. *Prerequisite:* Sophomore standing or instructor permission.

116 Latino Writers US:Contemp Pers Study of texts written by Latinos since the 1960s. Topics: construction of "ethnic identities," representation of race/gender relations; writers and their communities. *Prerequisite:* Sophomore standing or instructor permission.

117 German Lit in Translation Topics such as German author(s), genre, literary movement, or theme such as Goethe, proverbs, Expressionism, Faust, Holocaust, or the German film. *Prerequisite:* Sophomore standing or instructor permission.

118 Russian Lit in Translation Topics such as Russian author(s) (e.g. Dostoevsky, Tolstoy), genre (e.g. the Russian novel), literary school (e.g. Russian Formalism), or period (19th or 20th century literature). *Prerequisite:* Sophomore standing.

122 Dante's Comedy A study of Dante's Comedy in Modern English translation.

145 Comparative Epic (See Classics 145) *Prerequisite:* Sophomore standing.

153 Greek Drama (See Classics 153.) Three hours.

154 Stories and Histories *Prerequisite:* Sophomore standing, three hours in Classics.

155 Ancient Epic (See Classics 155.) Three hours.

156 Greek & Roman Satiric Spirit (See Classics 156.) Three hours.

157 Greek Feminism (See Classics 157.)

188 Studies in Comparative Lit Courses comparing literary works from different countries, cultures, or language groups. May be repeated for credit with different topic. Pre/co-requisite: Sophomore Standing.

195, 196 Special Topics Special topics in literary studies. Individual courses might include comparative study of particular literary genres, periods, authors or works from varied international literatures. *Prerequisite:* Sophomore standing or instructor permission.

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UNIVERSITY PROFESSORSHIPS

- **The Williams Professorship of Mathematics**, 1853, honors Azarias Williams of Concord, Vermont, merchant and judge, native of Sheffield, England, who in 1839 deeded to the University extensive land holdings.
- **The Marsh Professorship of Intellectual and Moral Philosophy** was established in 1867 to honor James Marsh, distinguished UVM president and philosopher of the 1830's. William E. Mann is the Marsh Professor.
- **The Pomeroy Professorship of Chemistry** was established in 1878 by John N. Pomeroy, A.B., 1809, who lectured on chemistry and served as trustee of the University. William E. Geiger is the Pomeroy Professor.
- **The Howard Professorship of Natural History and Zoology** was established in 1881 by John Purple Howard, a generous benefactor of the University. William Kilpatrick is the Howard Professor.
- **The Flint Professorship of Mathematics, Natural or Technic Science** was established in 1895 by a bequest from Edwin Flint.
- **The Converse Professorship in Commerce and Economics** was established in 1899 by John H. Converse, A.B., 1861, LL.D., 1897, who as a trustee of the University proposed the teaching of Latin, modern languages, history, and other subjects. William Gibson is the Converse Professor.
- **The Thayer Professorship of Anatomy** was established in 1910 to honor Dr. Samuel White Thayer, Dean of the College of Medicine from 1854-71 and 1880-82, from contributions made by alumni of the College of Medicine. Professor of Anatomy Rodney L. Parsons is the Thayer Professor.
- **The McCullough Professorship of Political Science** was established in 1926 through grants made by Gov. and Mrs. John G. McCullough. Frank Bryan, Professor of Political Science, is the McCullough Professor.
- **The Perkins Professorship of Zoology** was established in 1931 to honor George H. Perkins, a teacher of science and dean of the College of Arts and Sciences. Judith L. Van Houten, Professor of Biology, is the Perkins Professor.
- **The Shipman Professorship of Ophthalmology** was established in 1934 by a bequest from Dr. Elliot W. Shipman, M.D., 1885 and is held by Robert Millay, M.D..
- **The Lyman-Roberts Professorship of Classical Languages and Literature** was established in 1941 to honor Robert Roberts, mayor of Burlington in the 1890's and a University trustee from 1895-1939. Z. Philip Ambrose, Professor of Classics, is the Lyman-Roberts Professor.
- **The Corse Professorship of English Language and Literature** was established in 1952 by Frederick M. and Fannie C.P. Corse. Anthony G. Bradley, Professor of English, is the Frederick M. and Fannie C.P. Corse Professor.
- **The Lawrence Forensic Professorship of Speech** was established in 1965 by Edwin W. Lawrence, lawyer and financier of Rutland, Vermont, A.B., 1901. Alfred C. Snider, Associate Professor of Theatre, is the Lawrence Professor.
- **The Sanders Professorship** was established in 1968 by UVM alumni, honoring the Rev. Daniel Clarke Sanders, first president of the University.
- **The John L. Beckley Professorship in American Business** was established in 1983 by John L. Beckley, 1934 graduate of UVM a trustee from 1966 to 1970, to encourage economic education. James M. Sinkula, Professor of Business Administration, is the Beckley Professor.
- **The Bishop Robert F. Joyce Distinguished University Professorship of Gerontology** was established in 1983 by alumni and friends, honoring Robert F. Joyce, 1917 graduate, a trustee from 1948 to 1954, and Bishop of the R. C. Diocese of Burlington for 15 years. Stephen J. Cutler is the Joyce Professor.
- **The Buttles Professorship in Pathology** was established in 1984 to honor Ernest Hiram Buttles, Professor of Pathology and Bacteriology, 1921 to 1946. Bruce R. MacPherson is the Buttles Professor.
- **The McClure Professorship in Musculoskeletal Research** was established in 1988 by J. Warren and Lois H. McClure. Robert J. Johnson is the McClure Professor.

