Through this bulletin, announcement is made of the general rules, regulations, fees, and schedules in effect as of the date of publication. This bulletin is for informational purposes only and does not constitute a contract between the university and any applicant, student, or other party. The university reserves its right to make changes, without notice, in any course offerings, requirements, policies, regulations, dates, and financial or other information contained in this bulletin. Published by the Trustees of Tufts University, Medford, Massachusetts 02155. Printed in the USA.
For course descriptions, see Course Descriptions by Department/Program at http://uss.tufts.edu/registrar/Registrar_StudentResources.asp
About Tufts University

International, student-centered, Tufts University is dedicated to academic rigor and interdisciplinary research that addresses the most critical issues facing our world. Rooted in the best traditions of learning and scholarship, Tufts is committed to educating tomorrow’s global leaders in all disciplines and fields through innovation in its teaching and research.

Since its founding in 1852 by members of the Universalist Church, Tufts has grown from a small liberal arts college into a nonsectarian university of approximately 8,500 students on four campuses. The trustees of Tufts College voted to make Tufts coeducational in 1892, and the first women were graduated in 1896. Although women applied to Tufts almost immediately after its founding in 1852, they were denied admission until the 1890s. With the founding of Jackson College for Women in 1910—named for Cornelia Maria Jackson, the benefactor who did the most to promote women's education at Tufts—women's education gained security at the institution.

At Tufts, creating excellence in education is forged through a philosophy that is forward-thinking, imaginative, and responsive to the fast-paced evolution of technology, politics, the sciences, our global society, and the arts.

Our Schools
The largest division of the university is the Faculty of Arts, Sciences, and Engineering. This division comprises the College of Liberal Arts, the School of Engineering, the Graduate School of Arts and Sciences, the College of Special Studies, and Summer Session. The university’s graduate and professional schools are the Fletcher School of Law and Diplomacy, the School of Medicine, the School of Dental Medicine, the Cummings School of Veterinary Medicine, the Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy, and the Sackler School of Graduate Biomedical Sciences.

The schools are located on Tufts’ campuses in Medford/Somerville, Boston, and North Grafton, Massachusetts. Students may also study at the Tufts European Center, located in an eleventh century monastery in Talloires, France. Tufts is also
affiliated with the School of the Museum of Fine Arts and New England Conservatory of Music, providing joint graduate and undergraduate programs and flexible cross-registration.

The Undergraduate Experience
Undergraduate study is on Tufts’ Medford/Somerville campus, situated on a hill about five miles northwest of Boston. It is a tranquil New England setting within easy access by subway and bus to the cultural, social, and entertainment resources of Boston and Cambridge.

Tufts is a student-centered institution, where support for students’ personal and academic development is embedded into the organization and ethos of the university. The Faculty of Arts, Sciences, and Engineering is committed to scholarship of the highest order and teaching of exacting quality, while equally dedicated to providing a friendly, open, and intellectually rich and stimulating environment. This environment is one of the reasons Tufts is one of the most highly competitive universities in the country.

Tufts has programs abroad in Britain, Chile, China, France, Germany, Ghana, Hong Kong, Japan, and Spain. More than 40 percent of undergraduates choose to spend their junior year abroad to add a strong international dimension to their education. This experience adds to the international flavor of the Tufts campus when they return for their senior year.

More than 98 percent of enrolling students expect to pursue graduate or professional studies, and annually Tufts students are the recipients of such prestigious academic awards as Fulbright, Rhodes, Marshall, and Mellon scholarships and fellowships.

Financial Information

Expenses and Policies
All undergraduate students (with the exception of those in the R.E.A.L. program) are expected to carry a full course load (four to five courses) except in cases of serious, documented medical problems.

A typical first-year student in residence at Tufts during the 2011-2012 academic year may expect the following expenses:

<table>
<thead>
<tr>
<th>Expense</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition</td>
<td>$41,998</td>
</tr>
<tr>
<td>Residence hall</td>
<td>$6,162</td>
</tr>
<tr>
<td>Meal plan</td>
<td>$5,350</td>
</tr>
<tr>
<td>Health service and student activity fees</td>
<td>$964</td>
</tr>
<tr>
<td>Books, supplies, and miscellaneous expenses (estimated)</td>
<td>$2,126</td>
</tr>
</tbody>
</table>

**Total for year (estimated)** $56,600*

Medical Insurance costs $1,723 for the year if the student is not covered by a comparable plan of their own.

*The charges listed above are subject to change.

Tuition
Tufts undergraduate tuition is a comprehensive fee that covers basic charges for instruction, costs of registration, most laboratory supplies, and other incidental items or services.

Campus Housing
All first-year and sophomore students are required to live in university housing or recognized fraternities or sororities, and to purchase a meal plan. Commuting students pay no residence hall fee and are not required to purchase a meal plan.

Meal Plans
Students select a meal plan or JumboCash in accordance with university requirements. JumboCash allows students to make purchases at all on-campus dining locations (Carmichael and Dewick Dining Centers, Hodgon Good-to-Go Take-Out, Hotung Café, Commons Deli & Grill, Brown & Brew Coffee House, Tower Café at Tisch Library, Jumbo Express Convenience Store, and The Rez), as well as the bookstore, Campus Center Info Booth, vending machines, on-campus washers and dryers, to pay fines at the Tisch and Ginn Libraries, purchase parking permits or lost IDs at
Public Safety Administrative Services. JumboCash can also be used to pay for printing and copying in campus libraries and computer centers. JumboCash may be used at 20 off-campus restaurants to dine in, take-out or delivery (where available), as well as a drug store and a convenience store (alcohol, tobacco products, lottery tickets and gift cards excluded). Dining Services is located at 89 Curtis Street. For more information, call 617-627-3566.

Health Service
The Health Service fee is mandatory and non-waivable and covers the cost of running a comprehensive outpatient health service and counseling center. The fee covers unlimited primary care and walk-in visits to the Health Service, access to the Counseling and Mental Health Service, and an annual flu shot if available for those who desire inoculation. Laboratory tests, prescribed medications, and consultation with on-campus medical specialty consultants are not covered by the health service fee. Students who do not purchase the optional medical insurance are required to demonstrate that they have other medical insurance. Details regarding the fee and deadlines for waiving the insurance are available at http://ase.tufts.edu/healthservice.

Fees
All students are required to pay the student activity fee, which is proposed by the student government. Accepted students must pay an enrollment deposit, which is applied to tuition for the first year.

Housing Charges
Room assignments are made for the full academic year. The campus housing room rates set by the Board of Trustees will appear on the resident student’s bill in two parts, identified as the housing commitment fee and room charge. The housing commitment fee is nonrefundable at the time a student selects a room, has a proxy select a campus room on his or her behalf, or otherwise accepts a room assignment from the Residential Life Office. The housing commitment fee is only refundable when:

a) the student is placed on required leave or withdrawal by the university, including academic probation level III, or

b) the student, subsequent to selecting a room, is admitted to a study abroad program. In such cases the student must file an electronic study abroad leave of absence form with Undergraduate Education at http://uss.tufts.edu/Registrar/Webcenter.asp. Students in both Tufts and non-Tufts study abroad programs must file an update form, available at the Residential Life Office in South Hall, within ten (10) days of acceptance—no later than April 30 for fall semester housing cancellation and November 15 for spring semester housing cancellation. The room charge portion of a student’s bill will be equal to the room rate for the student’s assignment, less the $750 housing commitment fee.

Room selection for spring-only applicants is held during the first week of December. Once a spring-only room assignment has been selected by the student (or his or her proxy), or an assignment is offered and accepted, the student is subject to the housing commitment fee.

Questions may be directed to the Residential Life Office, Tufts University, Medford, Massachusetts 02155, 617-627-3248, fax 617-627-3929, e-mail: reslife@tufts.edu, website: http://ase.tufts.edu/reslife.

Payment of Bills
All currently enrolled students are billed electronically through the Tufts eBill system. Information on Tufts eBill can be found at http://uss.tufts.edu/bursar/eBill/. Students are required to pay tuition, fees, room, and board prior to the start of each semester. Bills for the fall semester must be paid in the first week in August; spring semester bills are due and payable in early December. The amount billed is reduced by any financial aid awarded by or sent to the university on behalf of the student for the semester. Payment in full (after deduction for financial aid) must be made before each term either by check, echeck, wire transfer or by enrolling in the monthly payment plan. Detailed information about the payment plan is sent to returning students in April and incoming students in May/June.

Fall semester charges do not include those incurred for courses an applicant must take to become fully qualified for admission. Charges will not be reduced when courses are accepted for transfer credit.

All university charges are collected by Student Financial Services. Without waiting for receipt of a formal bill, payments for tuition, fees, room, and
board are to be made to Tufts on or before the due date for the semester. Checks should be made payable to the Trustees of Tufts College.

If full payment has not been received, or financial arrangements have not been agreed upon by the specified due date, a late payment fee will be assessed monthly.

The following actions will take place should a student fail to meet his or her financial obligations to the university for outstanding student loans or balances on his or her student account: the student may be denied access to university dining services; will not be allowed to access library resources; will not be issued an official transcript; and will be denied an on-campus room selection for an upcoming semester.

Any unpaid student account balance may be referred to our collection agency. The student will be responsible for all costs associated with collection, including collection agency fees, attorneys’ fees, and court costs. The account will be reported to credit bureaus if assigned to a collection agency.

Diplomas and official transcripts of records for those in arrears are regularly withheld until all payments have been made.

**Administrative Withdrawal**

If a student’s account remains unsettled beyond the billing due date, subsequent bills will be issued reflecting monthly late payment charges. If the student’s account remains unsettled after the first day of classes, the student may be subject to withdrawal from the university.

Students are strongly encouraged to communicate with Student Financial Services as soon as they encounter personal or financial difficulties so that the university may help identify possible solutions and alternatives for meeting individual needs.

**Withdrawal/Leave Tuition Refund Policy**

Students who elect to take a leave of absence or withdraw or who are required to withdraw will receive a tuition refund in accordance with the following schedule, based on the effective date of the leave.

<table>
<thead>
<tr>
<th>Fall semester 2011</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>By September 5, 2011</td>
<td>100% of tuition charged is cancelled</td>
</tr>
<tr>
<td>September 6 to 19, 2011</td>
<td>90% of tuition charged is cancelled</td>
</tr>
<tr>
<td>September 20 to 26, 2011</td>
<td>80% of tuition charged is cancelled</td>
</tr>
<tr>
<td>September 27 to October 3, 2011</td>
<td>60% of tuition charged is cancelled</td>
</tr>
<tr>
<td>October 4 to 10, 2011</td>
<td>40% of tuition charged is cancelled</td>
</tr>
<tr>
<td>October 11 to 17, 2011</td>
<td>20% of tuition charged is cancelled</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring semester 2012</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>By January 18, 2012</td>
<td>100% of tuition charged is cancelled</td>
</tr>
<tr>
<td>January 19 to February 1, 2012</td>
<td>90% of tuition charged is cancelled</td>
</tr>
<tr>
<td>February 2 to 8, 2012</td>
<td>80% of tuition charged is cancelled</td>
</tr>
<tr>
<td>February 9 to 15, 2012</td>
<td>60% of tuition charged is cancelled</td>
</tr>
<tr>
<td>February 16 to 22, 2012</td>
<td>40% of tuition charged is cancelled</td>
</tr>
<tr>
<td>February 23 to 29, 2012</td>
<td>20% of tuition charged is cancelled</td>
</tr>
</tbody>
</table>

**No tuition refunds are made after the sixth week of classes.**

The student is responsible for any unpaid charges and must make arrangements to pay this balance prior to leaving Tufts. Any outstanding balance will result in a hold on the release of any transcripts until paid in full. If the student’s account is referred to a collection agency, the student will be responsible for all collection and litigation costs associated with this debt.

**Campus Housing Charges**

Campus housing charges will be refunded based on the above prorated tuition schedule for the semester. The date of withdrawal from housing will be based on the date that the room has been vacated and the room key returned to residential facilities. The housing commitment fee is non-refundable.
Meal Plan Charge
Students wishing to cancel their meal plan after the cutoff date will be assessed 50 percent of the pro-rated refund amount.

Other Charges
Other fees and charges such as the health service fee, the student activity fee, library or traffic fines, and traffic or parking citations are not refunded or prorated after the beginning of the academic year. If a student is enrolled in the optional medical insurance plan, both the charge and the plan benefits remain in place through the end of the contract period. A student enrolled for only one semester will be charged the full student activity fee and health service fee.

Financial Aid
Tufts University students are eligible for a full range of financial aid in the form of university, state, and federal grants; long-term university, state, Federal Perkins and Stafford Loans; and federally subsidized (FWS) campus employment. In 2010-11, 48 percent of full-time undergraduates received over $78 million in these forms of aid and other government and foundation grants and loans. Forty-two percent of the entering class received over $18 million in total aid, of which over $15 million (85 percent) was in the form of grants. The average grant was $30,500; the average award (including loan and work study) was $32,500 to entering students.

Application
Entering undergraduates, including transfers, apply for aid by submitting the Profile Form of the College Scholarship Service, the Free Application for Federal Student Aid (FAFSA), and copies of family federal tax returns before February 15. Decisions on the amounts and kinds of aid are announced in April, shortly after the letter of admission is mailed. Students requesting renewal of aid, and other undergraduates who have not received assistance previously, apply by April 15. Decisions are made in June. Preference in awarding grants each year is given to those who received aid in the previous year.

Satisfactory progress toward a degree is required for continuance of aid.

Details concerning the Satisfactory Progress requirements can be found on the financial aid website at http://uss.tufts.edu/finaid
Applications for tuition scholarships and teaching assistantships in the graduate school are an integral part of the application for admission. Decisions are announced with the letter of admission or at a later date. Complete application instructions, deadlines, and links are available at http://uss.tufts.edu/finaid

Forms of Aid
University grants are by far the largest single source of funds received by Tufts undergraduates from the application procedure described above. They range from $500 to more than full tuition each year and are combined with other scholarships, loans, and employment to meet the university’s estimate of each student’s need.

For graduate students, scholarships range from quarter to full tuition as decided by the department. Teaching assistants normally receive tuition scholarships plus an annual stipend for teaching. If needed, graduate students also may apply for Federal Direct Stafford, Perkins, and Federal GradPLUS loans.

Federal Supplemental Educational Opportunity Grants (SEOG) are federal grants allocated to Tufts for exceptionally needy undergraduates. The average award is about $2,000 a year; the range is from $200 to $3,000.

Federal Pell Grants are federal grants to which undergraduates from low- and moderate-income families are entitled according to their financial circumstances. Application is made by completing the FAFSA and submitting it after January 1 preceding each academic year. Only undergraduates are entitled to these grants. Awards range from $555 to $5,550.

Carl Gilbert Matching Grants are funds awarded to Tufts and other independent institutions by the Commonwealth of Massachusetts to be given as grants to needy Massachusetts undergraduates.

Tufts National Merit Scholarships: Entering first year students who are National Merit finalists are eligible for scholarships of $500 to $2,000 per year.
for up to four undergraduate years for any semester in which the student is charged Tufts tuition. To enter the program, students must name Tufts as first choice in the National Merit competition. Honorary awards of $500 per year for four years may be made to successful applicants who do not demonstrate financial need. Merit awards up to $2,000 per year may be offered to applicants with demonstrated financial need. Those who need more than the $2,000 award will be considered for additional loan, work, and grant aid up to the total amount needed. Need must be determined annually by Tufts based on the FAFSA analysis of family ability to meet total educational costs. In 2010-2011, 173 scholars were awarded over $200,000.

**Federal Perkins Loans** are awarded by Tufts to students of exceptional need from funds repaid by previous Federal Perkins Loan borrowers.

**Tufts loans** may be offered to needy undergraduates not eligible for Federal Perkins Loans. Interest on Tufts loans is 7 percent and begins to accrue six months after the student leaves Tufts. Repayment of principal and interest begins six months after leaving Tufts and continues for five years. Tufts loans require a parental cosigner.

**Massachusetts No-Interest Loans** may be awarded to Massachusetts undergraduates of exceptional need from funds allocated to Tufts by the Commonwealth of Massachusetts. Repayment terms are very similar to Federal Stafford Loans but there is no interest charge.

**Federal Direct Subsidized Stafford Loans:** This program offers student loans subsidized by the federal government. Students may borrow up to $3,500 for the first undergraduate year, $4,500 for the second year, and $5,500 per year for the remaining undergraduate years (maximum $23,000) and up to $8,500 per year for graduate study. A maximum of $65,500 for undergraduate and graduate years is permitted under this program. Federal Direct Loans are normally disbursed in two equal installments. The interest rate during repayment is 6.8 percent for graduate students and 3.4 percent for undergraduate students. Repayment begins six months after the student graduates or stops attending school on at least a half-time basis.

**Federal Direct Unsubsidized Stafford Loans** are available for students who do not qualify for a subsidized Federal Direct Loan or who want to borrow in addition to the Subsidized Loan. Students are responsible for interest while in school and may make monthly interest payments or capitalize the interest. The interest rate on the unsubsidized loan is 6.8%.

Dependent undergraduates may borrow up to $2,000 above the subsidized Federal Direct Loan limits less the amount of any subsidized loan received. Graduate students and independent undergraduates may borrow up to the subsidized Federal Direct Loan limit less the amount of any subsidized loan received plus $6,000 per year for freshmen and sophomores, $7,000 per year for juniors and seniors, and $12,000 per year for graduate students. In order to advise students of their rights and responsibilities, an entrance interview is required of all first-time borrowers at Tufts prior to disbursement of the loan. Exit counseling is required of all borrowers before leaving the university.

**Federal Direct PLUS Loans:** Through the Federal Direct PLUS Loan program, graduate students and parents of dependent undergraduates may borrow up to the full cost of education minus any financial aid annually at a fixed rate of 7.9%. The fee on PLUS loans is 2.5%. A credit check is required and payments begin 60 days after the loan is fully disbursed. PLUS loans must be used for college expenses, including room and board. PLUS loan borrowers are required to complete a FAFSA form.

**Federal Work-Study Program (FWS):** FWS provides federal funds for Tufts to subsidize the hourly wages of students who need financial aid during the school year. Work-study positions are available either on-campus or with off-campus, nonprofit community service programs, and typically wages range from $7.00 to $15.00 per hour.

**ROTC Programs:** ROTC may be applied for before or after admission and used at Tufts. Applications may be obtained from Air Force or Navy recruiting officers, or students may join after registration and compete for two- or three-year Army scholarships. Many ROTC scholarships include full tuition, books, and fees, as well as a monthly stipend of up
to $500, while others offer up to $20,000 toward tuition, plus a stipend. Tufts students participate in ROTC through units at nearby M.I.T. Most classes are held on the M.I.T. campus. After graduation, a 4-year active duty commitment is required, with pilots needing to serve longer. After undergraduate college graduation, other ROTC medical college scholarships may also be available.


Job Location and Development Program (JLD): JLD aids all Tufts students, regardless of financial need, in finding campus or off-campus employment. Students may work part time while in school or full time during vacation. Students are encouraged to visit the Tufts Student Employment website at http://uss.tufts.edu/stuemp where they can register for an interactive job-search program providing access to a host of employment opportunities and services.

All information regarding federal student aid programs is correct as of May 2011, but is subject to change with the passage of new legislation.

For more complete information regarding financial aid policy and procedures, visit http://uss.tufts.edu/finaid
School of Arts and Sciences

Mission Statement

Broadly recognized as one of the premier liberal arts colleges within a research university, the School of Arts and Sciences at Tufts University educates students for transformational leadership in communities around the world. Tufts’ tradition of innovation dates to the school’s founding in 1852. Today, a multi-disciplinary and experiential approach defines scholarship and teaching. Faculty and students use the curricular framework of the arts and sciences to address the great intellectual and social challenges of the twenty-first century.

The school has a distinctive style. Excellence in scholarship and teaching are the school’s highest priorities; translating inquiry and research into action is a defining theme. The Faculty of Arts and Sciences, the largest of Tufts’ seven schools, explores collaborative research opportunities across the university’s professional schools and around the world. More than 5,000 students at the undergraduate and graduate levels represent the broad range of intellectual, creative, and personal attributes. The creation of new knowledge in traditional and emerging disciplines, a dedication to globalism and active citizenship, a commitment to humanitarianism and diversity in its many forms, and a belief that intellectual discourse and discovery serve the common good are deeply held ideals.

College of Liberal Arts

Requirements for Degrees

For students entering the College of Liberal Arts, the degree of Bachelor of Arts or Bachelor of Science is awarded after four years (eight semesters) of full-time study and with successful completion of the equivalent of thirty-four credits. (Study in summer school at other institutions does not count toward the residence requirement under this policy.) A cumulative average of C- (1.67) or higher is required for graduation. No more than two of the thirty-four credits may consist of fieldwork or internship placements. Up to two semesters of full-time study after matriculation at Tufts may be spent at other approved four-year institutions or on approved foreign study programs. (See Residence Requirement in the general information section for details.)