The E. L. Amidon Professorship in Medicine was established in 1989 to honor Dr. E.L. Amidon, a revered teacher and former chair of the Department of Medicine. Dr. Burton E. Sobel is the Amidon Professor.

- **The Roger H. Allbee Endowed Research Fellowship in Surgery** was created in 1992 by Roger Allbee, M.D., '31, to provide support for a research fellow in the Department of Surgery. Michael A. Ricci is the Allbee Fellow in Surgery. **The Robert F. and Genevieve B. Patrick Endowed Professorship** was created in 1999 through a generous bequest from the estate of Genevieve Patrick. The endowment is intended to support the study or specialty of nephrology. Dr. F. John Gennari is the Patrick Professor.
- **The Gund Chair in Liberal Arts**, established in 1995 by Gordon and Lulie Gund, provides the College of Arts and Sciences with the opportunity to attract a leading teacher-scholar to one of the liberal arts disciplines. * - *Unfilled at this time.*
- **The Wallace Professorship in the Department of Pediatrics** was established in 1995 by the family of Harry W. Wallace to represent Mr. Wallace's philanthropic interests. Jerold F. Lucey is the Wallace Professor of Neonatology.
- **The Dorothean Professorship** was established in 1996 by Dr. Stuart Martin in memory of his wife, Dorothy Webster Martin, to support an outstanding individual in the field of engineering or a related science. Sean Wang is the Dorothean Chair.
- **The Henry and Carleen Tufo Chair in General Internal Medicine** was created in 1999 by Henry M. and Carleen Ann Tufo to support continued excellence in teaching, research and patient care in General Internal Medicine. The Tufo Chair is held by Benjamin Littenberg, M.D.
- **The S.D. Ireland Family Professorship in Surgical Oncology** was established in 1999 in recognition of the cancer research being conducted at the University of Vermont by David N. Krag, M.D., who serves as the S.D. Ireland Family Professor.
- **The Patrick Chair in Watershed Planning and Science** was established in 2000 from the estate of Genevieve Patrick, bequest to the University. W. "Breck" Bowden is the first Patrick chair.
- **The John Van Sicklen Maeck, M.D. Chair in Obstetrics and Gynecology** was established in 2000. It is the expressed wish of the Maeck family that the chair of the Department of Obstetrics and Gynecology hold this endowed faculty position. This position is currently held by Mark Phillippe, M.D., Chair and Professor of Obstetrics and Gynecology.
- **The Gund Professorship of Ecological Economics** was established in 2001 by Gordon and Lulie Gund and their sons, Grant and Zachary. The first Gund professor is Robert Costanza, who also directs the Gund Institute of Ecological Economics.
- **The Stanley S. Fieber, M.D.'48 Chair in Surgery** was created in 2002 by Stanley S. Fieber, M.D. to enhance the research and educational activities of the Department of Surgery. Steven R. Shackford, M.D. is the Fieber Chair in Surgery.
- **The Albert G. Macay, M.D.'32 and GH. Gordon Page , M.D.'45** was established in 2005 as a professorship in Surgical Education in the College of Medicine, Department of Surgery.

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Our Common Ground

The University of Vermont is an educationally purposeful community seeking to prepare students to live in a diverse and changing world. We who work, live, study, teach, do research, conduct business, or participate in the University of Vermont are members of this community. As members, we believe in the transforming power of education and agree to help create and foster an environment where we can discover and reach our true potential.

We aspire to be a community that values:

RESPECT. We respect each other.
We listen to each other, encourage each other and care about each other. We are strengthened by our diverse perspectives.

INTEGRITY. We value fairness, straightforward conduct, adherence to the facts, and sincerity. We acknowledge when things have not turned out the way we had hoped. As stewards of the University of Vermont, we are honest and ethical in all responsibilities entrusted to us.

INNOVATION. We want to be at the forefront of change and believe that the best way to lead is to learn from our successes and mistakes and continue to grow. We are forward-looking and break new ground in addressing important community and societal needs.