Three-fourths of all courses taken at Tufts with standard grading must be completed with a grade of C- or better. There is no rigid program of courses that must be taken by every student. Students are regarded as individuals and each student is encouraged to pursue a course of study appropriate to his or her training, experience, aptitudes, and plans for the future. Within a framework designed to ensure both breadth and depth in intellectual development, there is a broad range of choice. Students work with their advisors to select those courses best suited to their particular needs and interests.

Each student selects courses to fulfill the foundation and distribution requirements. All courses used to fulfill these requirements must be taken for a letter grade, not pass-fail.

Degree Audit Reporting System

DARS is a web-based application that allows students to systematically assess their progress toward degree completion. A DARS audit will report detailed degree requirements, how coursework can be used to complete that degree, and completed and outstanding requirements. For more information visit http://degreeaudit.studentservices.tufts.edu.

Foundation Requirements

The faculty recognizes the following elements as basic to any program leading to a bachelor’s degree in liberal arts, whatever a student’s particular interests may be. First, an educated person in our society must be able to write coherent English and must be able to apply that writing ability to the critical analysis of information and ideas in any field. Second, the study of another language and of foreign cultures is indispensable to a liberal education; such study provides a basis for locating oneself within a larger cultural and international context. Courses in college writing, foreign language and culture, and world civilizations constitute the foundation of a liberal arts education at Tufts.

The foundation requirements should be met early in a student’s college career, so that these courses may serve as a foundation for later work. Where appropriate, a single course, examination, or
other unit of work may be credited toward the fulfillment of both the foundation and the distribution requirements.

1. Writing
   Two semesters of college writing are normally required for graduation in liberal arts. In general, students should complete this requirement in the first year. Most students do so by taking English 1 (Expository Writing) in the first semester and, in the second semester, English 2 (College Writing Seminar) or another approved writing course (such as Philosophy 1). A Philosophy 1 class (or other English 2 substitute) transferred from another college will not count for English 2 or 4. Students taking courses approved as English 2 substitutes may not count them as English 2 if taken before or at the same time as English 1. Students for whom English is a second language may take English 3 with consent of the instructor. Courses taken toward fulfillment of this requirement must be taken for letter grades, except English 3, which is pass-fail.

   There are also other alternatives for satisfying the college writing requirement. In summary, the requirement may be satisfied in any of the following ways:
   • Exemption from the entire requirement by attaining a score of five on the Advanced Placement Test in English Language and Composition or English Literature and Composition; an A on the British A-Level exams; or a score of seven on the Higher-Level International Baccalaureate.
   • Exemption from the first half of the requirement by attaining one of the following: a score of four on the Advanced Placement Test in English Language and Composition or English Literature and Composition, 760 or above on the SAT Writing exam, five or six on the Higher-Level International Baccalaureate, six or seven at the Subsidiary Level, or a B on the British A-Level exams. Students so exempted from the first half of the requirement must complete English 2 or an equivalent course.
   • Satisfactory completion of English 1 or 3 and English 2 or 4, or an approved alternative course (which may not be taken concurrently with English 1). These courses vary from year to year; students and their advisors should ascertain which alternatives are offered and approved in any given semester. Philosophy 1 offered at Tufts is an approved alternative to English 2 or 4; however, courses equivalent to Philosophy 1 transferred from another college are not approved alternatives. • Completion of English 1 with a grade of A or A- (resulting in exemption from the second half of the requirement). This exemption does not apply to writing courses equivalent to English 1 that were taken at another college.

2. Foreign Language/Culture Option
   This foundation requirement has two parts. First, every student must satisfy a basic language requirement, demonstrating knowledge of a foreign language through the third semester college level. The second part of the requirement may be satisfied in several different ways. Students may take advanced courses in the same foreign language or they may undertake study of a second language. Students are offered the alternative of studying a foreign culture through courses taught in English. Students who speak, read, and write proficiently in a language other than English should consult their academic dean about possible exemption from this requirement. No credit is awarded for exemption.

   PART I. Basic Language Requirement
   Every student must demonstrate competence in a second language through the third semester college level. Secondary school transcripts are not accepted as evidence of language competence. Language competence may be determined on the basis of a placement examination taken at Tufts, SAT II Subject Test scores, AP scores, or a college transcript. Entering students who do not demonstrate the required level of competence must take college language courses until that level is reached.

   PART II. Continued Language Study/Culture Option
   After the basic language requirement has been satisfied, the student has four options:
   1) To continue study in the foreign language used to fulfill the basic language requirement until two courses have been completed at the third-year level; e.g., French 21-22 or French 31-32, German 21-22 or German 33-44. Because the fourth-semester college-level course (e.g., French 4, Spanish 4) is normally a prerequisite for courses at the advanced
level, the option usually involves taking three courses beyond the basic language requirement.

2) To complete courses through the third college semester level (e.g., Spanish 1 through 3) in a language different from the one used to satisfy the basic language requirement.

Beginning with students in the Class of 2009, American Sign Language may be used to fulfill this option.

3) To complete three credits dealing with a single culture or designated cultural area, either the same as or different from the language taken to fulfill Part I. Each course must deal with the same culture. For purposes of this requirement, a foreign culture is defined as having non-English speaking origins. Anglo-American, English, Anglo-Irish, and Anglo-Australian cultures do not qualify, but Aboriginal Australian, Celtic, and African-American, Latino/a, and Asian American, for example, do to the degree that they are discrete from the Anglo-American tradition.

At least one of the three culture credits must focus on the region of origin. For instance, a student choosing the East Asian and Diasporas culture area must take at least one course rooted in East Asia. These non-diasporic classes are noted at http://uss.tufts.edu/stuServ/bulletin/.

Culture courses are regularly updated on the Bulletin website. Students wishing to submit courses that are not on this list must petition the Academic Review Board; forms are available under Student Forms at http://uss.tufts.edu/stuServ.

4) Foreign language courses beyond the third semester college level may be counted as part of the culture option, e.g., Spanish 4, French 4, or courses at higher levels. For example, a student who has completed four semesters of foreign language study may choose to complete the foundation requirement by taking two culture credits in the same culture area as that of the language studied.

Travel or residence in another country, while admittedly educational, may not be applied toward fulfillment of the culture option. Courses accepted for transfer from other colleges or universities may be used upon approval of the Academic Review Board. Policies governing the acceptance of courses in satisfaction of the language requirement and culture option are established by the Academic Review Board.

3. World Civilizations
The world civilizations requirement focuses on an in-depth study of a non-Western civilization or civilizations, or the interaction of non-Western and Western civilizations with equal attention given to both. The definition of the non-Western world is considered to include Africa, Asia, the Caribbean, Latin America, and selected indigenous cultures of Oceania and North America.

The course taken in fulfillment of the world civilizations requirement may be used to fulfill the culture option or that distribution requirement for which the course would normally be appropriate, but not both.

For an updated list of courses that have been approved by the Academic Review Board, visit http://uss.tufts.edu/stuServ/bulletin/. For approval of courses that do not appear on this list, a petition form is available under Student Forms at http://uss.tufts.edu/stuServ.

4. Quantitative Reasoning
The quantitative reasoning requirement is designed to impart basic mathematical skills that students will need throughout their studies. Students who receive at least 560 on the mathematics SAT or at least 23 on the mathematics ACT are automatically exempt from this requirement.

Students with a mathematics SAT score below 560 or a mathematics ACT score below 23 must take Mathematics 4 in the fall semester of their first year. Exemptions are granted for students who pass the placement examination offered by the mathematics department during orientation, or who receive an AP calculus credit or an international diploma mathematics credit, or who receive transfer credit for a calculus course or a course equivalent to Mathematics 4.

Students who are required to take Mathematics 4 are also allowed to count it as one of their two mathematical sciences distribution credits. Those who receive exactly 560 on the mathematics SAT or 23 on the mathematics ACT may seek permission from the mathematics department to count Mathematics 4 toward the mathematical sciences distribution requirement. Students who submit multiple scores, one of which is a mathematics SAT above 560 or a mathematics ACT above 23, are considered exempt and not allowed to count Mathematics 4 toward the mathematical sciences distribution requirement.
Distribution Requirements
The faculty holds that a student enrolled in any program leading to a liberal arts degree must demonstrate a reasonable acquaintance with each of the following five areas of inquiry: the humanities, the arts, the social sciences, the natural sciences, and the mathematical sciences.

- A student must take the equivalent of two course credits in each area.
- No more than two of the ten credits may be from the same department or program.
- Beginning with those who matriculated into Tufts in Fall 2009, students may use one approved pre-matriculation credit (e.g. AP or IB) toward fulfillment of each distribution area, for a total of five.
- No single course may be used in more than one distribution area. For example, a history course may be counted as either humanities or a social science requirement, but not both.
- Courses used in the foundation requirement or as part of the concentration (major), may also be used to fulfill distribution requirements (with some exceptions noted below).

Special restrictions apply to Experimental College courses:
Approval of the Academic Review Board must be obtained in all cases. Only one Experimental College credit may be used as a distribution requirement. Those courses graded pass-fail may not be used to satisfy any distribution requirement.

Please go to the Student Services web page to view the courses that have been approved by the Academic Review Board.

Summary Sheet of Requirements
Foundation Requirements

1. WRITING
   1) 
   2) 

2. FOREIGN LANGUAGE/CULTURE OPTION
   Part I: Competence equivalent to three semesters of college language courses
   1) 
   2) 
   3) 

Part II: Competence equivalent to three semesters of college language courses, or culture option.
(Fulfill a, b, or c.)

4) 
5) 
6) 

   a. Continue in the first language for three more semesters
   b. Three semesters in a second language (including ASL)
   c. Culture option—there are two ways to fulfill the culture option:
      1. Continue through the fourth or fifth semester of the language used to fulfill Part I, and take one or two credits in the same culture area as that language.
      2. Take three credits related to a single culture either the same as or different from the language taken to fulfill Part I. One credit must focus on the region of origin. See the online list of approved culture courses.

3. WORLD CIVILIZATIONS
   1) 
   This credit may also be used toward a culture OR a distribution requirement, but not both.

4. QUANTITATIVE REASONING
   1) 
   For students with a math SAT score below 560 or a math ACT score below 23.

Distribution Requirements

1. HUMANITIES
   1) 
   2) 

2. ARTS
   1) 
   2) 

3. SOCIAL SCIENCES
   1) 
   2)
Interdisciplinary Studies Major

Interdisciplinary Studies offers a student the opportunity to create a self-designed, individual concentration area corresponding to a unique set of interests, yet meeting the spirit of the concentration requirement. The Interdisciplinary Studies major involves a selection of courses from the humanities, arts, social sciences, natural sciences, mathematics (quantitative), and engineering areas, with at least two of these six being represented.

The Interdisciplinary Studies major consists of an integrated program of at least ten credits, including a two-semester thesis credit (CIS 95/195 (Honors)) or a substantial project comparable in scope to a thesis, including a written component. In this course, the student integrates material learned in the selected disciplines into a final project, culminating in a substantial thesis. Students in Interdisciplinary Studies are eligible for thesis honors. In order to complete an Interdisciplinary Studies major, the student must have a high degree of initiative and self-discipline. Also, no more than two credits used to fulfill another major may be used toward the Interdisciplinary Studies and students may not triple major if one major is the Interdisciplinary Studies major. A student who wishes to select the Interdisciplinary Studies major must submit an application describing in detail the planned program (see the CIS website for application and deadlines).

Each applicant selects an advisory committee of three faculty members who support the application, including representatives from three departments in at least two of the six areas listed above. (At least two of the committee members must be full-time members of the Arts and Sciences faculty, with the rank of lecturer or above; at least one of the committee members must be a tenure-track member of the Arts and Sciences faculty.) In consultation with the advisory committee, the student develops plans for his or her program, which are then submitted as part of the application. For more information visit the Center for Interdisciplinary Studies website: http://cis.tufts.edu.

4. NATURAL SCIENCES
1) ____________________________
2) ____________________________

5. MATHEMATICAL SCIENCES
1) ____________________________
2) ____________________________

Concentration (Major) Requirement

The object of the concentration (or major) requirement is to provide the student with an integrated and thorough program of study in a well-developed field of learning. Most students satisfy the concentration requirement within established academic departments and programs, selected from among those listed below. An alternative program, called the Interdisciplinary Studies major, is available to students with unique academic interests not clearly encompassed by the established fields of concentration.

All courses used toward fulfillment of the concentration requirement must be taken for letter grades.

Department or Program Major

Students are expected to choose their major and to have a faculty advisor in the major field during the second semester of the sophomore year. With the assistance of the faculty advisor, the student plans a concentration program of ten or more courses as specified by the major department. In some cases, the student must complete prerequisite courses in addition to those that constitute the concentration program.

For students with multiple concentrations, no more than half the credits used to fulfill the requirements for one concentration may be used to satisfy the requirements for a second or subsequent one. However, for courses taught in a foreign language beyond the third-year level of instruction, this overlap can be extended: up to 80 percent of the courses used to fulfill the requirements for one concentration may be used to satisfy the requirements for a second or subsequent one. Departments and programs may further restrict the amount of overlap between concentrations. Students who wish to complete two sets of concentration requirements are urged to continue to design such programs with minimal course overlap.
The degree of Bachelor of Arts or Bachelor of Science is conferred on all students who complete this program. Students whose major concentration is applied physics, astrophysics, biochemistry, biology, biomedical engineering, biopsychology, biotechnology, chemical physics, chemistry, cognitive and brain sciences, computer science, engineering psychology, environmental studies, geological sciences, geology, mathematics, and physics will receive a Bachelor of Science degree. Those majoring in psychology, psychology/clinical, and quantitative economics may choose to receive the degree of Bachelor of Science or Bachelor of Arts at the time they complete their degree sheet. Students in all other majors will receive a Bachelor of Arts degree. Students whose multiple majors make them eligible for either a Bachelor of Arts degree or a Bachelor of Science degree may choose between the two when completing their degree sheet.

Pass-Fail Option

Within the limits stated below, students may elect to have their grades in certain courses recorded simply as pass or fail. The purpose of this option is to encourage students to extend their academic interests. Faculty advisors will approve selection of the option if this purpose is clearly fulfilled; it is not designed as a safety valve to permit students to carry unrealistic academic loads. A student will be graded as usual throughout the course, with final grades transcribed by the registrar into pass (if D or better) or fail. A pass does not affect the grade point average; a failing grade is averaged into the grade point average.

In a thirty-four course credit program, students are normally required to take at least twenty-six semester course credits under standard grading; the pass-fail option may be applied to any courses in excess of twenty-six, with the exceptions stated elsewhere in this section.

Transfer students and those students who transfer credit to Tufts from programs at other institutions must complete three-fourths of their work at Tufts under standard grading subject to the stated quality requirement. The pass-fail option may be applied to courses in the remaining one-fourth of the program with the exceptions stated below.

No distinction is made between regular courses that a student elects to take under pass-fail grading and those courses that may only be taken pass-fail.

All decisions with respect to the pass-fail option must be made within the first five weeks of any term. After five weeks, the student must complete a course under the grading system then in force or withdraw from the course. For liberal arts students, only electives may be taken pass-fail; courses taken to fulfill the foundation, distribution, concentration, and minor requirements may not be taken pass-fail.

Additional Graduation Requirements

Other courses to complete the thirty-four credits required for graduation may be selected without restriction. However, students should be guided in their choice by the purpose of promoting breadth as well as depth in intellectual development. In
planning their programs of study, students should keep in mind that a good general education in the humanities, the arts, the sciences, mathematics, and the social sciences is a distinguishing characteristic of members of all the established professions. Faculty advisors are ready at all times to aid and counsel in making decisions.

Seniors must file a degree sheet the semester prior to their expected date of graduation. (Consult Undergraduate Education in Dowling Hall.)

**Undergraduate Minor Programs**

A student may have any number of majors and minors, provided there is only one disciplinary (departmental) minor. Two course credits used toward the departmental minor may be used toward a foundation, distribution, or concentration requirement. Two course credits used toward the interdisciplinary minor may be used toward a distribution or concentration requirement, but not toward a foundation requirement.

**Disciplinary (or Departmental)**

A minor is a coherent group of four to six course credits that may be a limited version of a field of concentration or a group of courses having closely related subject matter. Minors are optional and in no way replace the field of concentration. The object of a minor program is to present students with the basic concepts in a single scholarly discipline, including an introduction to appropriate methodologies and ways of thinking about the subject.

Students may have only one disciplinary (departmental) minor, regardless of the number of majors. Two course credits used toward the departmental minor may be used toward a foundation, distribution, or concentration requirement. Students may not complete both a minor and a concentration (major) in the same discipline. All courses used in fulfillment of a disciplinary minor must be taken for a grade. Not all departments have minors, so students should consult department websites for additional information.

**Interdisciplinary**

The interdisciplinary minor involves a designated group of five credits from at least three departments or programs of the university, bringing to bear the knowledge and perspectives of various disciplines on a single subject. Students may select a minor from among the programs approved by the Subcommittee on Academic Minors of the Committee on Curricula. These programs offering interdisciplinary minors are listed below.

Students may have more than one interdisciplinary minor, regardless of the number of majors they have, and may have an interdisciplinary minor in addition to a departmental minor. Two credits used toward the interdisciplinary minor may be used toward a distribution or concentration requirement, but not toward a foundation requirement.

In addition to the five credits, a student is required to complete an appropriate project, such as a thesis, an oral presentation, or a performance, which integrates the knowledge and methodologies of the disciplines involved. The integrative project will receive a letter grade and be given one-half or one course credit under a designation either from the sponsoring program or CIS 120. The topic of the project must receive initial approval from an instructor of one of the courses taken by the student for the specific minor program. This instructor will also agree to direct the student’s work on the project. The project will be evaluated by at least one other faculty member whose courses are part of the particular minor program, and who will then consult the project director regarding the grade to be assigned. The student is responsible for selecting the faculty members who will participate in this aspect of the program.

In a further effort to synthesize knowledge acquired in the program, the faculty members involved in each minor will arrange two meetings for all students who will be working on their project in that particular academic year. The first meeting, scheduled for the fall semester, will give the students the opportunity to consult the faculty regarding project topics, resources, and methodology. The second meeting, held at the end of the spring semester, will provide a forum at which the participants in the minor will discuss their work with others interested in the same general area and share the views and insights gained by participation in the particular minor program.

Students may submit a Declaration of Minor form to the Center for Interdisciplinary Studies only after they have declared a major concentration. At the completion of their minor program, students must submit a Minor Certification form, bearing
the signatures of the faculty coordinator of the minor and of the two or more faculty members involved in the evaluation of their project, the title of the project, and a list of the five courses taken.

The approved interdisciplinary minor programs are:
Africa in the New World
Asian Studies
Cognitive and Brain Sciences
Film Studies
Judaic Studies
Latin American Studies
Latino Studies
Leadership Studies
Mass Communications and Media Studies
Medieval Studies
Multimedia Arts
Urban Studies
Women's Studies

See the alphabetical listings in this bulletin for a description of these programs and the name of the faculty coordinator, who in each case can provide more information and an updated list of approved courses.

Pre-matriculation Credits
Pre-matriculation credits are defined as credits earned from certain scores on Advanced Placement and SATII examinations, scores on examinations of certain international diplomas, as well as credits earned from college courses taken prior to matriculation at Tufts. These scores and their equivalencies have been determined by the individual departments and are listed below. Pre-matriculation credits are treated as regular course credits, but are not normally applied toward the concentration. These credits may be accepted in partial satisfaction of the foundation requirements. They also may count toward one of the two credits required in each distribution area. If the student chooses to take a course that is equivalent to a pre-matriculation credit received and passes, then the pre-matriculation credit will be removed from the student's record. Students do not need to take the next level course in order to keep the pre-matriculation credit (except where stated). Liberal arts students are limited to five pre-matriculation credits toward their degree. Credits earned prior to matriculation via Tufts Summer Session are not included in this limit. Students with more than five eligible credits will be awarded five credits by the registrar. If they wish to make any changes, they may do so by completing the appropriate form under Student Forms at http://uss.tufts.edu/stuServ. Students receiving five pre-matriculation credits will be allowed to graduate in seven semesters instead of eight; however, this advanced standing will not be instated until the student completes four semesters at Tufts.

Secondary school students who have taken college courses should consult the appropriate departments regarding their placement and the possible award of credits. Credit is awarded only for courses taken at a college with regularly enrolled college students. Some colleges offer their courses at nearby secondary schools for classes composed entirely of secondary school students; credit is not awarded for these courses.

Please note: Health professions graduate programs, such as medical and dental schools, will generally expect actual college science courses with laboratory on the transcript.

Advanced Placement
Art History and Studio Art
5: Exemption from FAH 0001 and 0002; no credit.

Biology
5: Consult department regarding placement; normally, placement will be in Biology 13 or 14; one course credit which may count toward the major. Students who take both Biology 13 and 14 will not also be awarded pre-matriculation credit.

Chemistry
5: Placement into Chemistry 31 or 51; two credits awarded. A student may choose to use only one credit and take Chemistry 2 or 12.

Chinese
5: Exemption from the basic language requirement (part 1); placement into Chinese 22. One credit equivalent to Chinese 21 is granted and one course is required to complete part II of the foreign language requirement.
4: Exemption from the basic language requirement (part 1); placement into Chinese 21. No credit is granted and two courses are required to complete Part II of the foreign language requirement.
3 or lower: Tufts Chinese language placement exam required for proper placement. No credit is granted.

**Computer Science A and/or AB**
If both tests are taken, only one credit is awarded to the student.
5 or 4: Placement into Computer Science 15; one credit.

**Economics**
5 in microeconomics: One credit; enroll in Economics 5.
5 in macroeconomics: One credit; enroll in Economics 5.
5 in microeconomics and macroeconomics: Two credits; exemption from Economics 5 prerequisite; eligibility for Economics 11, 12, or 18.

**English Language and Composition and/or Literature and Composition**
If both tests are taken, only one credit is awarded to the student.
5: Exemption from the College Writing Requirement; one credit.
4: Exemption from the first semester of the College Writing Requirement (placement into English 2 or an equivalent course); one credit.
Scores of 760 or higher on the SAT Writing Exam will exempt students from English 1 (no credit).

**Environmental Science**
5 or 4: One course credit equivalent to Biology 7.

**French and Spanish Language and Literature**
5: Exemption from the Basic Language Requirement (Part I); placement into French/Spanish 22. One credit equivalent to French/Spanish 21 is granted and one course is required to complete Part II of the Foreign Language Requirement.
4: Exemption from the Basic Language Requirement (Part I); placement into French/Spanish 21. No credit is granted and two courses are required to complete Part II of the Foreign Language Requirement.
3: Exemption from the Basic Language Requirement (Part I); placement into French/Spanish 4. No credit is granted and three courses are required to complete Part II of the Foreign Language Requirement.

**Italian Language and Culture**
5: Exemption from the Basic Language Requirement (Part I); placement into Italian 21. No credit is granted and two courses are required to complete Part II of the Foreign Language Requirement.
4: Exemption from the Basic Language Requirement (Part I); placement into Italian 4. No credit is granted and three course credits are required to complete Part II of the Foreign Language Requirement.
3: Placement into Italian 3. No credit is granted and one course credit is required to complete Part I of the Foreign Language Requirement.
Scores of 770 and above on the SAT II Subject Tests for French, Spanish, or Italian satisfy Parts I and II of the Foreign Language Requirement and confer one credit that is equivalent to French/Spanish/Italian 22.
The Department of Romance Languages awards two credits, equivalent to French/Spanish/Italian 21 and 22, only to students who have completed the International Baccalaureate.
Students whose results on the Tufts Placement Test are superior to their scores on the Advanced Placement Test or the SAT II Subject Tests will be placed at the higher course level. AP and SATII examination credit satisfies language course requirements (but does not satisfy the Liberal Arts humanities requirement).
See the appropriate coordinator of language instruction in the Department of Romance Languages for recommended courses to continue French, Spanish, and Italian.

**German**
5: Exemption from the Basic Language Requirement (Part I); placement into German 22 or 33 or 44; one credit. One course is required to complete Part II of the Foreign Language Requirement.
4: Exemption from the Basic Language Requirement (Part I); placement into German 21 or 33; one credit. Two courses are required to complete Part II of the Foreign Language Requirement.
Scores of 770 or higher on the German SAT II Subject Test satisfy both Parts I and II of the Foreign Language Requirement and also earn one credit.

3: Exemption from the Basic Language Requirement (Part I); placement into German 4; no credit.

2: Placement into German 3; no credit.

**Hebrew**

Scores of 770 or higher on the Hebrew SAT II Subject Test satisfy both Parts I and II of the Foreign Language Requirement and also earn one credit.

**History**

*If all three tests are taken, the student is awarded a maximum of two credits.*

5 or 4: One credit, which may be counted as either humanities or social science distribution credit, but may not be counted toward the history major.

**Japanese Language and Culture**

5: Exemption from the Basic Language Requirement (Part I); placement into Japanese 21. No acceleration credit is granted and two courses are required to complete Part II of the Foreign Language Requirement.

4: Exemption from the Basic Language Requirement (Part I); placement into Japanese 4. No acceleration credit is granted and three courses are required to complete Part II of the Foreign Language Requirement.

3: Placement into Japanese 3. No acceleration credit is granted and one course is required to complete Part I of the Foreign Language Requirement.

**Latin**

5 or 4: Exemption from the Basic Language Requirement (Part I); placement into Latin 21, 22, or 91; one credit.

The above placement and credit are also given for scores of 720 or over on the Latin SAT II Subject Test.

3: Exemption from the Basic Language Requirement (Part I); placement into Latin 21, 22, or 91; no credit.

2: Placement into Latin 3; no credit.

**Mathematics—Calculus AB and BC**

AB 4 or 5, or BC 4, or BC 3 with an AB subscore of 4 or 5: One credit, equivalent to Mathematics 11, and placement into Mathematics 12 or one mathematics credit and placement into Mathematics 17.

BC 5: Two credits, equivalent to Mathematics 11 and 12, and placement into Mathematics 13, 18, 46, or 54.

**Music**

5: Exemption from Music 10; no credit.

**Physics B (non-calculus-based)**

5: One credit equivalent to Physics 1; placement into Physics 2.

4: With successful performance on the Mechanics Placement Exam (offered during orientation), one credit equivalent to Physics 1 and placement into Physics 2.

**Physics C (calculus-based)**

**MECHANICS SECTION**

5: One credit equivalent to Physics 11; placement into Physics 12.

4: With a successful performance on the Mechanics Placement Exam (offered during orientation), one credit equivalent to Physics 11 and placement into Physics 12.

**ELECTRICITY AND MAGNETISM SECTION**

5: One credit for Physics 12.

**BOTH SECTIONS**

Students who receive credits for both Physics 11 and 12 achieve placement into Physics 13.

**Political Science—Government and Politics—U. S. and/or Comparative**

*If both tests are taken, only one credit is awarded to the student.*

5 or 4: One credit, which may not be counted toward the minimum required for a political science concentration, but may be counted as Liberal Arts distribution credit.

**Psychology**

5 or 4: Eligible for two-digit course. No credit.
Statistics
5 or 4: One credit, which may be counted as Liberal Arts mathematical sciences distribution credit.

Foreign Language Placement
Listed here are the suggested placements for scores achieved on the SAT II Subject Test. If tests are taken in both language and literature, only one credit will be awarded for each language.

<table>
<thead>
<tr>
<th>Language</th>
<th>Score Range</th>
<th>Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>French</td>
<td>240–440</td>
<td>Placement into 2</td>
</tr>
<tr>
<td></td>
<td>450–510</td>
<td>Placement into 3</td>
</tr>
<tr>
<td></td>
<td>520–590</td>
<td>Placement into 4; exempt Part I</td>
</tr>
<tr>
<td></td>
<td>600–660</td>
<td>Placement into 5; exempt Parts I and II</td>
</tr>
<tr>
<td>Italian/Spanish</td>
<td>200–410</td>
<td>Not exempt</td>
</tr>
<tr>
<td></td>
<td>420–490</td>
<td>Placement into 2</td>
</tr>
<tr>
<td></td>
<td>500–580</td>
<td>Placement into 3</td>
</tr>
<tr>
<td></td>
<td>590–650</td>
<td>Placement into 4; exempt Part I</td>
</tr>
<tr>
<td></td>
<td>660–710</td>
<td>Placement into 5; exempt Parts I and II</td>
</tr>
</tbody>
</table>

Degrees with Honors
Distinction (cum laude) is conferred at commencement on liberal arts students who achieved a record of five credits of A or A- in satisfying their concentration requirements, including related fields, and whose cumulative average for all courses is 3.50 or higher.

High distinction (magna cum laude) may be conferred at commencement on liberal arts students who achieved a record of six credits of A or A- in satisfying their concentration requirements, including related fields, and whose cumulative average for all courses is 3.65 or higher. Students must be recommended in writing by their departmental major.

Highest distinction (summa cum laude) may be conferred at commencement on liberal arts students who achieved a record of six credits of A or A- in satisfying their concentration requirements and whose cumulative average for all courses is 3.80 or better. Such candidates must also have earned at least one credit of A or A- in four of the five areas of the distribution requirement. All of these A or A- grades must be received in courses offered by a department or interdisciplinary program at Tufts or on Tufts Programs Abroad. Please note that Advanced Placement scores are not interpreted as grades.
IMPORTANT INFORMATION CONCERNING CREDITS AND PLACEMENT FOR ALL PRE-MATRICULATION CREDITS
(Refer to this chart to ensure that you do not duplicate enrollments.)

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>IF YOU RECEIVED ONE TUFTS CREDIT</th>
<th>IF YOU RECEIVED TWO TUFTS CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biology</strong></td>
<td>May take either Biology 13 or 14; not both</td>
<td>Do not enroll in Biology 13 or 14</td>
</tr>
<tr>
<td><strong>Chemistry</strong></td>
<td>Do not enroll in Chemistry 1 or 16</td>
<td>Do not enroll in Chemistry 1, 2, or 16</td>
</tr>
<tr>
<td><strong>Computer Science</strong></td>
<td>Do not enroll in Computer Science 11</td>
<td>Consult department for placement</td>
</tr>
<tr>
<td><strong>Economics</strong></td>
<td>May enroll in Economics 5</td>
<td>Do not enroll in Economics 5</td>
</tr>
<tr>
<td><strong>English</strong></td>
<td>Do not enroll in English 1 or 3</td>
<td>Do not enroll in English 1, 2, 3, or 4</td>
</tr>
<tr>
<td><strong>Environmental Science</strong></td>
<td>Do not enroll in Biology 7</td>
<td></td>
</tr>
<tr>
<td><strong>Foreign Language</strong></td>
<td>Do not enroll in level 21 or below</td>
<td>Do not enroll in level 21 or below</td>
</tr>
<tr>
<td><strong>Mathematics</strong></td>
<td>Do not enroll in Math 4, 5, or 11</td>
<td>Do not enroll in Math 4, 5, 11, 12, or 17</td>
</tr>
<tr>
<td><strong>Physics</strong></td>
<td>Do not enroll in Physics 1 or 11</td>
<td>Do not enroll in Physics 1, 2, 11, or 12</td>
</tr>
<tr>
<td><strong>Psychology</strong></td>
<td>Do not enroll in Psychology 1</td>
<td></td>
</tr>
</tbody>
</table>

BRITISH GENERAL CERTIFICATE OF EDUCATION

**A-Level**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>GRADE</th>
<th>CREDIT/PLACEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>A</td>
<td>One Tufts credit; exempt from English 1 and 2</td>
</tr>
<tr>
<td>English</td>
<td>B</td>
<td>One Tufts credit; exempt from English 1</td>
</tr>
<tr>
<td>Economics</td>
<td>A, B</td>
<td>One Tufts credit; equivalent to Economics 5</td>
</tr>
<tr>
<td>Knowledge and Inquiry</td>
<td>A</td>
<td>One Tufts general philosophy credit</td>
</tr>
<tr>
<td>All other approved subjects (except those listed above)</td>
<td>A, B</td>
<td>Two Tufts credits; do not enroll in introductory level courses in relevant subject (see chart above)</td>
</tr>
</tbody>
</table>

INTERNATIONAL BACCALAUREATE

**Higher Level**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>GRADE</th>
<th>CREDIT/PLACEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics</td>
<td>5, 6, or 7</td>
<td>One Tufts credit equivalent to Economics 5</td>
</tr>
<tr>
<td>English</td>
<td>7</td>
<td>One Tufts credit; exempt from English 1 and 2</td>
</tr>
<tr>
<td>English</td>
<td>5 or 6</td>
<td>One Tufts credit; exempt from English 1</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>5, 6, or 7</td>
<td>Two Tufts credits; (students should take the Tufts Language Placement exam to determine level of placement, but should not enroll in a course below level 22)</td>
</tr>
<tr>
<td>Mathematics</td>
<td>6 or 7</td>
<td>One Tufts credit; equivalent to Math 11; do not enroll in Math 4, 5, or 11</td>
</tr>
<tr>
<td>All other approved subjects (except those listed above)</td>
<td>5, 6, or 7</td>
<td>One Tufts credit; do not enroll in introductory level courses in relevant subject (see chart above)</td>
</tr>
</tbody>
</table>
Chapter of Massachusetts at Tufts University was established on September 7, 1892, and women became eligible from the time of their acceptance at Tufts. Although second-semester juniors and all seniors will be considered without any action on their part, students can be recommended for election to Phi Beta Kappa by their major departments or programs or by individual professors. Election is determined by the student’s cumulative average together with his or her program: the courses selected in the field(s) of concentration and in fulfilling the foundation and distribution requirements, the general nature and difficulty of the program, its breadth and depth, the student’s progress in the program, and the use of the pass-fail option.

**Thesis Honors Program**

The Thesis Honors Program allows students to pursue a program of independent study usually leading to a senior thesis. (In some fields, the thesis may take the form of a creative project or research experience.) The principal purpose of the program is to give special impetus to the development of self-reliance, individual initiative, habits of critical analysis, and correlation of knowledge. Departments and programs are responsible for establishing specific guidelines for senior theses. Intensive specialization in a field of knowledge may be considered an appropriate corollary in some cases, depending on the student’s individual approach and the particular area of investigation. Students pursuing a major in Interdisciplinary Studies or a CIS thesis are eligible for thesis honors.

Since this is an honors program, admission is normally restricted to students whose names have appeared on the Dean’s List at least two times.
before their senior year. Students may take on an honors thesis with one semester on the Dean’s List if they have transferred to Tufts or have received special permission from their major department or program. Application should be made no later than the end of the junior year. The student is responsible for finding an advisory committee. While three members are recommended, the committee may have two members, one of whom may be outside the student’s major department. Admission to the program requires formation of an advisory committee, consent of the student’s advisor, and approval either of the chair of the student’s major department, or in the case of a CIS thesis, the CIS Board. The membership of the advisory committee and the title of the thesis must be registered with the Academic Resource Center.

The advisory committee is normally chaired by a member of the student’s major department or by the sponsor of the thesis in the case of a major in Interdisciplinary Studies. The committee will direct the student’s reading and research or other creative work and will guide the student in preparing for a qualifying examination in the area of investigation. All such programs will include a thesis course, which normally will count as two one-semester credits. Students who would like to be recommended for degrees with honors by departments or programs that require a thesis should be aware that a thesis within their own department or program is required and a CIS thesis will not usually count as a substitute.

The thesis may be of a creative, critical, or historical nature, or may embody critical analysis of the results of experiments carried out by the student under supervision. Its subject and scope will be agreed upon in advance by the student and sponsor and approved by the committee. The completed thesis will be presented for consideration no later than two weeks before the last day of classes of the student’s final semester.

Each candidate for a degree with thesis honors is required to undergo examination on the thesis and on the principal area of investigation (or major concentration). The specific character of the examination is determined by each department or advisory committee and may be oral or written or both. After the defense, a final copy of the thesis, in electronic form, should be submitted to the Tisch Library archive.

The department or advisory committee is empowered to determine the level of thesis honors to be awarded, basing its recommendation on an evaluation of the thesis. Degrees are designated bachelor of arts or bachelor of science, with highest thesis honors, with high thesis honors, or with thesis honors. (Thesis honors will be indicated on the student’s transcript, but not on the diploma.) Students who, in the judgment of the department or advisory committee, have not attained the standards required for a thesis honors designation, but whose work is worthy of a degree, are recommended for the bachelor of arts or bachelor of science degree subject to the general regulations. Students who, in the judgment of the department or advisory committee, have attained the standards required for a thesis honors designation may also receive the degree summa cum laude, magna cum laude, or cum laude, in accordance with the procedures governing degrees with distinction.

After the defense, a final copy of the thesis should be submitted to Digital Collections and Archives (DCA). Beginning in academic year 2008–2009, the DCA will accept thesis submission electronically as an alternative to submitting a bound paper copy. Please contact the DCA for more information on how to submit your thesis. For answers to frequently asked questions and a style sheet, visit the website http://ase.tufts.edu/wts/seniorThesis.asp.

Internship Programs
Internships provide juniors, seniors, and in some cases sophomores with the opportunity to apply various types of knowledge and skills in a field-based situation. Two internship programs are available: internships for academic credit and internships that award transcript notation but no academic credit.

Internships for academic credit in a wide range of fields are offered by some departments and programs through the Experimental College. Students granted internships for academic credit must register for a relevant course and have a faculty advisor on campus as well as professional supervision at their workplace. They also complete and submit an internship agreement at the time they register for the course. All agreements must be signed no later than the add deadline of the semester. Participants are expected to demonstrate
in a written project the learning that has taken place on the job by placing the work experience in an academic context. A minimum of twelve hours of work each week or 150 hours for the semester is required, and only two one-credit internships are normally accepted toward a degree. No credit is granted retroactively for these activities, and the two internships may not be done in the same semester. Students may develop their own field placement programs. However, all new proposals must be submitted to the appropriate department for approval. *Tufts does not accept transfer credits for internships.*

Students may also participate in the All-College Internship Program, which awards transcript notation but no academic credit. A faculty advisor is not needed to participate in this program because there is no academic component, but students do receive official recognition of their work on their transcript. Students register for the internship in Career Services by the second week of classes, spend a minimum of 100 hours over the course of the semester at the site, and complete an evaluation form at the close of the semester. Internships cannot be filed retroactively and students may receive no more than two notations on their transcript.

**Cross Registration**
Up to twenty undergraduate Tufts students may enroll in each of the following institutions during the fall and spring semesters: Boston College, Brandeis University, and Boston University. Qualifying students must be enrolled full time and be in good academic standing in their home institution. The course must be taken for credit and may not be taken pass-fail. There is no exchange of fees and both course credits and grades are recorded at the home institution. One cross-registered course at the above institutions may be taken per semester. Cross-registration is not allowed during Summer Session. Tufts students are limited to a total of two courses taken in departments for which there is no Tufts equivalent (e.g., business). Tufts students are subject to the requirements of the course taken at the host institution, including attendance.

Any student from the above institutions wishing to take a course at Tufts University is subject to the same rules as the resident Tufts University students. One course per fall and spring semester for up to twenty enrollments per institution may be taken at the Tufts University Medford, Boston, and Grafton campuses. This does not include classes being held at the School of the Museum of Fine Arts.

For questions and forms, contact Student Services at 617-627-2000 or email studentservices@tufts.edu.

**Domestic Exchange and Off-Campus Programs**
Tufts offers one-semester student exchanges with Spelman College and Swarthmore College. Juniors in good standing may participate. For the Spelman program, participating students pay tuition, room and board (subject to availability), and special fees to Spelman. Information on the application and selection process is available from Undergraduate Education. For the Swarthmore exchange program, students pay all charges to their home institution; there is no exchange of fees. The course credits and grades earned in both exchange programs by Tufts students are recorded on the Tufts transcript.

Sophomores and juniors are also eligible to participate in a one-semester program in American Maritime Studies, accredited by Williams College and held at Mystic Seaport, Connecticut. Both credits and grades are recorded on the Tufts transcript. For more information on this program, contact Undergraduate Education.
Graduate School of Arts and Sciences

The Graduate School of Arts and Sciences is the academic unit responsible for all postbaccalaureate degree programs offered through the School of Arts and Sciences. The advanced degrees offered are the master of arts, master of science, master of fine arts, master of arts in teaching, master of public policy, educational specialist, certificate of advanced study, doctor of occupational therapy, and doctor of philosophy.

Through its doctoral programs, the Graduate School of Arts and Sciences aims to advance knowledge and to develop intellectual leaders in selected areas of the natural sciences, social sciences, and the humanities. In order to encourage the close association of doctoral candidates and faculty, the number of programs offered is relatively small and the number of students admitted to each is limited. Through its wider variety of master's level programs, the school provides students with a focused education and specific skills to further their professional careers. The programs leading to these degrees are described in this bulletin. Inquiries should be addressed to the Office of Graduate Studies, Ballou Hall, first floor, Tufts University, Medford, Massachusetts 02155.

The Office of Graduate Studies also administers the Graduate Career Advancement Program, and the nonacademic aspects of graduate programs in arts, sciences, and engineering, such as admissions, registration, and degree certification as described in the following pages.

Admission

Graduate program and application information is available online at [http://gradstudy.tufts.edu/](http://gradstudy.tufts.edu/). Admissions. The application must be accompanied by a nonrefundable application fee. The fee is waived if the applicant is a current Tufts undergraduate, graduate, or certificate student. Departments can also supply information about their graduate programs.

The deadlines for admission vary by program. The application deadline for fall admission for international students is December 15; applications for spring admission must be completed by September 15. In addition, the graduate office must receive notification by April 15 of students’ intention to accept Tufts’ admission offer for fall matriculation and by December 1 for spring matriculation.

Registration

All graduate students must be registered, or on an approved leave of absence, each academic year term. If all required courses—including any thesis courses—have been completed, master’s candidates must register for courses 401 (part time) or 402 (full time) in their departments and doctoral candidates must register for courses 501 (part time) or 502 (full time) in their departments.