OPENNESS. We encourage the open exchange of information and ideas from all quarters of the community. We believe that through collaboration and participation, each of us has an important role in determining the direction and well-being of our community.

JUSTICE. As a just community, we unite against all forms of injustice, including, but not limited to, racism. We reject bigotry, oppression, degradation, and harassment, and we challenge injustice toward any member of our community.

RESPONSIBILITY. We are personally and collectively responsible for our words and deeds. We stand together to uphold our common ground.

Aspirations and shared values for the UVM Community, endorsed by the UVM Board of Trustees.

The University of Vermont Equal Opportunity in Educational Programs and Activities Policy

The University of Vermont and State Agricultural College is committed to a policy of equal educational opportunity. The University therefore prohibits discrimination on the basis of unlawful criteria, such as race, color, religion, national or ethnic origin, age, sex, sexual orientation, marital status, or disability, as those terms are defined under applicable law, in admitting students to its programs and facilities and in administering its admissions policies, educational policies, scholarships and loan programs, athletic and other institutionally administered programs or activities made available to students at the University. The University also prohibits unlawful harassment defined in 16 V.S.A. £11(a)(26) as verbal or physical conduct based on a student's race, creed, color, national origin, sex, sexual orientation, marital status, or disability and which has the purpose or effect of substantially interfering with a student's educational performance or creating an intimidating, hostile, or offensive environment.

Questions regarding this policy statement or compliance with its provisions may be directed to Tom Gustafson, Vice President for Student Affairs, University of Vermont, 41–43 South Prospect Street, Burlington, VT 05405 (802-656-3380) or Kathryn Friedman, Executive Director, Office of Affirmative Action and Equal Opportunity, University of Vermont, 428 Waterman Building, Burlington, VT 05405 (802-656-3368). Questions may also be directed to government agencies having oversight and enforcement authority with respect to the referenced laws. A complete listing of those agencies may be obtained from the Office of Affirmative Action and Equal Opportunity.

Sources: Title VI of the Civil Rights Act of 1964; Title IX of the Education Amendments of 1972; the Age Discrimination Act of 1975; Section 504 of the Rehabilitation Act of 1973; the Americans with Disabilities Act of 1990; the Vermont Public Accommodations Act; and such other federal, state and, local nondiscrimination laws as may apply.

Equal Employment Opportunity and Affirmative Action Policy

The University of Vermont and State Agricultural College is committed to a policy of equal employment opportunity and to a program of affirmative action in order to fulfill that policy. The University will accordingly recruit and hire into all positions the most qualified persons in light of job-related requirements, and applicants and employees shall be treated in employment matters without regard to unlawful criteria including race, color, religion, national origin, sex, sexual orientation, disability, age, or status as a disabled or Vietnam-Era Veteran, as these terms are defined under applicable law. In addition, The University of Vermont recognizes that sexual harassment is a form of unlawful sex discrimination, and it is therefore the policy of the University that sexual harassment will not be tolerated.

Questions regarding this policy statement or compliance with its provisions may be directed to Kathryn Friedman, Executive Director, Office of Affirmative Action and Equal Opportunity, University of Vermont, 428 Waterman Building, Burlington, VT 05405 (802) 656-3368. Questions may also be directed to government agencies having oversight and enforcement authority with respect to the referenced laws. A complete listing of such agencies may be obtained from the Office of Affirmative Action and Equal Opportunity.

Sources: Titles VI and VII of the Civil Rights Act of 1964; Title IX of the Education Amendments of 1972; the Equal Pay Act of 1963; the Age Discrimination Act of 1975; Sections 503 and 504 of the Rehabilitation Act of 1973; the Americans with Disabilities Act; Section 402 of the Vietnam-Era Veterans Readjustment Assistance Act of 1974; Executive Order 11246 as amended; the Vermont Fair Employment Practices Act; and such other federal, state, and local non-discrimination laws as may apply.

Note: These Policy Statements are official University of Vermont Equal Employment Opportunity/Affirmative Action and Equal Opportunity in Educational Programs and Activities Policy Statements and supersede all prior policy statements regarding their subject matter. They may be modified only by written statement issued by the President as Chief Executive Officer of the University or formal action by the University of Vermont and StateAgricultural College Board of Trustees. These Policy Statements are designed to express the University's intent and commitment to comply with the requirements of federal, state, and local nondiscrimination laws. They shall be applied co-extensively with such laws, and shall not be interpreted as creating any rights, contractual or otherwise, greater or lesser than exist under such nondiscrimination laws. Persons seeking to participate in educational and employment opportunities offered by the University must consult position and program descriptions to determine criteria for eligibility. All such criteria shall be established in a manner consistent with the legal requirements herein referenced.