A full-time student may arrange with an instructor to audit a course, but this course will not appear on the student’s academic record. A course for which a student has been formally registered remains on the record unless a formal petition to remove it has been approved by the dean within the first four weeks of the term.

Prior to their initial registration, all graduate students must complete a health examination report, available from the Health Service. Registration will not be allowed for those with missing or incomplete health questionnaires and examination forms.

Cross Registration—Graduate School Consortium

Full-time students in the Graduate School of Arts and Sciences and graduate students in the School of Engineering may enroll in any semester for one graduate course in the Graduate School of Arts and Sciences at Boston College, Boston University, or Brandeis University. The catalogs and schedules of the host institutions are available at the registrar’s office of each university. Students who wish to cross-register should consult the instructor in the particular course and should expect to satisfy the prerequisites and requirements normally required for admission to that course. Cross-registration is not permitted in any summer school. Courses satisfactorily completed (B- or better) at one of the three consortium schools automatically appear on the student’s Tufts transcript and may be counted toward degree requirements.

A student at Tufts University who wishes to enroll in a graduate course at one of the host institutions should obtain a registration permit from the student services center in Dowling Hall.
and present it to the graduate registrar of the host institution. The host institution reserves the right to terminate the student’s participation at that institution at any time. A full-time graduate student at Tufts University may also enroll for two graduate courses during any semester at the Fletcher School of Law and Diplomacy or the Friedman School of Nutrition Science and Policy. Cross-registration forms are available at Student Services in Dowling Hall.

Tufts is also a member of the Graduate Consortium in Women's Studies (GCWS) at MIT. For information about course offerings and application materials go to http://mit.edu/gcws.

Graduate Career Advancement Program
The Office of Graduate Studies administers the Graduate Career Advancement Program (GCAP) that allows someone with a baccalaureate degree to take courses for credit or audit during the academic year without being matriculated into a degree program. In addition to taking courses for personal enrichment, GCAP students enroll to become familiar with a graduate or professional degree program, to strengthen their academic record, or to advance their careers. Admission to any course is at the discretion of the instructor and is subject to the availability of space. For students who later matriculate as graduate students at Tufts, a maximum of two relevant courses are transferable to a master's degree.

Certificate Programs
For those interested in earning professional credentials in a concentrated format, graduate-level certificate programs are available in bioengineering, biotechnology and biotechnology engineering, civil and environmental engineering, community environmental studies, computer science, environmental management, epidemiology, human-computer interaction, management of community organizations, manufacturing engineering, microwave and wireless engineering, museum studies, program evaluation, science education, and advanced professional study in occupational therapy, including a concentration in hand and upper extremity rehabilitation. Postbaccalaureate minor programs in computer science and civil and environmental engineering are also available. Tufts certificate students may transfer up to four relevant courses to a master's degree.

For more information, contact the Office of Graduate Studies, Ballou Hall (first floor), Medford, Massachusetts 02155, 617-627-3395, or visit http://gradstudy.tufts.edu.

Reserving Graduate-Level Courses while an Undergraduate
Tufts undergraduate students may reserve graduate level courses taken prior to completion of their baccalaureate degree that are not needed for completion of those degree requirements. Through arrangement with the registrar, these courses are designated on the transcript and may be applied toward a master's degree at Tufts or elsewhere.

Combined Bachelor’s/ Master’s Degrees Program
This program, which is offered on a limited department-by-department basis, is conducted jointly by the undergraduate colleges and the graduate school. Exceptional students may undertake studies combining undergraduate and graduate courses, and are simultaneously enrolled in bachelor’s and master's degree programs. However, courses counted toward the completion of one degree may not be used for the other. Combined-degrees students must pay four years of undergraduate tuition and the entire tuition for the master’s degree.

Transfer of Credit
After matriculating in the Graduate School of Arts and Sciences or the School of Engineering, eligible students may apply for transfer credit for graduate-level courses taken at Tufts or at other institutions. A maximum of two graduate-level courses (one for M.F.A. candidates) taken either as a non-degree student at Tufts or at another institution may be transferred and used to fulfill requirements for a master's degree subject to the following conditions. Credits transferred must carry the grade of B- or better; have been taken within the past five years; and not have been counted toward another degree. Tufts certificate students may request to transfer two additional courses from the College of Special Studies. In all cases, courses to be transferred must be approved by the department and the Graduate School of Arts and Sciences or the School of Engineering. Transfer of credit request forms are available online at http://gradstudy.tufts.edu/forms.
**Master’s Degree**

**Residence and Course Requirements**

The minimum residence requirement for the master’s degree is two terms of graduate study. The degree requires a program of advanced study of at least eight courses or the equivalent. The specific requirements of the various departments are given in this bulletin. Additional courses beyond the first eight are required in many programs. Courses counted for credit for one degree may not be used for another. A student seeking two separate master’s degrees must meet the stated requirements for each degree. Tuition will be charged for both degrees.

**Thesis**

In some departments, a thesis is required for the master’s degree; in others, the thesis is optional or is not required. A thesis should show the student’s competence in independent investigation and should demonstrate critical power as well as ability in expression.

**Foreign Language**

Some departments require demonstration of proficiency in an approved foreign language. The schedule for proficiency exams is available from the graduate office.

**Comprehensive Examination**

Candidates for a master’s degree may be required to pass a comprehensive examination conducted by a committee of the graduate faculty. The character of the examination is determined by each department, and may be either oral or written or both.

**Recommendation for the Degree**

Candidates for the master’s degree must complete a recommendation-for-degree (degree sheet) and the graduate exit survey. Degree sheets and the exit survey are available online at [http://gradstudy.tufts.edu](http://gradstudy.tufts.edu). The candidate cannot be recommended to the faculty for a degree unless the degree sheet is completed, endorsed by the department, and submitted to the graduate office near the beginning of the semester in which the degree is to be granted. Deadlines are listed in the Graduate Student Handbook.

**Time Limit**

All credits to be counted toward a master’s degree must be earned within five calendar years just prior to the granting of the degree. Candidates for the M.F.A. must complete all degree requirements in three years. Petitions for extension of time require the approval of the Graduate School of Arts and Sciences or the School of Engineering.

**Combined-Degrees Programs**

The Graduate School of Arts and Sciences and the Fletcher School of Law and Diplomacy administer a combined-degrees (M.A./M.A.L.D.) program in international environmental policy. Students must be accepted simultaneously by both the Fletcher School of Law and Diplomacy and the Department of Urban and Environmental Policy and Planning within the Graduate School of Arts and Sciences and must complete the two degrees within five years. The program consists of twenty-three course credits taken over three years, resulting in a jointly advised thesis.

The Graduate School of Arts and Sciences and the Friedman School of Nutrition Science and Policy administer a combined-degrees (M.A./M.S.) program for students interested in urban and environmental policy and agriculture, food, and environment. Students must be accepted simultaneously by both the Friedman School of Nutrition Science and Policy and the Department of Urban and Environmental Policy and Planning within the Graduate School of Arts and Sciences, and must complete the two degrees within five years. The program consists of twenty-three course credits that include a two-credit thesis.

The Graduate School of Arts and Sciences and the Boston College School of Law administer a combined-degrees (M.A./J.D.) program. Students apply to each School independently and may complete the program in four years.

**Doctor of Philosophy Degree**

The doctor of philosophy degree is conferred by the university only to advanced students who demonstrate exceptional achievement in original scholarship. This degree prepares students to become scholars, to make original contributions to their field, and to communicate and disseminate this information to others. Doctoral candidates will develop their ability to evaluate critically and
synthesize information from many sources and apply it to specific problems. Students must practice their work ethically, as appropriate to that field. During the dissertation, the student is apprenticed to a faculty advisor who is an expert in the field of inquiry.

Opportunity for doctoral study and research is selective, and admissions are contingent on the recommendation of the department concerned. A student planning to follow such a program should, if possible, arrange an interview with the chair or graduate advisor of the department in which he or she wishes to study.

When a student enrolls in a doctoral program with a master's degree in the relevant subject area from an accredited college or university, the number and identity of the courses and other requirements needed to satisfy the predoctoral dissertation obligations are negotiable with the department. A letter detailing the results of these negotiations must be on file with the graduate office.

Tufts will not award the doctoral degree to students whose dissertation research or writing was performed at another institution, unless they were under the direct supervision of a Tufts-based faculty member. (See residence requirement restrictions below.)

Credit for work at another institution taken concurrently with studies in the graduate school, including courses taken elsewhere during the summer, must receive approval from the student's department prior to registration for such courses. The Graduate School of Arts and Sciences and the School of Engineering approve all final transfers of credit. Students who formally cross-register in regular semesters with Boston College, Boston University, and/or Brandeis University through the consortium do not need prior approval. Also, the number of courses taken through the consortium is not subject to the limits on transferred credits as stated above.

Residence Requirement
The minimum requirement is three academic years of study and research completed with distinction, of which at least one year of full-time study must be spent in residence at Tufts. All work must be completed within seven years. Employees of Tufts University are not eligible for doctoral-level tuition remission and would normally be unable to satisfy the full-time study requirement. Petitions for extension of time require approval of the Graduate School of Arts and Sciences and the School of Engineering. Graduate-level courses taken elsewhere prior to matriculation may be counted to a maximum of one year of credit toward the residence requirements. One year of the residence requirement is automatically satisfied by a master's degree obtained from an accredited college or university.

Foreign Language
Many departments require demonstration of proficiency in one or two approved foreign languages. Consult departmental program descriptions for specific requirements. The schedule for proficiency exams is available from the graduate office.

Qualifying Examinations
A student who has completed the major part of his or her systematic study and has met the language requirement (if any) will, subject to the approval of the department or committee supervising the program, take a qualifying examination. This examination, which may be written, oral, or both, is described in the statement of each department’s program in this bulletin.

Dissertation
A major portion of work toward a doctoral degree consists of the preparation of a dissertation chosen with the approval of the department concerned and written under its supervision. The dissertation must demonstrate high attainment in a special branch of knowledge, the original development of an appropriate subject, and independent research. The dissertation must be accepted by a faculty committee. The examining committee for doctoral candidates in Arts and Sciences should be composed of four members—three from the department with which the student has conducted his/her research (or relevant disciplines at Tufts) and one from outside the university. The School of Engineering doctoral examining committees consist of a minimum of four members with one member from a different Tufts department and one member from outside the university. Dissertations are deposited in the Library of Congress through the University Microfilms, Inc. system.
Recommendation for the Degree
Candidates for the doctoral degree must complete a recommendation-for-degree form (degree sheet) and the graduate exit survey. Degree sheets and exit surveys are available online at [http://gradstudy.tufts.edu](http://gradstudy.tufts.edu) and the Graduate School of Arts and Sciences.

The candidate cannot be recommended to the faculty for a degree unless the degree sheet is completed, endorsed by the department, and submitted to the graduate office at the beginning of the semester in which the degree is to be granted.

Interdisciplinary Doctorate
The Interdisciplinary Doctorate (ID) was established to accommodate students interested in pursuing doctoral-level studies in areas that cannot be accommodated in the other doctoral programs within the Graduate School of Arts and Sciences and the School of Engineering. The admissions committee considers applications from those who are familiar with the Tufts graduate-level offerings and with its faculty, and whose research area is truly interdisciplinary and carefully matched to the university’s human, intellectual, and physical resources. The application process places the burden of acquiring this information on the applicant. A standing committee of the graduate school, the Interdisciplinary Doctorate Overseers Committee (IDOC), serves as the admissions committee and will monitor the progress of all students matriculated into the program.

Admission to ID is highly selective. Students must demonstrate the ability to do independent research/scholarship. Creative works of art, musical composition and performance, and performance direction, though laudable, are not acceptable as the sole criteria for admission into a scholarly doctoral program of study.

In addition to the standard application material, ID applicants must submit a proposal for interdisciplinary doctorate study, as well as documents pertaining to the student’s advisory committee. These will all be examined by IDOC at one of its twice yearly admissions meetings, and possible follow up with the candidate and his/her advisory committee may be required.

For complete information about the admissions and program requirements for the Interdisciplinary Doctorate, call the Office of Graduate Studies, at 617-627-3395 and ask for the guidelines for applicants. The guidelines are also available on the Web at [http://gradstudy.tufts.edu](http://gradstudy.tufts.edu).

Leave of Absence
A leave of absence, which stops the clock toward time to degree completion, is usually allowed for reasons of ill health or other personal contingencies. To be granted a leave of absence, a student must complete a leave of absence request form and submit it to the graduate office. The student’s advisor must provide written support for the request. Leave of absence request forms are available online at [http://gradstudy.tufts.edu](http://gradstudy.tufts.edu). A leave of absence will not be granted for more than one year. See the Graduate Student Handbook for details.

Extension of Degree Time
Master’s students are expected to complete their degree within five years, M.F.A. students within three years, OTD students within five years and doctoral students within seven years from matriculation. A student should consider applying for an extension of time when he/she is actively working on program requirements and needs more time to complete them, but is confident that the work will be completed within the additional year if it is approved. Students should not request an extension of time if substantial progress cannot be made within the additional year provided.

To request an extension of time to complete the degree requirements, a student must complete a Request for Extension of Time form, which is available online at [http://gradstudy.tufts.edu/Forms](http://gradstudy.tufts.edu/Forms) and submit it to his/her department for approval. See the Graduate Student Handbook for details.

Grades
Grades of scholarship are expressed by one of the following letters:

- A Superior work
- B Meritorious work
- C Not acceptable for graduate credit
- D Not acceptable for graduate credit
- F Failure
- P Not acceptable for graduate credit
- S, U Grades of S (Satisfactory) and U (Unsatisfactory) may be given by the instructor in special topics
courses, courses in supervised teaching, research courses, certain graduate colloquia, and thesis and dissertation courses.

The following symbols are also used:

I Incomplete: an indication that more time will be allowed to complete the work, specifically within six weeks of the first day of classes in the subsequent semester (fall or spring only; summer terms excluded).

W Withdrawn: an indication that a student has been permitted to withdraw from a course after the fifth week of a semester, but no later than the last day of classes.

Y Work not scheduled for evaluation during the current term

Changes in Course Grades: Statute of Limitations
Effective education requires timely and objective evaluation of students’ academic work, using clear, standard, fair and public criteria. Such standards should be listed in the course syllabus. While criteria differ across disciplines and faculty, and while the ultimate responsibility for setting standards and evaluating performance rests with departments and individual faculty, submitted grades are final and not subject to negotiation. Exceptions should be limited to correcting clerical and calculation errors, and correcting deviations from stated criteria. Of course, students do have the right to know the basis of a grade and faculty should be open to that post-semester conversation. Following such conversation, students who believe that an error or deviation remains may appeal to the department chair and, if necessary, subsequently to the Dean of the Graduate School of Arts and Sciences, or to the Associate Dean of the School of Engineering.

Policy on Incompletes
An incomplete may be awarded only if the student has done substantial work in the course, the instructor judges the reasons for granting incomplete status to be valid, and the instructor determines that the work can be completed in the time specified on the incomplete form. The instructor is responsible for specifying on the incomplete form the reason for the incomplete grade and the conditions that must be satisfied for the awarding of a grade. A copy of this form must be submitted to the registrar at the time final grades are reported. It is the responsibility of the student to request an incomplete before the date of the required work and sign the contract.

If an incomplete is granted, all work in the course must be completed on or before the date six weeks after the first day of classes in the subsequent semester (fall or spring only; summer terms excluded). If the student has completed the work within the stated time, it will be evaluated without prejudice. Upon the student’s completion of work in the course, the instructor must submit a final grade to the registrar within eight weeks after the first day of classes of the subsequent semester. If a course is not completed by the designated time, the student will receive the default grade specified on the incomplete form. Under exceptional circumstances, an extension of the six-week deadline may be granted with the written approval of the instructor and the graduate dean. Any such agreement must be put on file at the registrar’s office.

Academic Standing
To remain eligible to continue in a degree program and/or to receive various types of financial assistance including federal aid, a graduate student must maintain good academic standing and be making adequate progress toward the degree. The following are the minimum requirements; departments have the right to impose additional criteria for good academic standing. 1) It is expected that a student will complete all courses taken for credit with the grade of B- or better (see Grades). Courses for which a student receives a grade lower than B- may be retaken only once. The original grade earned remains in the student’s record. If a student receives any two grades lower than B-, the department will recommend to the graduate dean that the student be administratively withdrawn. 2) All comprehensive and/or qualifying examinations and language examinations must be passed within the time limits established by the various departments. 3) Deadlines established by departments for submission of thesis outlines and dissertation proposals, for the completion of internships or other field experience, and for regular evaluations of research progress must be met. 4) It is expected that incomplete grades will be completed in the specified six-week time frame (unless an extension of this deadline has been given in writing to the registrar). Two or more
incompletes (incompletes existing for more than one semester) may be grounds for dismissal. 5) The completion of all degree requirements must take place within the time limits established for the various programs by the graduate schools.

Deviation from any of the items above constitutes evidence that the student is making inadequate degree progress and is no longer in good academic standing; thereupon the student will be administratively withdrawn, unless an exception is granted by the graduate school dean based on the recommendation from the appropriate department or departmental committee. Only the deans of the Graduate School of Arts and Sciences and the School of Engineering may administratively withdraw an enrolled graduate student.

**Office of the Dean of Student Affairs**

Graduate students’ primary academic relationships are with their department. However, the personnel of the Office of the Dean of Student Affairs in Dowling Hall are available for concerns outside academic life. Graduate students should refer to [http://uss.tufts.edu/studentaffairs](http://uss.tufts.edu/studentaffairs) to become familiar with university rules. Breaches of rules will be referred to the Office of the Dean of Student Affairs for investigation and, when appropriate, disciplinary action. Students writing theses or dissertations should be particularly sensitive to standards of acceptable research and presentation.

**Expenses**

**Tuition**

Tuition for graduate students in the Graduate School of Arts and Sciences and the School of Engineering varies by program. For an arts and sciences master’s degree requiring eight to twelve courses, one full year’s tuition is charged. For programs requiring additional course work, tuition is charged for two years. For an arts and sciences doctoral degree, full tuition is charged for five years. Engineering master’s programs require full tuition payment for three semesters unless a student has registered for all ten credits required for the degree and completed all required courses (excluding thesis or project) in fewer than three semesters. For an engineering doctoral degree, full tuition is charged for nine semesters unless the student enters the program with an appropriate master’s degree, in which case tuition is charged for six semesters. Part-time graduate students in both schools are charged for each course/credit taken until their degree is completed. Current tuition rates for each school are available on the web at [http://gradstudy.tufts.edu](http://gradstudy.tufts.edu).

The Trustees of Tufts University reserve the right to change the tuition or to establish additional fees or charges for special features or services whenever in their opinion such action is deemed advisable.

**Student Activity Fee**

All graduate students pay an annual student activity fee. The monies are used by the Graduate Student Council to support the interests of graduate students.

**Penalty Fees**

A penalty fee is charged for late registration and for late payment of any university charge. Any loss or damage to university property for which the student is responsible, including breakage of equipment in a laboratory, is charged to the student.

**Living Accommodations**

The university provides a limited number of residential facilities for use by first-year graduate students. Contact the Office of Residential Life at 617-627-3248 for applications. Accommodations are available to incoming, full-time students for a maximum of one year. Most students live in apartments in the surrounding community, many of which are within walking distance of the campus.

**Dining Facilities**

Students and faculty meet casually in the Campus Center and Trios, where meals are served on a cash basis, cafeteria style. Graduate students may take advantage of the meal plans on the Medford/Somerville campus.

**Financial Assistance**

To help students whose records indicate scholarly promise, the university makes available a variety of awards and work opportunities. Tuition scholarships and fellowships are normally granted for one academic year; therefore, a registered student who holds a scholarship or fellowship must apply annually to the department for a renewal. All awards are granted and accepted with the understanding that they may be revoked or reduced at any time for inadequate progress toward the degree
as defined by departmental standards. Ordinarily, no student may hold a fellowship, scholarship, or teaching assistantship for more than two years of study for a master's degree, or for more than five years of study for the doctoral degree. Priority in making awards is given to full-time students.

Scholarships
A tuition scholarship is an award, on grounds of scholarly ability and need, of financial credit that may be used exclusively for remission of tuition during the academic year. A limited number of full scholarships and a larger number of partial scholarships are available. Scholarship students are responsible for payment of tuition charges above those covered by their particular scholarship as well as all fees.

Fellowships
A fellowship is an academic award of honor to outstanding students to help them in furthering advanced study and research. No services are required of students for fellowship or scholarship awards.

Teaching Assistants
Teaching assistants are resident graduate students who participate part time in the instructional programs of the university and receive a stipend. The university has established these awards to enable graduate students to gain teaching experience. Teaching assistants are also eligible for scholarships and fellowships. Teaching assistants normally have instructional responsibility in the recitation or laboratory sections of courses to which they are assigned, or their work involves grading papers and examinations. International students are not usually eligible for appointment as teaching assistants in their first year of graduate work unless they have demonstrated proficiency in spoken English or they have received training at another American university.

Appointments to these positions are based on the recommendation of a student's department chair or appropriate departmental graduate committee and are made for periods of one academic year or one semester, but are renewable. The university reserves the right to terminate an appointment at any time for due cause. Inadequate degree progress as defined by departmental or program standards may constitute cause. Also, academic dishonesty may constitute cause, as may incomplete or false information on the application forms to the graduate school. In all instances of dismissal, the student will be notified in writing of the reasons for the termination and may appeal the decision to the dean.

Stipend levels vary by department. All stipends are taxable by the U.S. Internal Revenue Service. Prorated fractions of these stipends are made based on the actual time commitments of a given assistantship.

Graduate Institute for Teaching
The Graduate Institute For Teaching (GIFT) offers a program for graduate students who are interested in becoming college-level faculty. GIFT students attend specialized workshops on pedagogy during the summer and have the opportunity to co-teach a fall semester course under the direction of a faculty mentor. Students receive a stipend for teaching. For more information, go to http://gradstudy.tufts.edu.

Financial Aid
Information on other types of financial assistance, including various loan programs, is available from Student Financial Services at http://uss.tufts.edu/finaid/gradaid. Students seeking part-time work on campus should contact Student Employment, Dowling Hall.
College of Special Studies

The College of Special Studies offers a variety of academic programs. One is the degree program offered in conjunction with the School of the Museum of Fine Arts. The other programs of the college, offered through the Office of Graduate Studies, are intended to provide quality education on a non-degree basis, primarily but not exclusively to nontraditional students.

School of the Museum of Fine Arts

In accordance with Tufts University’s affiliation with the School of the Museum of Fine Arts, a student may apply as a candidate for the bachelor of fine arts degree. After acceptance into the B.F.A. program, students take their studio art courses at the Museum School (in Boston) and the majority of their liberal arts courses through Tufts University, either on the Medford campus or on site at the Museum School through the Tufts Department of Visual and Critical Studies. Courses in many fields of art are available, such as printmaking, photography, painting, drawing, sculpture, ceramics, metalsmithing, video and multimedia, film, performance, sound, text and image arts, and stained glass. Requirements for the bachelor of fine arts degree include eighty-four credits in studio art and fourteen academic courses, including five semesters of art history. Students interested in obtaining licensure as teachers of visual art may apply to the M.A.T. in art education after completing the B.F.A. through the TuftsPlus program, which offers a streamlined admission process and tuition scholarships for completing the 12-month M.A.T. graduate degree. (See Teacher Licensure Programs.)

For more information about the B.F.A. program, students may write to the School of the Museum of Fine Arts, 230 The Fenway, Boston, Massachusetts 02115, visit http://www.smfa.edu/admissions/, write admissions@smfa.edu, or call 617-369-3626 or 800-643-607. For more information about the TuftsPlus program, please visit http://gradstudy.tufts.edu/TuftsPlus.

Office of Graduate Studies

This office administers the Graduate Career Advancement Program, which allows holders of baccalaureate degrees to enroll in courses at Tufts to prepare for further study or simply to expand their knowledge of particular fields or disciplines. In addition to the Graduate Career Advancement Program, the office sponsors a number of advanced professional certificate programs. Each program consists of a coherent set of credit-bearing courses in an emerging or rapidly evolving field. The certificate can serve as a credential for professional advancement or as an intermediate step toward a master’s degree.

For more information, visit http://gradstudy.tufts.edu, or contact the Office of Graduate Studies in Ballou Hall at 617-627-3395.
School of Engineering

Mission Statement

A Unique Learning Environment

The Tufts University School of Engineering offers a rigorous engineering education in a unique environment that blends the intellectual and technological resources of a world-class research university with the strengths of a top-ranked liberal arts college. Our size and educational philosophy support a distinctive sense of community, a diversity of perspectives, and a student-centric learning environment. Engineering curricula across a wide spectrum of majors emphasize project-based learning, the nurturing of leadership skills, and cultivation of creativity through innovative design. Close partnerships with Tufts’ cadre of excellent undergraduate, graduate, and professional schools, coupled with a long tradition of collaboration, provide a strong platform for interdisciplinary education and scholarship. Proximity to a thriving Boston metropolitan area facilitates close relationships with local industry and research labs, student internship and employment opportunities, and the committed engagement of seasoned practitioners in the school professoriate.

Mission

• To educate engineers committed to the innovative and ethical application of science and technology in addressing the most pressing societal needs
• To develop and nurture twenty-first century leadership qualities, perspectives, and skills in our students, faculty, and alumni
• To develop and disseminate transformational new knowledge and technologies that further the well-being and sustainability of society
• To provide national leadership in enhancing the role and visibility of the engineering profession in the education of our youth and the development and implementation of public policy

School of Engineering Information

Undergraduate Programs

The School of Engineering offers courses leading to the bachelor of science in five departments of engineering (biomedical, chemical and biological, civil and environmental, electrical and computer, and mechanical), as well as in the computer science department. Students may also enroll in special programs in the School of Engineering in preparation for careers in architecture, medicine, dentistry, veterinary medicine, law, public health, human factors, urban planning, and biomedical engineering. The school offers twelve bachelor of science degrees: bachelor of science in biomedical engineering, chemical engineering, civil engineering, computer engineering, computer science, electrical engineering, environmental engineering, and mechanical engineering, bachelor of science in engineering science, bachelor of science in engineering, bachelor of science in engineering physics, and bachelor of science.

The programs of study leading to these degrees differ in structure and the manner in which they are administered. Departments administer professional degrees in programs accredited by the Engineering Accreditation Commission (EAC) or the Computing Accreditation Commission (CAC) of ABET, Inc. for students who wish to be recognized as practicing professionals, especially those who wish to become registered professional engineers. Whereas the professional degree programs are the most structured, the bachelor of science degree program is the most flexible. Through consultation with an individual faculty member in the School of Engineering, students may pursue an individualized program of study leading to the bachelor of science degree. The bachelor of science in engineering is administered by engineering departments and allows for some departure from the curriculum for the professional degree. The School of Engineering, in cooperation with the Department of Physics, offers a bachelor of science in engineering physics. This program combines a mastery of the fundamental principles of physics with the professional aspects of engineering.
<table>
<thead>
<tr>
<th>DEPARTMENT</th>
<th>UNDERGRADUATE DEGREE</th>
<th>DEGREE ABBREV</th>
<th>FIRST MAJOR</th>
<th>MAJOR ABBREV</th>
<th>PROGRAM</th>
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<tbody>
<tr>
<td>BIOMEDICAL ENGINEERING</td>
<td>Bachelor of Science in Biomedical Engineering</td>
<td>BSBME</td>
<td>Biomedical Engineering</td>
<td>BME</td>
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<tr>
<td>CHEMICAL &amp; BIOLOGICAL ENGINEERING</td>
<td>Bachelor of Science in Chemical Engineering*</td>
<td>BSCHE</td>
<td>Chemical Engineering</td>
<td>CHE</td>
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<tr>
<td>CIVIL &amp; ENVIRONMENTAL ENGINEERING</td>
<td>Bachelor of Science in Civil Engineering*</td>
<td>BSCE</td>
<td>Civil Engineering</td>
<td>CE</td>
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</tr>
<tr>
<td></td>
<td>Bachelor of Science in Environmental Engineering*</td>
<td>BSEVE</td>
<td>Environmental Engineering</td>
<td>ENVE</td>
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</tr>
<tr>
<td></td>
<td>Bachelor of Science in Engineering</td>
<td>BSE</td>
<td>Engineering</td>
<td>ENGR</td>
<td>Env. Health</td>
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<td></td>
<td>Bachelor of Science in Engineering</td>
<td>BSE</td>
<td>Engineering</td>
<td>ENGR</td>
<td>Arch. Studies</td>
</tr>
<tr>
<td>COMPUTER SCIENCE</td>
<td>Bachelor of Science in Computer Science*</td>
<td>BSCS</td>
<td>Computer Science</td>
<td>COMP</td>
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</tr>
<tr>
<td>ELECTRICAL &amp; COMPUTER ENGINEERING</td>
<td>Bachelor of Science in Electrical Engineering*</td>
<td>BSEE</td>
<td>Electrical Engineering</td>
<td>EE</td>
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</tr>
<tr>
<td></td>
<td>Bachelor of Science in Computer Engineering*</td>
<td>BSCPE</td>
<td>Computer Engineering</td>
<td>COEN</td>
<td>--</td>
</tr>
<tr>
<td>MECHANICAL ENGINEERING</td>
<td>Bachelor of Science in Mechanical Engineering*</td>
<td>BSME</td>
<td>Mechanical Engineering</td>
<td>ME</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Bachelor of Science (in Engineering Psychology)</td>
<td>BS</td>
<td>Engineering Psychology</td>
<td>EPSY</td>
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<tr>
<td>OTHER DEGREES</td>
<td>Bachelor of Science in Engineering Science</td>
<td>BSES</td>
<td>Engineering Science</td>
<td>ES</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Bachelor of Science in Engineering Physics</td>
<td>BSEP</td>
<td>Engineering Physics</td>
<td>ENPH</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Bachelor of Science in Engineering</td>
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<td>Engineering</td>
<td>ENGR</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Bachelor of Science</td>
<td>BS</td>
<td>No Major</td>
<td>NOMA</td>
<td>--</td>
</tr>
</tbody>
</table>

* ABET, Inc. Accredited Program
Professional Degree Requirements
Bachelor of Science in Chemical Engineering (B.S.C.H.E.)
Bachelor of Science in Civil Engineering (B.S.C.E.)
Bachelor of Science in Computer Engineering (B.S.C.P.E.)
Bachelor of Science in Electrical Engineering (B.S.E.E.)
Bachelor of Science in Environmental Engineering (B.S.E.V.E.)
Bachelor of Science in Mechanical Engineering (B.S.M.E.)
The programs leading to these degrees are accredited by the Engineering Accreditation Commission (EAC) of ABET, Inc.

Bachelor of Science in Computer Science (B.S.C.S.)
The Department of Computer Science administers the program leading to Bachelor of Science in Computer Science (in the School of Engineering) accredited by the Computing Accreditation Commission (CAC) of ABET, Inc. This program combines mastery of computer science with the breadth and practicality of an engineering education. It is for students who desire a knowledge of computer science, computer systems, and computer applications without the hardware courses required for the computer engineering degree.

The requirements for these professional degrees in engineering are thirty-eight credits to be distributed as detailed below.

Introductory Course Requirement
The introductory courses consist of eleven credits:

a. Mathematics 11, 12, 13, 38 (or 22 for computer science majors). Mathematics 17 and 18 may be substituted for Mathematics 11, 12, and 13.
b. Physics 11
c. Chemistry 1 or 11 or 16
d. Intro CAD (half-credit)
e. Intro to Computers (one credit)
f. One elective half-credit course in introductory engineering
g. English 1 or 3

The above 9 credits may not be taken pass-fail, except for English 3.

h. Physics 12 or Chemistry 2
i. One approved science elective credit chosen from astronomy, physics, chemistry, biology, or geology.

Please see http://go.tufts.edu/EngineeringAdvising for more information.

Foundation Requirement
There are eight credits required by the student’s department of concentration and selected from among the following: biology, chemistry, computer science, engineering science, geology, mathematics, and physics/astronomy.

Concentration Requirement
The twelve credits that constitute the concentration requirement for a particular degree are determined by the department offering the degree.

Humanities, Social Sciences, and Arts Requirement
Courses selected must include a minimum of one credit each in the areas of humanities and social sciences. In addition, at least two courses must be taken in the same department. Ex-college courses are excluded, including those approved for distribution credit by the College of Liberal Arts. The student has the option to satisfy these requirements through a special minor in foreign language and culture in the areas of Chinese, French, German, Hebrew, Italian, Japanese, Russian, or Spanish. Contact the Department of German, Russian, and Asian Languages and Literatures, or the Department of Romance Languages for details. See http://go.tufts.edu/EngineeringAdvising for more information on accepted courses in Humanities, Social Sciences, and Arts.

Free Elective Requirement
There are two free elective credits to complete the thirty-eight credits required for these degrees. The courses selected to fulfill the two free elective credits may be chosen without any restriction.

Bachelor of Science (B.S.)
The program leading to the bachelor of science degree consists of thirty-six credits. A minimum of eighteen of these credits must be in engineering and in those departments that provide foundation courses in the accredited programs. This group must include Mathematics 11 and 12 and eight
credits in engineering or engineering science. A
minimum of six of the remaining credits must be in
the humanities, arts, and social sciences. Students
in the program choose their advisor from the faculty
of the School of Engineering. Each student,
through his or her advisor, must submit for approval
a proposed program of study to the academic dean.
No major is associated with this degree. The
program leading to this degree is not accredited by the
Engineering Accreditation Commission (EAC) of ABET, Inc.

Bachelor of Science in Engineering (B.S.E.)
All engineering departments offer additional
programs that emphasize the basic sciences or a
more theoretical approach than their regular
programs, or that in other respects depart from
the traditional concentration requirements in that
discipline. These departments designate these
programs with the degree title of bachelor of
science in engineering, without department
designation. The curricula differ from the profes-
sional degree programs in the selection of the
departmentally required concentration courses and
the department foundation courses.

Programs leading to this degree are not accred-
ited by the Engineering Accreditation Commission
(EAC) of ABET, Inc.

Bachelor of Science in Engineering Science
(B.S.E.S.)
In general, the School of Engineering requires
undergraduate students to specialize within the
framework of the various departments. A student
may, however, seek a more diversified program in
engineering and science leading to the bachelor of
science degree in engineering science. This degree
program allows the student who is interested in
the application of science and mathematics in
engineering to develop an individualized program
of study. The engineering science curriculum is
designed to meet the need for basic studies in
engineering with a broad foundation in science. It
includes the introductory courses and selected
foundation courses. It differs from the professional
degree programs in that the department concentra-
tion courses can be varied to provide flexible
programs in science and engineering. Of the credits
beyond the introductory, the foundation, the free
electives, the humanities and/or arts, and social

Bachelor of Science in Engineering Physics
(B.S.E.P.)
The School of Engineering, in cooperation with
the Department of Physics, offers a combined
program of study leading to a bachelor of science
in engineering physics. The program combines an
emphasis on the mastery of the fundamental prin-
ciples of physics and basic mathematical techniques
with the disciplined practicality of professional
engineering. Students enrolled in this program are
members of the School of Engineering but will
have academic advisors in both engineering and
physics. While a student may enter the engineering
physics program at any time, it is expected that he
or she will have taken the introductory courses in
basic science and mathematics common to all Tufts
engineering programs. Early participation in faculty
research projects is encouraged.

The program leading to this degree is not accred-
ited by the Engineering Accreditation Commission
(EAC) of ABET, Inc.

Bachelor of Science in Biomedical
Engineering (B.S.B.M.E.)
The Department of Biomedical Engineering offers
a bachelor of science in biomedical engineering
for engineering students that combines intensive
training in research methods, techniques, and
practical skills with a solid science and engineering
curriculum that provides breadth and depth in the
field. The program leading to this degree is not accred-
ited by the Engineering Accreditation Commission (EAC) of ABET, Inc.
Pre-Matriculation Credits
Pre-matriculation credits are defined as credits earned from certain scores on Advanced Placement and SAT II examinations, scores on examinations of certain international diplomas, as well as credits earned from college courses taken prior to matriculation at Tufts. These scores and their equivalencies have been determined by the individual departments and are listed below. Pre-matriculation credits are treated as regular course credits and accepted toward satisfaction of the degree requirements. If the credit received is equivalent to a Tufts course, the student may not take that course for additional credit toward the degree. Students are limited to eight pre-matriculation credits toward their degree. Credits earned prior to matriculation via Tufts summer session are not included in this limit.

Secondary school students who have taken college courses should consult the appropriate departments regarding their placement and the possible award of credits. Credit is generally awarded only for courses taken at a college with regularly enrolled college students. Some colleges offer their courses in nearby secondary schools for classes composed entirely of secondary school students; credit is not awarded for these courses.

Advanced Placement Credit
Please see next page for complete listing.
## Subject AP Scores

<table>
<thead>
<tr>
<th>Subject</th>
<th>5</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>One credit for Bio 13 (or Bio 14)</td>
<td>Not Accepted</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Two credits for Chem 1 and 2</td>
<td>Not Accepted</td>
</tr>
<tr>
<td>Computer Science A and/or AB</td>
<td>One credit for Comp Sci 11</td>
<td>One credit for Comp Sci 11</td>
</tr>
<tr>
<td>Economics</td>
<td>Micro AND Macro: Two credits (Social Sciences)</td>
<td>Not Accepted</td>
</tr>
<tr>
<td></td>
<td>Micro OR Macro: One credit (Social Sciences)</td>
<td>Not Accepted</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>One credit (Free Elective)</td>
<td>One credit (Free Elective)</td>
</tr>
<tr>
<td>Chinese</td>
<td>One credit (Humanities)</td>
<td>Not Accepted</td>
</tr>
<tr>
<td>French/Spanish Lang and Lit</td>
<td>One credit (Humanities)</td>
<td>Not Accepted</td>
</tr>
<tr>
<td>German</td>
<td>One credit (Humanities)</td>
<td>One credit (Humanities)</td>
</tr>
<tr>
<td>Latin</td>
<td>One credit (Humanities)</td>
<td>One credit (Humanities)</td>
</tr>
<tr>
<td>History (Max 2 credits even if all three taken)</td>
<td>One credit (Humanities or Social Sciences)</td>
<td>One credit (Humanities or Social Sciences)</td>
</tr>
<tr>
<td>US History</td>
<td>One credit (Humanities or Social Sciences)</td>
<td>One credit (Humanities or Social Sciences)</td>
</tr>
<tr>
<td>European History</td>
<td>One credit (Humanities or Social Sciences)</td>
<td>One credit (Humanities or Social Sciences)</td>
</tr>
<tr>
<td>World History</td>
<td>One credit (Humanities or Social Sciences)</td>
<td>One credit (Humanities or Social Sciences)</td>
</tr>
<tr>
<td>Mathematics – Calculus AB</td>
<td>One credit for Math 11</td>
<td>Not Accepted</td>
</tr>
<tr>
<td>Mathematics – Calculus BC</td>
<td>Two credits for Math 11 and 12</td>
<td>One credit for Math 11</td>
</tr>
<tr>
<td>Physics C (Calculus Based)</td>
<td>Mechanics: One credit for Physics 11</td>
<td>Mechanics: With successful placement on the Mechanics Placements Exam (offered during Orientation), one credit equivalent to Physics 11</td>
</tr>
<tr>
<td></td>
<td>Electricity and Magnetism: One credit for Physics 12</td>
<td>Not Accepted</td>
</tr>
<tr>
<td>Political Science</td>
<td>One credit (Social Sciences)</td>
<td>One credit (Social Sciences)</td>
</tr>
<tr>
<td>Statistics</td>
<td>One credit (Free Elective)</td>
<td>One credit (Free Elective)</td>
</tr>
</tbody>
</table>
### SAT II Credit

<table>
<thead>
<tr>
<th>Subject</th>
<th>One Credit (Humanities) for SAT II Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>760-800</td>
</tr>
<tr>
<td>French</td>
<td>770-800</td>
</tr>
<tr>
<td>German</td>
<td>770-800</td>
</tr>
<tr>
<td>Hebrew</td>
<td>760-800</td>
</tr>
<tr>
<td>Italian</td>
<td>770-800</td>
</tr>
<tr>
<td>Japanese</td>
<td>760-800</td>
</tr>
<tr>
<td>Korean</td>
<td>760-800</td>
</tr>
<tr>
<td>Latin</td>
<td>720-800</td>
</tr>
<tr>
<td>Spanish</td>
<td>770-800</td>
</tr>
</tbody>
</table>

If tests are taken in both language and literature, only one credit will be awarded for each language.

### International Diploma Credit
Tufts does not grant credit automatically for the diploma as a whole; rather credit is awarded for each approved subject passed at an appropriate level.

### British General Certificate of Education

#### A-Level

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>A or B</td>
<td>1 credit, English 1</td>
</tr>
<tr>
<td>Economics</td>
<td>A or B</td>
<td>1 credit, EC5 (social science)</td>
</tr>
<tr>
<td>Biology</td>
<td>A or B</td>
<td>2 credits, Bio13 and Bio14</td>
</tr>
<tr>
<td>Computer Science</td>
<td>A or B</td>
<td>2 credits, Comp11 and Comp15</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>A or B</td>
<td>2 credits (free elective)</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>A or B</td>
<td>2 credits (humanities)</td>
</tr>
<tr>
<td>Mathematics</td>
<td>A or B</td>
<td>2 credits, Math11 and Math12</td>
</tr>
<tr>
<td>Physics</td>
<td>A or B</td>
<td>2 credits, Phy11 and Phy12</td>
</tr>
<tr>
<td>All other approved subjects</td>
<td>A or B</td>
<td>2 credits (contact administrative support at Dowling Hall)</td>
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</table>
INTERNATIONAL BACCALAUREATE
Higher Level

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>GRADE</th>
<th>CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics</td>
<td>5, 6, or 7</td>
<td>1 credit, ECS (social science)</td>
</tr>
<tr>
<td>English</td>
<td>5, 6, or 7</td>
<td>1 credit, English 1</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>5, 6, or 7</td>
<td>2 credits (humanities)</td>
</tr>
<tr>
<td>Mathematics</td>
<td>6 or 7</td>
<td>1 credit, Math11</td>
</tr>
<tr>
<td>Biology</td>
<td>5, 6, or 7</td>
<td>1 credit, Bio13</td>
</tr>
<tr>
<td>Chemistry</td>
<td>5, 6, or 7</td>
<td>1 credit, Chem1</td>
</tr>
<tr>
<td>Computer Science</td>
<td>5, 6, or 7</td>
<td>1 credit, Comp11</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>5, 6, or 7</td>
<td>1 credit (free elective)</td>
</tr>
<tr>
<td>Physics</td>
<td>5, 6, or 7</td>
<td>1 credit, Phy11</td>
</tr>
<tr>
<td>Psychology</td>
<td>5, 6, or 7</td>
<td>1 credit, Psy1 (social science)</td>
</tr>
<tr>
<td>All other approved subjects</td>
<td>5, 6, or 7</td>
<td>1 credit (contact administrative support at Dowling Hall)</td>
</tr>
</tbody>
</table>

For possible credit from all other international diplomas, students must contact a professional academic equivalency service—such as the World Educational Service (WES)—to provide an official evaluation. Tufts accepts possible credit only for certain scores on standardized examinations and reserves the right to determine equivalencies toward the Tufts degree.

**Engineering Double Majors**

Students pursuing a major within the School of Engineering may undertake a second major with the consent of the respective department in the College of Liberal Arts or the School of Engineering. To do so, the student must notify the department of the second major at least one semester before graduation. No more than half the courses used to fulfill the requirements for one concentration may be used to satisfy the requirements for a second or subsequent one. Students may not complete the second or subsequent concentration in the same discipline.

Students following the bachelor of science in engineering and the bachelor of science in engineering science are considered to have engineering and engineering science, respectively, as majors and may participate in double-major programs.

**Undergraduate Minor Programs**

In addition to completing the courses for the concentration requirement, an undergraduate may elect to enroll in a minor program in the College of Liberal Arts or the School of Engineering. All courses used in fulfillment of the minor program must be taken for a grade. No more than two courses used to fulfill a foundation or concentration requirement may be counted toward fulfillment of the minor. Students may not complete both a minor and a concentration in the same discipline.

Minor programs offered in the School of Engineering are:

- **Architectural Engineering**
  (for liberal arts students) Department of Civil and Environmental Engineering
Biomedical Engineering
Department of Biomedical Engineering

Biotechnology Engineering
Department of Chemical and Biological Engineering

Computer Science
Department of Computer Science

Engineering Education
administered by the Center for Engineering Education and Outreach

Engineering Management
administered by the Gordon Institute

Entrepreneurial Leadership
administered by the Gordon Institute

Geoengineering
(for liberal arts students) Department of Civil and Environmental Engineering

Human Factors Engineering
Department of Mechanical Engineering

Multimedia Arts
(for liberal arts and engineering students) Department of Electrical and Computer Engineering

Music Engineering
(for liberal arts and engineering students) Department of Mechanical Engineering

Musical Instrument Engineering
(for liberal arts and engineering students) Department of Mechanical Engineering

For more information, see departmental listings in this bulletin.

Dean’s List
Each semester, students who have been enrolled with a minimum of 4.0 credits, received letter grades in a minimum of three credits, completed every course in which they were enrolled with no work incomplete (with the exception of Y), and earned the minimum grade point average of 3.2 will be placed on the Dean’s List in recognition of their academic achievement. An indication of Dean’s List status will be placed on their permanent record.

Pass-Fail Option
The spirit of the pass-fail option is to encourage academic exploration. Certain introductory courses must be taken for a grade (see Introductory Course Requirement). Not more than eight pass-fail credits may be counted toward the credits required for graduation. For the accredited programs, no foundation or departmental concentration course may be taken pass-fail. Normally, no more than one course per semester may be taken pass-fail. No distinction is made between regular courses that students elect under the pass-fail grading and those courses in which grading is pass-fail. All decisions regarding the pass-fail option must be made within the first four weeks of any term. After four weeks, the only choices are to complete a course under the existing grading system or to withdraw for the remainder of the term. Please see http://go.tufts.edu/EngineeringAdvising for more information.

Academic Standing/
Satisfactory Progress Toward the Degree
The following are guidelines for maintaining satisfactory progress toward the degree. Determination of a student’s academic status is made by the School of Engineering Committee on Academic Standing.

Students are subject to action by the committee if they have accumulated one or more of the following during the semester:

• two Ds
• one F
• two incompletes
• fewer than three credits with C- or better
• a semester grade point average below 1.80
• a cumulative grade point average below 1.67
• complete fewer than the following number of credits:

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST YEAR</td>
<td>3 credits</td>
<td>7 credits</td>
</tr>
<tr>
<td>SOPHOMORE</td>
<td>12 credits</td>
<td>17 credits</td>
</tr>
<tr>
<td>JUNIOR</td>
<td>22 credits</td>
<td>27 credits</td>
</tr>
<tr>
<td>SENIOR</td>
<td>32 (BS, 31)</td>
<td>38 (BS, 36)</td>
</tr>
</tbody>
</table>

Normally, students are removed from probation if, in the succeeding semester, they complete the minimum total number of credits, earn four credits with grades of C- or better, have no failing grades, and no incompletes.

Academic Probation
Students who fail to meet these guidelines may be placed in any one of the following categories at the end of semester.
Probation I: Probation I indicates that a student’s academic performance has not met expectations. The student is encouraged to seek support in order to improve future performance.

Probation II: Probation II indicates significantly weak academic performance during a single semester, or a lack of meaningful academic progress over more than one semester.

Probation III: A student on Probation III is not considered to be in good academic standing. The student has demonstrated very poor academic performance and is urged to take a voluntary leave of absence.

Required to Withdraw: Students in this category are required to withdraw for one to four semesters. Tufts will accept transfer credit for no more than one semester’s and one summer’s work completed during the absence.

Permanent Academic Withdrawal: In rare instances, a student will be required to withdraw permanently from the university.

Grade Requirements
For graduation, grades of C- or better are required in 67 percent of the courses submitted for the degree. For students who transfer to Tufts, grades of C- or better must be earned in more than 67 percent of the courses taken at Tufts. It is expected that grades of C- or better will be earned in at least 75 percent of the courses taken in the concentration.

Degrees with Honors
Distinction (cum laude) is conferred at commencement on deserving students who earned an academic average of 3.20 or higher.

High distinction (magna cum laude) is conferred at commencement on deserving students who had an academic average of 3.50 or higher.

Highest distinction (summa cum laude) is conferred at commencement as follows. Each degree program may nominate deserving students who:

- Have a cumulative grade point average of 3.80 or higher
- Have at least one A letter grade in each of the following subject areas:
  - Math or Natural Science
  - Humanity or Arts or Social Science (HASS)

These nominations are approved by a special vote of the faculty. With the consent of the faculty, deserving students who graduate at a time other than May will be granted the honor summa cum laude if they meet the above criteria.

The above criteria may be replaced by special evaluation of the Tufts academic record if substantial transfer credit is submitted in fulfillment of the degree requirements, or if the degree program is of unusual duration. Students whose permanent record includes a serious disciplinary infraction will not normally be eligible for degrees with honors.

Tau Beta Pi
Tau Beta Pi, the national engineering honor society, founded in 1885, affords engineering students the same recognition for high scholastic achievement and exemplary character as is provided for liberal arts students in Phi Beta Kappa. The Tufts chapter is designated as Delta Chapter of Massachusetts.

Thesis Honors Program
The Thesis Honors Program allows students to pursue a program of independent study usually leading to a senior thesis and a qualifying examination. The principal purpose of the program is to give special impetus to the development of self-reliance, individual initiative, habits of critical analysis, and correlation of knowledge. Students pursuing a CIS thesis are eligible for thesis honors.

Because this is an honors program, admission is normally restricted to students whose names have appeared on the Dean’s List at least two times before their senior year. Students may take on an honors thesis with one semester on the Dean’s List if they have transferred to Tufts or have received special permission from their department. The application process should be completed during the junior year, including the summer of the senior year. The student is responsible for finding an advisory committee (one principal advisor who is a full-time faculty member in the School of Engineering, and at least one other full time faculty member from the faculty of Arts, Sciences, and Engineering, or industry expert). Admission to the program requires formation of an advisory committee, consent of the student’s advisor, and approval of either the student’s major department, or in the case of a CIS thesis the CIS Board. The membership of the advisory committee and the title of the thesis must be registered with the Academic Resource Center.
The advisory committee will be chaired by a full-time faculty member in the School of Engineering. Exceptions to this rule may be made at the discretion of the department chair for the student’s major. The committee will direct the student’s reading and research or other technical work, and will guide the student in preparing for a qualifying examination in the area of investigation. All such programs will include two one-semester course credits (with at least one credit toward the concentration elective). The thesis should be of quality comparable to a paper publishable in a peer-reviewed journal. Its subject and scope will be agreed on in advance by the student and sponsor and approved by the committee. The completed thesis will be presented for consideration no later than two weeks before the last day of classes of the student’s final semester.

Each candidate for a degree with thesis honors is required to undergo examination on the thesis and on the principal area of investigation. The specific character of the examination is determined by each advisory committee and may be oral or written or both. After the defense, a final copy of the thesis, in electronic form, should be submitted to the Tisch Library archive.

The advisory committee is empowered to determine the level of thesis honors to be awarded, basing its recommendation on an evaluation of the thesis. Degrees are designated bachelor of science, with highest thesis honors, with high thesis honors, or with thesis honors. (Thesis honors will be indicated on the student’s transcript, but not on the diploma.) Students who, in the judgment of the advisory committee, have not attained the standards required for a thesis honors designation, but whose work is worthy of a degree, are recommended for the bachelor of science degree subject to the general regulations. Students who, in the judgment of the advisory committee, have attained the standards required for a thesis honors designation may also receive the degree summa cum laude, magna cum laude, or cum laude, in accordance with the procedures governing degrees with distinction.

After the defense, a final copy of the thesis should be submitted to Digital Collections and Archives (DCA). Beginning in academic year 2008-2009, the DCA will accept thesis submission electronically as an alternative to submitting a bound paper copy. Please contact the DCA for more information on how to submit your thesis. For answers to frequently asked questions and a style sheet, visit the website: http://ase.tufts.edu/wts/seniorThesis.asp.

**Internship Programs**

Internships provide students with the opportunity to apply their education and skills directly toward a field-based situation, usually at an off-site organization. Most often, internships are paid positions that are performed on a full-time basis over the summer months, or for approximately ten to fifteen hours a week during the semester. The Office of Engineering Internships and Employer Outreach, located in Dowling Hall, helps qualified engineering students identify potential internship opportunities.

Internships are typically performed without an academic component, in which case students focus directly on the practical experience and tasks at hand. However, in some departments, students also have the option of performing an internship for academic credit. Students who wish to receive academic credit for an internship must have a faculty sponsor on campus as well as professional-level supervision at the workplace. Students must register for the relevant course within the department, and an internship agreement must be completed at the time of registration. All agreements must be signed no later than the add-drop deadline for the semester. At the end of the internship, students are expected to complete a written project, which demonstrates what has been learned during the internship experience. A minimum of 150 hours of work for the semester is required.

**Combined Bachelor’s/Master’s Degrees Program**

The School of Engineering offers exceptional engineering students the option of pursuing one of two combined degree programs: a bachelor of science and master of science degree (B.S.-M.S.) or a bachelor of science and master of engineering degree (B.S.-M.Eng.). Both bachelor’s and master’s degrees are awarded only on completion of the entire program; a student may not receive one degree earlier, even if the requirements for that degree have been met. Combined-degrees students must pay four years of undergraduate tuition and two semesters of graduate tuition (plus continuation fees as applicable).
Students seeking admission to the program must submit an application to the Office of Graduate Studies by November 15th of their junior year. Admission to the program requires (1) a minimum cumulative GPA (through the fall semester of the junior year) of 3.60 for the B.S.-M.S. program and 3.20 for the B.S.-M.Eng. program; and (2) acceptance by the department in which the student intends to complete the master’s portion of the program. Applicants admitted to the combined-degree programs will be notified by January 15th of their junior year.

Combined-degrees students are expected to fulfill all the requirements of the bachelor’s degree program (38 credits); of these, two graduate-level credits are allowed to count toward the master’s degree requirements as long as they carry the designation of the department in which the master’s portion of the combined degree program is to be completed.

Students admitted to the combined B.S.-M.S. program receive summer research support for the summers after junior and senior year. This summer research support provides salary at the level of research assistants set by the School of Engineering for three summer months. Students may petition to opt out of summer research provided they conduct master’s thesis work approved by the student’s advisor and department.

Degree Audit Reporting System
DARS is a web based application that allows students to systematically assess their progress toward degree completion. A DARS audit will report detailed degree requirements, how coursework can be used to complete that degree, and completed and outstanding requirements. For more information visit http://degreeaudit.studentservices.tufts.edu

Graduate Programs
The School of Engineering is the academic unit of Tufts University responsible for postbaccalaureate degrees in engineering and computer science. The nonacademic aspects of graduate engineering programs, such as admissions, registration, special student program, transfer credit and degree certification, are administered along with the nonengineering programs by the Graduate School of Arts and Sciences. Several combined undergraduate-graduate degree programs are offered by the school, including tracks in the traditional engineering disciplines, engineering management in collaboration with the Gordon Institute, biomedical engineering/medicine in collaboration with Tufts’ health science schools, and international engineering in collaboration with the Fletcher School of Law and Diplomacy.

Through its six academic departments and the Gordon Institute, the School of Engineering offers the master of science degree (a thesis is required in some programs), the master of engineering degree that is especially well suited for part-time, practicing engineers, and the doctor of philosophy degree in selected areas of research excellence. Students may enroll full time or part time in any program subject to the residence requirements described in the Graduate School of Arts and Sciences section of this bulletin. Departments award tuition scholarships, teaching assistantships, and research assistantships on a competitive basis to graduate admissions candidates. Prospective and current students should consult with the individual departments to obtain detailed policies regarding degree requirements and programs.
General Undergraduate Information

Undergraduate Policies

Residence Requirement
The university requires eight semesters of full-time study for the baccalaureate degree. After matriculating at Tufts, a student may spend no more than two semesters of full-time study at other approved institutions or on approved non-Tufts study abroad programs. Transfer students must spend four full-time semesters at Tufts or on Tufts study abroad programs. All students must earn a minimum number (17 for liberal arts; 19 for engineering) of their required graduation credits (34 for liberal arts; 36 for engineering) at Tufts or on Tufts study abroad programs.

Students must be in full-time residence at Tufts for the final two semesters. Enrolled students may normally transfer courses only from accredited four-year colleges and universities. Candidates for combined bachelor’s degrees (liberal arts/engineering combined degrees, and the programs with New England Conservatory and the School of the Museum of Fine Arts) must complete their programs in no fewer than ten semesters. Enrolled students may accelerate in the ways described below.

Completion of a specified number of credits does not in itself constitute an undergraduate education. Students need time to reflect on and absorb knowledge. Four years of full-time study in an academic environment provide the opportunity to explore a varied curriculum at a reasonable pace; to interact with and learn from fellow students representing a variety of national, ethnic, religious, and racial backgrounds; to be enriched by study in a foreign country; and to survey the cultural, recreational, and educational opportunities of Boston and New England.

Exceptions to the policy are rarely granted. Petitions may be made on the basis of unanticipated personal, family, or financial emergencies.

Advanced Standing
Once students have completed two full years at Tufts, they may advance their standing if they meet the following criteria. Students earning a total of five credits from pre-matriculation credits and Tufts summer session credits (including Tufts in Talloires) will be eligible for one semester’s advanced standing; students earning a total of nine such credits will be eligible for two semesters’ advanced standing. Applying students must be in at least their fourth semester, must have declared a major, and must complete a Request for Advanced Standing form, available on line.

Students electing advanced standing are expected to complete the stated degree requirements with a minimum of thirty-four course credits for the College of Liberal Arts and thirty-eight for the School of Engineering, including credits awarded in determining advanced standing. All will include in their programs sufficient courses to meet the requirements of their college or school.

Students electing advanced standing must spend at least six semesters as full-time students. Ordinarily, two years or four semesters of the undergraduate’s course of study must be taken at Tufts University’s home campus. Up to one year or two semesters may be spent in a Tufts-related program, either foreign or domestic.

Resumed Education for Adult Learners (R.E.A.L.)
The Resumed Education for Adult Learners program is open to students 24 years of age or older, veterans, and students who are married or are parents. This unique undergraduate program meets the need for greater academic flexibility in the education of older students. It is open to those who have some college experience, with recent coursework a requirement. The R.E.A.L. program is particularly receptive to prospective students who have assumed leadership roles in local community affairs as well as to residents of Medford and Somerville. Students in the program are enrolled in regular undergraduate courses and pursue a course of study leading to a college degree in liberal arts or engineering, for which they are expected to fulfill existing requirements. The R.E.A.L. program admits students for both the fall and spring semester of the academic year. For more informa-
tion about the program, please call the Office of Undergraduate Admissions, located in Bendetson Hall, at 617-627-3170, or call the director, Jean Herbert, at 617-627-2000.

Transfer Students
Entering transfer students are considered sophomores until their transfer credits have been evaluated. Transfer students are entitled to the same advanced placement credits and exemptions from foundation requirements as students who enter Tufts as first-year students, with the same stipulation that transfers may not receive credit for a course covering essentially the same material as that for which advanced placement credit is granted.

Transfer students with eligible scores on the SAT II Subject Tests and Advanced Placement Tests should have official records of their scores sent to Undergraduate Education before orientation. Such credits will be approved only on the basis of official test records and not a transcript from the student’s previous institution.

Students transferring from other institutions must spend a minimum of four full-time semesters and must complete at least half the credits toward their degree at Tufts or on a Tufts study abroad program.

Transfer of Credit from Other Institutions
In order to receive transfer credit from another accredited institution, a student must have received a grade of C- or better. Transferred credits are entered in the Tufts record without the grade. Students may transfer from other institutions no more than the equivalent of seventeen Tufts course credits for the College of Liberal Arts and nineteen Tufts course credits for the School of Engineering. Tufts does not accept transfer credits for internships nor for on-line courses.

A matriculated student may take courses at other accredited four-year colleges and universities and receive credit for them toward a Tufts degree by obtaining approval in advance from the relevant department through WebCenter. Up to two semesters of full-time study after matriculation at Tufts may be spent at other approved four-year institutions or on approved foreign study programs. Students who transferred to Tufts must spend a minimum of four full-time semesters at Tufts or on a Tufts study abroad program. Students attending summer schools (other than Tufts Summer Session) are normally allowed to transfer no more than three credits earned in one summer, nor more than a cumulative total of five credits toward a Tufts degree.

Students who plan to complete a full-time semester elsewhere must complete the equivalent of three or more Tufts credits to have it qualify as a full-time semester.

All students planning to transfer credits earned while on leave at other institutions should begin the process by first discussing their plans with their academic dean.

Applied courses in music and dance, such as performance ensembles and lessons, are not normally accepted for transfer.

Academic Standing/Satisfactory Progress Toward the Degree
The following are guidelines for maintaining satisfactory progress toward the degree. Determination of a student’s academic status is made by the Committee on Academic Standing. The following procedures are guidelines; the committee reserves the right to make decisions on an individual student’s academic progress. Students are subject to action by the Committee on Academic Standing if they have accumulated one or more of the following during the semester: two Ds, one F, two Incompletes, fewer than three credits with C- or better, a semester grade point average below 1.80. Liberal arts students are removed from probation if, in the succeeding semester, they earn 3.5 credits, three of which must be with grades of C- or better, and no failing grades. An incomplete, even with a default grade of C- or better, is not counted as a grade. The minimum three graded credits may not be taken pass/fail. Engineering students are removed from probation if, in the succeeding semester, they earn 4.0 credits with grades of C or better, with no failing grades and no incompletes. The committee also determines whether students are maintaining satisfactory progress toward the degree. An overall cumulative average of C- (1.67) is required.

Liberal arts students are subject to action by the Committee on Academic Standing if they complete fewer than the following number of credits:
Registration Information

Registration for courses is done through SIS online. Students register for courses in November for the coming spring term and in April for the next fall term. It is critical that students register for courses during this time. Students who are taking personal leaves of absence or leaves of absence to study elsewhere in the U.S.A. must complete the on-line leave of absence form (available through WebCenter) and should contact their academic dean. Students taking a leave of absence to study abroad on a non-Tufts program must complete a leave of absence form and submit it to the office of Tufts Programs Abroad. International students taking a leave of absence must also contact the International Center at 617-627-3458. Failure to register or file the appropriate leave of absence could result in administrative withdrawal from the University.

Registration will reopen during winter and summer breaks. Students will be able to register for any open classes, drop any classes, and sign up for the waitlist during this period. Please note that the waitlist will be active throughout this time. If a student is number one on a waitlist for a course and another student drops this course then the first waitlisted student will be rolled into the course. The ability to add courses online will remain open for the first two weeks of the term. Once the add period is over, students who wish to enroll in a closed course must get the instructor’s signature and submit the add form to the Student Services Desk in Dowling Hall.

Sophomores, juniors, and seniors will be able to drop courses online through the end of the fifth week of classes. First-year students will be able to drop courses online through the end of the tenth week of classes. After these deadlines, a student may withdraw from a course until the last day classes meet (before reading period) through a paper form available in Dowling Hall. The grade of W (withdrawn) will appear on the transcript, but does not affect a student’s cumulative average. Petitions for W will not be accepted after the last day of classes. After that date, students must either finish the course and receive the appropriate grade, or request an I (incomplete) from the instructor and complete the work by six weeks into the following semester (or by a date set by the instructor).

Engineering students are subject to action by the Committee on Academic Standing if they complete fewer than the following number of credits:

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<thead>
<tr>
<th></th>
<th>FALL</th>
<th>SPRING</th>
</tr>
</thead>
<tbody>
<tr>
<td>First year</td>
<td>3 credits</td>
<td>6 credits</td>
</tr>
<tr>
<td>Sophomore</td>
<td>10 credits</td>
<td>14 credits</td>
</tr>
<tr>
<td>Junior</td>
<td>19 credits</td>
<td>23 credits</td>
</tr>
<tr>
<td>Senior</td>
<td>27 credits</td>
<td>34 credits</td>
</tr>
</tbody>
</table>

Academic Probation

Students who fail to meet these guidelines may be placed in any of the following categories at the end of the semester. The levels are listed in order of increasing seriousness. However, a student does not have to have been on Probation I to be placed on Probation II or III. The placement is dependent solely on the student’s performance.

Probation I. Probation I indicates that a student’s academic performance has not met expectations. The student is encouraged to seek support in order to improve future performance.

Probation II. Probation II indicates significantly weak academic performance during a single semester, or a lack of meaningful progress over more than one semester.

Probation III. A student on Probation III is not considered to be in good academic standing. The student has demonstrated very poor academic performance and may want to consider taking a leave of absence.

Required to Withdraw. Students in this category are required to withdraw for one to four semesters. Tufts will accept transfer credit for no more than one semester’s and one summer’s work completed during the absence.

Permanent Academic Withdrawal. In rare instances, a student will be required to withdraw permanently from the university. Normally, a student will have been required to withdraw on at least one previous occasion and, upon return, will have made no progress toward the degree.
Reduced Course Load
Permission to take a reduced program of courses may be granted to students in the Resumed Education for Adult Learners Program and those who have completed eight semesters of full-time study. In very rare instances, health needs may also merit a reduced course load; consideration for this is given by the Health Accommodations and Medical Leave Committee in advance of the semester for which it is requested. Such students are considered to be making satisfactory progress if they complete each course with a C- or higher. A minimum of three credits is full time.

Grades
The standing of the student in each subject is expressed by one of the following letters:

- A Superior work
- B Meritorious work
- C Satisfactory work
- D Unsatisfactory work but allowable for credit, subject to the restrictions specified under the requirements for graduation. Some departments disallow credit toward the concentration requirement.
- P Passing work (D- or better): for courses taken under the pass-fail option, and for selected courses offered only pass-fail by departments. Grade point average is not affected.
- F Failure: No credit is received. A grade of F is averaged into the grade point average.

No-grade status
- I Incomplete: An indication by the instructor that more time will be allowed to complete the requirements for the course. An incomplete may be awarded only if the student has done substantial work in the course, the instructor judges the reasons for granting incomplete status to be valid, and the instructor determines that the work can be completed in the time specified on the incomplete form. The instructor is responsible for specifying on the incomplete form the reason for the incomplete grade and the conditions that must be satisfied for the awarding of a grade. A copy of this form must be submitted to Dowling Hall at the time final grades are reported. It is the responsibility of the student to request an incomplete before the required work is due. If an incomplete is granted, all work in the course must be completed six weeks into the following semester (fall or spring only), or the date the instructor has stated on the incomplete form. The work will be evaluated without prejudice and a grade should be submitted two weeks after the work is received by the instructor. A course not completed by the designated time will receive the default grade specified on the incomplete form. Under special circumstances, a student may request from the instructor an extension of the deadline. Any such agreement should be submitted in writing to Dowling Hall.

W Withdrawn: An indication that a student has been permitted to withdraw from a course after the fifth week of a semester (tenth week for first-year students), but no later than the last day of classes.

Y An interim symbol used to denote the absence of a grade because the work on which the final grade is to be based extends beyond the time limits of the semester.

NG No grade: The instructor has no current knowledge of the student listed on the grade sheet.

NR No record of the student having attended class.

In computing the average of a student’s grades, each course grade of A is counted as 4.00; B, 3.00; C, 2.00; D, 1.00. Appropriate value is given to plus and minus grades and to half-credit courses. Averages are computed to three decimal places, and semester and cumulative averages are rounded to two decimal places. Since changes cannot be made after graduation, seniors are urged to have rectified any errors on their transcripts well in advance of the graduation date.

Changes in Course Grades: Statute of Limitations
Effective education requires timely and objective evaluation of students’ academic work, using clear, standard, fair, and public criteria. Such standards should be listed in the course syllabus. While criteria differ across disciplines and faculty, and while the ultimate responsibility for setting standards and evaluating performance rests with departments and faculty, submitted grades are final and not subject to negotiation. Exceptions should be limited to correcting clerical and calculation errors, and correcting deviations from stated criteria. Of course, students do have the right to
know the basis for a grade and faculty should be open to that post-semester conversation. Following such a conversation, undergraduates who believe that an error or deviation remains may appeal to the department chair or program director and, if necessary, subsequently to a dean of the faculty in Ballou Hall.

Any request for a change in a course grade must be made to the course instructor no later than six weeks into the following regular semester.

**Quality Requirements**

Students in the College of Liberal Arts must earn grades of C- or better in three-fourths of their courses taken at Tufts under standard grading. Students in the School of Engineering must earn grades of C- or better in two-thirds of the courses submitted for the degree and in three-fourths of the courses taken for the concentration.

**Repeated Courses**

Students who receive a failing grade for a course may repeat the course and receive degree credit if a passing grade is earned a second time. Both grades remain on the transcript and both the F and the passing grade are calculated into the cumulative average. Students may choose to repeat a course after receiving a D+, D, or D-. Both the repeated course, if passed, and the original course receive one-half their credit value in computing both grades for the grade point average and both grades remain on the transcript. Students who earn a grade of C- or above for a course may choose to repeat the course for a variety of reasons. Degree credit and cumulative average will reflect only the first passing grade earned in the course; record of the repeat and subsequent grade will appear. Studio art classes and performance classes in dance, music, and physical education may be repeated for credit. (A total of four of these half credit courses may be taken for credit; additional such courses will appear on the transcript with no credit.) Creative writing classes at the introductory level may be taken twice in each genre (fiction, poetry, journalism). Creative writing classes in fiction and poetry at the intermediate level may also be taken twice for credit. (Journalism and Nonfiction Writing at the intermediate level may be taken only once each.)

**Extra Courses**

Liberal arts students may register for a maximum of 5.5 credits each semester; engineering students may register for a maximum of 6.5 credits each semester. To add an additional credit, students must petition their academic dean for permission at the start of the semester, but not before. Such permission is rarely granted to first-year students.

**Missed Classes**

Students should make themselves aware of each professor’s attendance policy. Students who must miss a class because of an illness should submit the on-line short-term illness form, available through WebCenter. Students are encouraged to speak with the professor directly and to consult their academic dean in Undergraduate Education in Dowling.

**Dean’s List**

Each semester, students who have been enrolled with a minimum of 4.0 credits, received letter grades in a minimum of three credits, completed every course in which they were enrolled with no work incomplete (with the exception of Y), and earned the minimum grade point average required by their college or school (3.40 in the College of Liberal Arts; 3.2 in the School of Engineering) will be placed on the Dean’s List in recognition of their academic achievement. An indication of Dean’s List status will be placed on their permanent record.

Students in the combined-degrees program with New England Conservatory of Music whose total course load equals 4.0 credits or more will be awarded Dean’s List honors at both institutions if they meet Dean’s List GPA requirements for the course work taken at each institution.

**Study Abroad—Tufts Programs**

Students are encouraged to study abroad under one of the established programs sponsored by Tufts University. (See Tufts Programs Abroad.) To apply to a Tufts Program Abroad, students must plan a program relevant to their degree program at Tufts, secure in advance the approval of their advisor, and meet the requirements of the program to which they are applying. (For further information on requirements, see [http://ase.tufts.edu/studyabroad](http://ase.tufts.edu/studyabroad).) Among other requirements, students participating in Tufts Programs Abroad must be in good academic and disciplinary standing from the time of application through participation in the program.
Medical Leave

Medical leave is an option available to students who, for physical or psychological reasons, are unable to continue at the university during a semester. Appropriate medical evaluation is a required part of the process. In certain cases, mental health practitioners or physicians may recommend that it is not in a student’s or the community’s best interests for the student to continue at the university. The standard medical leave is for one year. In unusual circumstances a student may successfully demonstrate readiness to return earlier. Decisions about return eligibility are made by the Health Accommodations and Medical Leave Committee.

Notification of intention to request re-entry:
Notification must be submitted in writing or via email to the attention of Marisel Perez, Associate Dean of Student Affairs in the Office of the Dean of Student Affairs (marisel.perez@tufts.edu) no later than:

- June 1st for the following Fall semester
- November 1st for the following Spring semester
- March 1st for the following Summer Sessions.

Please visit: http://studentservices.tufts.edu/dos/healthaccommodations.htm.

Academic Ethics

A university is a community of individuals interested in the search for an understanding of knowledge. Absolute honesty on the part of every college student is and always shall be an integral part of the plan of higher education at Tufts University. Examples of academic dishonesty include plagiarism, handing in one paper for two or more courses without the knowledge and consent of the instructors involved, dishonesty on examinations, and the purchase of papers to be submitted in a course.

Certain fundamental principles for the acknowledgement of sources apply to all fields and to all levels of work. The use of source materials of any kind (including the Internet) in the preparation of essays or laboratory reports must be fully and properly acknowledged. In a paper or laboratory report, a student is expected to acknowledge any expression or idea that is not his/her own. In submitting the paper, the student is stating that the form and content of the essay or report, in whole
and in part, represent his/her own work, except where clear and specific reference is made to other sources. Even where there is not conscious intention to deceive, the failure to make appropriate acknowledgement may constitute plagiarism. Any quotation—even of a phrase—must be placed in quotation marks and the precise source stated in a note or in the text; any material that is paraphrased or summarized and any ideas that are borrowed must be specifically acknowledged. A thorough rewording or rearrangement of an author’s text does not release the student from these responsibilities. All sources that have been consulted in the preparation of the essay or report should be listed in the bibliography.

Allegations are reported to the Office of the Dean of Student Affairs. If a student agrees with the charge and/or the nature of the evidence makes it clear that academic dishonesty has taken place, the judicial affairs officer will take appropriate action. A decision made in this way may be appealed to the Committee on Student Life (CSL) according to the policies set forth in Tufts University Student Disciplinary System.

Working through the Office of the Dean of Student Affairs, it may be possible for the faculty member and the accused student(s) to reach a resolution through mediation. Note that both parties must be willing to use mediation as an alternative means of dispute resolution for this to work. The mediation process is described in Tufts University Student Disciplinary System. Disciplinary decisions resulting from hearings may be appealed to the CSL.

Consequences for academic dishonesty include disciplinary probation, suspension, or expulsion. Instructors commonly assign an F for a course in which ethical practice is violated. For more information, please refer to Academic Integrity @ Tufts.edu, available on line or in Dowling Hall.

Privacy
The federal Family Educational Rights and Privacy Act of 1974 (FERPA) gives each Tufts student access to his or her educational records, the right to correct inaccuracies in the records and the right to control distribution. Since September 11, 2001, the Department of Education has stated that a college must provide (absent a request) information it reasonably believes will assist law enforcement officials in investigating or preventing terrorist activities. In addition, there are exceptions in the statute, such as a subpoena, that allow Tufts to release student records even if the student objects. A description of your rights under the act, the location of records pertaining to you, and the procedures for requesting access and invoking your right to control access appears on the Student Affairs web site: http://uss.tufts.edu/studentaffairs.

Please note: Only directory information is made available to the public. Directory information includes whether a student is in attendance at the university and the student’s local telephone number and email address. Students may request that directory information not be released to anyone by completing a privacy request form available at the Student Services Desk. Such requests are subject to the exemptions provided by certain policies, including FERPA and the Patriot Act of 2001. Students should verify implementation of their request by calling Dowling Hall. A change in phone number, along with the request not to release the information, is suggested as the best way to ensure privacy.

Nondiscrimination Policy
Tufts University is committed to the fundamental principle of equal opportunity and equal treatment for every prospective and current employee and student. It is the policy of the university not to discriminate on the basis of race, color, national or ethnic origin, age, religion, disability, gender, sexual orientation, gender identity or expression, or status as a veteran in the administration of its educational policies, admissions policies, employment policies, scholarship and loan programs, and athletic or other university-sponsored programs.

For more information or to file a complaint of discrimination, contact the Office of Equal Opportunity and Affirmative Action at 617-627-3298 or visit www.tufts.edu/oeo.

Tufts Programs Abroad
Tufts University has been offering foreign study programs for more than four decades, and at present offers undergraduate programs for juniors and seniors to study in Chile, China, Ghana, Hong Kong, Japan, London, Madrid, Oxford, Paris, and Tübingen. Non-Tufts students may be admitted
provided there is space available. In all programs, students attend the designated college or university. Integration into a foreign university and the cultural and social life of the host country is the aim of Tufts Programs Abroad. Further information is available in the program office at Dowling Hall, 617-627-2000, or visit http://ase.tufts.edu/studyabroad.

**Tufts in China**
The Tufts-in-China program is open to students who have completed Chinese 4. Intensive instruction in Chinese language, as well as courses taught in English in such subjects as history, Chinese culture, and literature are offered. Students are housed in the new international dormitory on campus. A resident director provides academic advising and extracurricular social and cultural activities.

**Tufts in Ghana**
The Tufts-in-Ghana program, which takes place in the fall semester, links Tufts to the University of Ghana (Legon), located just outside the booming West African metropolis of Accra. The University of Ghana, founded in 1948, is a full-service research and teaching university offering students outstanding academic and extracurricular programs. The university’s 30,000 undergraduate and graduate students are served by seven residence halls, central and branch libraries, and a university hospital.

Two or three supervised excursions per semester will take students to the Dagbe Center for Arts and Culture, which provides an experience of traditional culture and the performing arts (drumming, singing, dancing) in a picturesque seaside village set among the palms one mile from the warm Atlantic Ocean. The Tufts-in-Ghana program is designed to expand students’ cultural awareness as they earn credit toward the undergraduate degree. In consultation with the resident director in Ghana, each student designs an academic program of four or five courses from the diverse array of subjects offered by the university’s many academic departments. Special language courses for Tufts students are taught at the Ghana Language Center on the Legon campus. Students from all academic majors, including mathematics and the sciences, are encouraged to apply.

**Tufts in Hong Kong**
The Tufts-in-Hong Kong program is affiliated with the University of Hong Kong and is available for the spring semester. Hong Kong, an affluent modern city of more than six million, offers visitors a unique blend of Eastern history and Western influence. Returned to China in July 1997 after more than 150 years as a British Crown Colony, Hong Kong continues to enjoy a high degree of autonomy as a Special Administrative Region.
The University of Hong Kong, known as HKU, evolved from the former Hong Kong College of Medicine, which was instituted in 1887. Since its official opening in 1912, the university has embodied the pioneering spirit of Hong Kong. It remains at the forefront of breakthroughs in medical and scientific research. HKU has a student population of 23,000, including about 3,300 international students. Courses are taught in English and are offered across a broad curriculum. Faculties open to Tufts-in-Hong Kong students include arts, business and economics, education, engineering, science, and social studies. Students are housed in dormitories on campus.

A resident director coordinates student activities, living arrangements, and academic advising.

**Tufts in Japan**

The Tufts-in-Japan program offers a full academic year at Kanazawa University.

Kanazawa, located on Japan’s western coast, is an ancient castle town with a rich heritage of arts and crafts, including silk dying, pottery, lacquerware, Noh theatre, papermaking, and confectionery. It boasts one of the most spectacular gardens in all of Japan. Students can visit the mansions and gardens of former samurai and tour the city’s two temples. Students take classes at the newly rebuilt Kanazawa University, one of the leading national universities. Courses include Japanese language at the intermediate and advanced levels, as well as subject courses taught in English. Housing is in a dormitory on the Kanazawa University campus. Students must have completed Japanese 2 or the equivalent by the time of departure. All majors are welcome to apply.

A resident director coordinates extracurricular social and cultural activities and will serve as a contact person.

**Tufts in London**

The Tufts-in-London program is affiliated with University College London (UCL) and with the School of Oriental and African Studies (SOAS), both constituent colleges of the University of London. Students enroll full time at either UCL or SOAS. Both are situated in the heart of the Bloomsbury district in central London, near the cultural and social life of the capital city. Tufts in London is a one-year program of academic study and is open only to full-year students. University College London is a comprehensive university offering courses across a broad curriculum, including biology and engineering. The School of Oriental and African Studies focuses on the languages, cultures, and societies of Africa, Asia, and the Middle East.

The program is under the overall supervision of a resident director who provides a full range of student services, including a program of extracurricular cultural and social activities, and coordinates all aspects of the program. Tufts-in-London students are housed in college dormitories that are located within a few minutes’ walk of the campus.

**Tufts in Madrid**

The Tufts program in Spain is affiliated with the Autonomous University of Madrid and with the University of Alcalá. The program is primarily a one-year course of study; however, arrangements may be made to allow students to participate for the fall or spring semester. Although the program is particularly valuable for Spanish majors, students from departments and programs such as economics, history, international relations, political science, psychology, biology, and sociology have studied in Spain as well.

Preparation equivalent to the successful completion of Spanish 21-22 (Composition and Conversation) is required. Spanish 31-32 (Main Currents of Spanish Literature) or 34-35 (Survey of Latin American Literature) are highly recommended. The Tufts director in Madrid advises students in selecting courses from the university.

The program offers an orientation session and group trips during the academic year. Monthly lectures and receptions are held at the program center, giving students contact with important figures from Spanish cultural and political life. Students are housed with Spanish families living in Madrid or Alcalá.

**Tufts in Oxford**

Tufts and Pembroke College of the University of Oxford maintain an agreement under which up to six qualified Tufts students are selected to spend an academic year at Pembroke College as non-degree visiting students.

Pembroke College was founded in 1624 and has a student body of 500. It is a friendly and informal college, emphasizing intellectual activity, but sports,
drama, and music are also important. Oxford, with 12,000 undergraduates and 7,000 graduate students, is now over 800 years old and consists of thirty-eight independent, self-contained, self-governed colleges and numerous other institutes and organizations. Students wishing to attend Pembroke College must show college-level course work in the subject they wish to pursue at Oxford.

Each applicant is required to have a 3.7 cumulative grade-point average (on a scale of 4.0) after two semesters. Pembroke will accept applications only from students who are prepared to study in the following areas: biochemistry; biological sciences; chemistry; economics and management; English language and literature; English and modern languages (French, German, Italian); experimental psychology; mathematics; mathematics and philosophy; history; history and economics; history and English; history and modern languages; history and politics; modern languages (French, German, Italian); philosophy, politics, and economics; philosophy and modern languages; politics; theology.

Tufts in Paris
The Tufts-in-Paris program offers a combination of Tufts in-house courses taught by French professors and courses in French institutions of higher education in Paris, notably the public University of Paris I (Panthéon-Sorbonne) and University of Paris III (Sorbonne Nouvelle) and the private Institut Catholique. Courses are available in French and comparative literature, political science, economics, history, cinema and theater studies, communications, art history, philosophy, religion, psychology, European studies and international relations. All courses are taught in French. Qualified students may apply for the full-year diploma program for international students at the prestigious Institut d’Etudes Politiques (Sciences-Po). Tufts in Paris is primarily a one-year course of study; however, arrangements may be made to allow students to participate for the spring semester only. Although the program is particularly valuable for French majors, students from departments and programs such as economics, history, international relations, political science, psychology, and sociology have participated as well.

Preparation equivalent to the successful completion of French 21-22 (Composition and Conversation I and II) is required for the program. French 31-32 (Readings in French Literature I and II) is highly recommended. The program is under the overall supervision of a resident director, who advises students in selecting courses at the French universities in Paris. The Tufts-in-Paris program also offers its own courses in French, art history, and literature. Full-year students are required to take either the French language course or the French literature course each semester. The program offers an orientation program and group trips during the academic year.

Tufts-in-Paris students are housed with French families.

Tufts in Tübingen
Tufts sponsors study at Eberhard-Karls Universität in Tübingen, Germany. Tübingen is located south of Stuttgart in the state of Baden-Württemberg. The university, founded in 1477, has 23,000 students.

The program is primarily one year of academic study, although arrangements may be made to allow students to participate for the spring semester only. Undergraduates who have taken at least two years of college-level German may apply to the program. The program is not, however, limited only to German majors. In recent years, students have attended from departments and programs such as biology, chemistry, economics, international relations, music, political science, and psychology.

The Tufts director in Tübingen advises students in selecting a full course load at the university. All courses are taught in German. Each semester, the director organizes a five-day study trip to Thüringen (fall) or Berlin (spring).

Students in Tübingen are fully integrated into university life, living with German students in regular university dormitories. A unique opportunity to acquire the master’s degree in German literature is offered by Tufts with the cooperation of the Eberhard-Karls Universität in Tübingen. See German, Russian, and Asian Languages and Literatures for a description of this program.
Tufts European Center

The Tufts University European Center is an international educational and meeting facility located in the village of Talloires, France. Set on the banks of Lake Annecy, in the foothills of the French Alps, the Tufts European Center is a restored eleventh-century former Benedictine Priory called Le Prieuré, which was donated to Tufts in 1978 by Donald (A’16) and Charlotte MacJannet.

The European Center hosts many important meetings each year on a wide range of topics. These events are sponsored by various faculty members and departments at Tufts as well as by other academic and professional organizations. Each summer Tufts’ fourth campus opens its doors to selected students who are interested in international study. Through a variety of unique programs students learn firsthand about international relations, France’s Celtic and Roman heritage, as well as the beauty and environment of the French Alps.

Tufts in Talloires

The Tufts in Talloires Program is a six-week summer semester for undergraduate students that takes place each summer at the European Center in Talloires. Students select two credit bearing courses from an array of undergraduate offerings taught in English by Tufts own faculty. Students live with French host families to experience French culture firsthand. Organized hikes, trips, and program activities help Tufts in Talloires students discover this magnificent area.

Tufts in Annecy

The Tufts in Annecy Program is a four-week French immersion program for university students and adults who want to concentrate on improving their French language skills. Classes are taught at a local French language institute by native French speakers who are expert in developing speaking, listening, grammar, writing, and reading skills. Strong support by a Tufts faculty member as well as placement with a French host family facilitates language acquisition and enhances the exploration or French culture and customs.

Tufts Summit

The Tufts Summit Program is a four-week program for selected rising high school juniors and seniors. A college level course on international relations is only part of an exploration into the complexities of world cultures and global issues. French classes make up the other part of the curriculum and are complemented by living with a French host family.

Because of its location near Geneva, the European center also serves as an important meeting center. Since its founding in 1978, the Center has welcomed a great number of seminars and meetings on a wide range of topics. These events are sponsored by Tufts own faculty members and departments, as well as by other academic and professional organizations.

For more information about Tufts programs in the French Alps or about the European Center, please visit http://ase.tufts.edu/europeancenter, call 617-627-3290, or e-mail france@tufts.edu.

Tufts Summer Session

Tufts Summer Session offers more than 200 courses during two six-week and one twelve-week terms each summer. A list of summer course offerings, available in November, can be helpful in planning your year-round academic program. Two-thirds of the summer students also attend Tufts during the fall and spring terms. They attend summer classes for many reasons: to take a course or courses not available other times of the academic year, catch up on a missed course, devote time to a specific course in an intense six-week session, take an additional course(s) to lighten course load during the year, or work on an independent study or internship.

Students pay a registration fee and tuition on a per-course basis.

Registration information specifically for Tufts students can be found on the summer session website or in summer session publications. Tufts Summer Session is located in Dowling Hall (419 Boston Avenue).

For more information on summer session programs and activities, visit http://ase.tufts.edu/summer, call 617-627-2000, or e-mail summer@tufts.edu.
Combined-Degrees Programs

Combined Five-Year Liberal Arts/Engineering Program
For most students entering college, the choice between liberal arts and engineering is a clear-cut matter. For some students, however, the choice is quite difficult. For the latter, both the professional flavor and occupational orientation of the engineering programs, on the one hand, and the variety of course selection in the liberal arts curriculum, on the other, have strong appeal. At Tufts, it is possible for students to secure the advantages of both types of education under the combined five-year program.

With a normal course load in each of ten semesters, students may complete the degree requirements in both engineering and liberal arts. The five-year program includes two fields of major concentration, one in liberal arts and one in engineering. The plan has particular appeal for engineering students who wish to secure a more liberal arts education than is possible in a four-year engineering curriculum and for liberal arts students who desire a strong technological background.

Two degrees are awarded on completion of the program. Both degrees are awarded only on completion of the entire program; a student may not receive one degree earlier, even if the requirements for that degree have been met. Students who start a five-year program, but decide within two years not to continue, may complete the degree requirements for either engineering or liberal arts in the usual period of four years.

Students may apply for and be admitted to the combined five-year program only after entrance to Tufts. Because the program requires careful planning, students are encouraged to apply as early as possible. Interested students should contact Dean Kim Knox (kim.knox@tufts.edu). Admission decisions are made twice a year, in January and in June. Five-year students are required to confer with their faculty advisors at the beginning of each semester to make certain that the courses that have been selected constitute a proper program. Five-year students must complete a minimum of forty-six courses and fulfill the foundation, distribution, and concentration requirements of both engineering and liberal arts. Within the School of Engineering, the B.S. degree may not be used as part of this program, except for the engineering psychology (human factors) program.

Combined-Degrees Program with New England Conservatory of Music
Tufts University and New England Conservatory of Music have by agreement instituted a full five-year program leading to a bachelor of arts or bachelor of science degree from Tufts and a bachelor of music degree from the conservatory. It is designed for students who wish to pursue studies on a musical instrument, voice, composition, music history, and theory without giving up the academic disciplines of a liberal arts degree. Admission to this combined-degrees program is generally gained by simultaneous application to both institutions. Students in the program will complete a minimum of twenty-four Tufts credits and will be in full-time residence for ten semesters, and will meet the foundation, distribution, and concentration requirements stipulated by the College of Liberal Arts. Prospective students are requested to address their concerns to: Dean of Enrollment Services, Office of Admission, New England Conservatory of Music, 290 Huntington Avenue, Boston, Massachusetts 02115, or Associate Dean Jeanne Dillon at Tufts University.

Combined-Degrees Program with the School of the Museum of Fine Arts
Tufts University and the School of the Museum of Fine Arts, Boston have by agreement instituted a five-year program leading to a bachelor of fine arts degree and a bachelor of arts or science degree. Admission to this combined-degrees program is by simultaneous application to both institutions, or for students enrolled at Tufts by application to the Museum School, usually in the first or second year. Students in the program will meet the foundation, distribution, and concentration requirements stipulated by the College of Liberal Arts. Requirements for the degree in art (B.F.A.) include many of the same academic requirements plus five semester courses in art history and eighty-four credits in studio art. Normally, the majority of the academic work is taken on the Tufts Medford/Somerville campus, and at least seventy credits of studio art are commonly taken at the Museum School. The entire five-year program consists of a
Combined Bachelor’s/Master’s Degrees Program with the School of Law and Diplomacy
(SEE SCHOOL OF LAW AND DIPLOMACY FOR DESCRIPTION)

Combined Bachelor’s/Master’s Degrees Program with the School of Engineering
(SEE SCHOOL OF ENGINEERING FOR DESCRIPTION)

Combined Bachelor’s/Master’s Degrees Programs with the College of Liberal Arts
Combined bachelor’s/master’s degrees programs are offered by the College of Liberal Arts and the Graduate School of Arts and Sciences. Exceptional students may combine undergraduate and graduate courses and are simultaneously enrolled in bachelor’s and master’s degrees programs. Both degrees are awarded only on completion of the entire program; a student may not receive one degree earlier, even if the requirements for that degree have been met. Combined-degrees students must pay four years of undergraduate tuition and the entire tuition for the master’s degree.

The combined-degrees program is one way of recognizing the fact that an increasing number of undergraduates are entering college with exceptional preparation in certain areas and that many are capable of doing graduate work in their junior and senior years.

Students seeking admission to the program should consult their undergraduate major advisors and their prospective graduate advisors before applying to the graduate school. Combined-degrees students are expected to fulfill all the requirements of the undergraduate and graduate programs. No courses offered in fulfillment of one set of requirements may be used for the other.

Admission to the program is normally during the junior year. Only in exceptional cases will an application be accepted after the junior year. Therefore, students interested in the program should contact their advisors early in their academic career to facilitate program planning. A student may elect to withdraw from the program at any time by filing the appropriate petition.

Combined Bachelor’s/Master’s in Public Health (M.P.H.) Degrees Program
(SEE HEALTH PROFESSIONS PROGRAMS FOR DESCRIPTION)

Combined-Degrees Programs with The Fletcher School of Law and Diplomacy
College of Liberal Arts
The combined-degree program is conducted jointly by the undergraduate college and The Fletcher School of Law and Diplomacy. It offers an opportunity for a limited number of highly qualified Tufts undergraduates in Arts and Sciences to earn both the bachelor’s degree in their selected major and the Master of Arts in Law and Diplomacy (MALD) degree on completion of a total of five to six years of study. Students may apply for the program once they have completed and received grades in at least twenty undergraduate credits.

A total of sixteen Fletcher course credits are required for the MALD degree. As many as four of these courses may be used to fulfill requirements for the bachelor’s degree. Fletcher courses will be taken over a period of two and a half to three years, during which time the student will complete his or her academic work for the bachelor’s degree. No more than a combined total of five undergraduate and Fletcher courses may be taken during any one semester, no more than four of which may be Fletcher courses. The student’s program must be coordinated to satisfy both the Fletcher requirements and those of the undergraduate department. Credit toward the MALD degree will not be allowed for Fletcher courses taken through cross registration or Fletcher Summer School before beginning the combined-degrees program. Cross registration for courses at Harvard or other institutions will not be approved until the student has completed at least eight Fletcher courses. Upon admission to this combined-degree program, the student must work with both his or her major advisor, respective academic dean, and the Fletcher registrar to ensure that he/she is meeting all requirements for both the bachelor’s and MALD degrees. These meetings must take place before beginning coursework toward the MALD degree.

The normal length of this program is six years. Students who are completing this combined-degree program in a total of six years will be required to satisfy the residency requirement of eight semesters.
The curriculum consists of a total of thirty-nine credits of which eight pre-Fletcher courses should be chosen. The required courses are Political Science 51, International Relations; Economics 5, Principles of Economics. The remaining five elective courses should either be foreign language courses or other courses with international focus. These elective courses should be approved by the Fletcher program advisor. Foreign language competence equal to the intermediate level (the equivalent of four semesters) is a minimum prerequisite for enrollment at Fletcher. Students are also required to complete at least one substantive internship in one of their undergraduate summers. This internship should be in an area appropriate to the study of international affairs.

In order to gain official admission to the Fletcher School, students must obtain a minimum of 3.60 GPA in the pre-Fletcher requirements and a minimum of 3.40 GPA in the remaining credits by the end of the first semester of their senior year.

Teacher Licensure Programs

Tufts offers several programs for graduate students who are interested in obtaining Massachusetts licensure as teachers.

Programs preparing early childhood, elementary, middle, and high school teachers, and art teachers at all levels are approved by the Massachusetts Department of Education. Graduate students seeking licensure as teachers complete at least one semester of full-time student teaching in the schools under the guidance of a cooperating teacher. They must also pass the Massachusetts Tests for Educator Licensure (MTEL), administered through the Massachusetts Department of Education, if they wish to be licensed to teach in Massachusetts public schools. More information about the state licensure process and test can be found on the Tufts Department of Education Web page at http://ase.tufts.edu/education/student/licensure.asp.

Participation in the licensure program is contingent on evidence of the feasibility of completing the academic and professional courses required for
state licensure. Only above 100 courses receiving grades of B- or better may be used to fulfill the subject area or education program requirements for licensure. For under-100 level courses, students must seek instructor and advisor approval, complete extra coursework, and receive a grade of B+ or better.

**Department of Education**
The middle and high school programs require that students complete a departmental major in the academic subject area that they plan to teach, and an additional nine course credits of professional preparation, including supervised student teaching. For elementary teacher licensure, graduates who complete the department’s program of professional courses are eligible to apply for licensure as elementary teachers after completing their program of study and passing the Massachusetts state educator tests. The 12-month M.A.T. programs lead to licensure at the elementary level and middle and high school levels in art, biology, chemistry, earth sciences, English, general sciences, history, mathematics, physics, engineering, political science/political philosophy, social studies; and as elementary, middle, or high school teachers of classical humanities, French, German, Latin, Japanese, and Spanish. In addition, the department offers graduate programs leading to licensure as school psychologists for all grade levels.

Students are assigned two program advisors—one in the Department of Education and a liaison faculty advisor from the department representing the subject area that the student wishes to teach. The advisors assist students in planning a program of study that fulfills the requirements for state licensure.

To receive an application or for additional information, students may contact the Department of Education in Paige Hall at 617-627-3244.

**Eliot-Pearson Department of Child Development**
The program of teacher preparation and licensure in early childhood education requires that students complete a departmental major in child development and additional course work in professional preparation, including supervised teaching practica. Students who successfully complete the depart-

**School of the Museum of Fine Arts, Boston**
Tufts undergraduate students, including B.F.A. students, are encouraged to apply for the M.A.T. in Art Education after their junior year through the TuftsPlus program. The TuftsPlus program streamlines the graduate admissions process and offers tuition scholarships, and gives students the opportunity to complete their B.F.A. and then matriculate directly into the M.A.T. which is a 12-month graduate program.

For more information, contact the Tufts Office of Graduate Studies, at gradschool@ase.tufts.edu or Director of Art Education Patty Bode at 617-369-3613 or patty.bode@tufts.edu.

**Health Professions Programs**
The health professions advisors work with students exploring various careers, advise them regarding curriculum, internships, and the application process, and offer a variety of programs and workshops each year. Students are encouraged to meet with an advisor at any point in their college career. Students interested in attending health professions schools are urged to visit the health professions advising website at http://uss.tufts.edu/hpa to learn about various professions and preparation for them.

Information about how to schedule meetings with the health professions advisors is also on the website and it is suggested that students seek advice from the health professions advisors as a complement to their academic advisor.

The director also sits on the Policy Board of the Community Health Program, a multidisciplinary major for students interested in health care issues, policy and community, and population health care. Many prehealth students choose to pursue this second major along with whatever primary major they select. For more information, visit http://ase.tufts.edu/commhealth.
Predental, Premedical, and Preveterinary Programs

There are no formal predental, premedical, or preveterinary majors at Tufts. Many preprofessional students major in biology, but a significant number choose an area of interest ranging from art history to child development to engineering. The major is not an important consideration for admission to health professions school, as long as the science and non-science academic record is sound. Dental, medical, and veterinary schools vary in their minimum requirements for admission. There are, however, certain courses that virtually all these schools require:

1. Biology: two courses with laboratory, preferably in areas of cellular and molecular biology, genetics, and physiology. At Tufts these are Biology 13 and 14.

2. Chemistry: two courses of inorganic with laboratory (typically Chemistry 1 and 2); two courses of organic with laboratory (Chemistry 51/53 and 52/54).

3. Physics: two introductory-level courses with laboratory (typically Physics 1 and 2).

4. Mathematics: the mathematics courses required varies but generally a semester of calculus (Math 5) and a semester of statistics (offered at Tufts through various departments as well as Math 10).

5. General requirements: U.S. schools desire evidence that students can read and write English well. Most schools require one year of college-level English. Biomedical professional schools prefer students with broad general knowledge including understanding of different cultures and languages.

Some schools have other requirements and it is recommended that students acquaint themselves with the special requirements for admission to schools in which they are especially interested. Also, some schools will not accept advanced placement credit or shortened courses for satisfying their science or non-science requirements and will want candidates to take additional science courses.

Premedical students should consult Medical School Admission Requirements (www.aamc.org) and the College Information Book (www.aacom.org), and predental students, Admission Requirements of U.S. and Canadian Dental Schools (www.adea.org). These are published annually.

Veterinary schools have more variability in their requirements than medical and dental schools. Virtually all require one semester of biochemistry (typically Bio 152). Students should consult Veterinary Medical Schools Admissions Requirements (www.aavmc.org).

Predental, premedical, and preveterinary students may apply in the summers following junior year or senior year or as alumni for any application year. The Tufts advising staff work with and support all students and alumni, no matter what year they choose to apply. Science requirements should be completed by the spring semester prior to the summer of application. Usually, students take the medical and dental aptitude tests at this time.

Letters of recommendation written by faculty members who know the candidate well are very important. It is strongly recommended that students become well acquainted with individual faculty. Participation in small seminar classes and joining in undergraduate research programs are two ways of getting to know individual faculty members. Students are also urged to learn as much as possible about health care through undergraduate research, volunteer work at health-care facilities, and/or summer internships or employment.

Students interested in veterinary school should have experience in the care of animals and, if possible, should have participated in biomedical research or environmental projects, or have assisted a practicing veterinarian.

Finally, there are more qualified applicants than spaces in these professional schools. As a consequence, some qualified students will not be admitted. High grades, strong letters of recommendation, and high aptitude scores are essential for—but do not guarantee—admission.

The Health Professions Recommendation Committee coordinates the preparation of composite letters of recommendation to the schools. All students who apply should register with the committee the year they will apply. The deadline for registering with the committee is April 1 of the application year. It is increasingly important to begin the application process at an early date (e.g., in May of the application year.) For students wishing to attend professional school immediately after graduation, that means completing all courses and taking the standardized test by the end of junior year. However, taking a year or two after graduation to work or do a service program before applying can strengthen an applicant’s credentials.
Tufts University School of Medicine—Early Assurance

For a very select group of sophomores, the School of Medicine offers an opportunity for early acceptance into the medical school. To be eligible, students must complete two semesters of general chemistry, two of introductory biology, and one of organic chemistry by summer of sophomore year. Qualified applicants need to perform extremely well in all their academic work, and should demonstrate a mature, informed motivation for a medical career. If accepted, a student will still complete the remaining two undergraduate years before beginning the four-year medical school curriculum. However, with an assurance of admission, the student may be more likely to explore the curriculum more fully by studying abroad, writing a thesis in a non-science discipline, or pursuing another significant academic interest. At the end of the junior year, those students who were accepted the previous year make their final commitment to attend Tufts University School of Medicine. The medical school, in turn, expects accepted students to maintain the same level of performance in their course work during their junior and senior years but the MCAT is not required.

For more information, visit http://uss.tufts.edu/hpa/AcademicPrep/

Tufts University School of Dental Medicine—Early Assurance

For a very select group of sophomores with a commitment to dental medicine, an opportunity for an early acceptance to the School of Dental Medicine is offered. To be eligible, students must complete two semesters of general chemistry and two semesters of introductory biology by the end of sophomore year. Qualified applicants need to perform well in all their academic work. If accepted, students will complete the remaining two undergraduate years before beginning the four-year dental school curriculum. They will also complete two semesters of physics, one of organic chemistry, and one of biochemistry. At the end of the junior year, those students who were accepted the previous year make their final commitment to attend Tufts University Dental School. The dental school, in turn, expects accepted students to maintain the same level of performance in their course work during the senior year. It is also expected that the candidates will receive at least a 17 academic average score, a 17 total science score, and a 17 perceptual ability score on the administration of the Dental Aptitude Test.

Combined Degree Bachelor’s/DMD Seven-Year Program

Tufts liberal arts undergraduates who are completing their first year are eligible to apply for a program that will require them to complete their undergraduate degree in the College of Liberal Arts and their degree in the School of Dental Medicine in seven years rather than the traditional eight. Due to the rigidity of the curriculum for this program, students in the School of Engineering cannot complete it and certain liberal arts majors are precluded as well. Interested students apply to the program during the spring semester of their first year at Tufts. Applicants to the program will have completed either the introductory chemistry or the introductory biology sequence by the end of their first year.

For more information, visit http://uss.tufts.edu/hpa/AcademicPrep/

Cummings School of Veterinary Medicine—Early Assurance

For a very select group of sophomores with commitment to veterinary medicine and experience working with animals, the School of Veterinary Medicine provides an opportunity for early acceptance into the veterinary school. To be eligible, students must complete two semesters of general chemistry and two of introductory biology by the end of sophomore year. If accepted, a student will still complete the remaining two undergraduate years before beginning the four-year veterinary school curriculum. The veterinary school expects accepted students to maintain the same level of performance in their course work during their junior and senior years, but the GRE test is not required for matriculation.

For more information, visit http://uss.tufts.edu/hpa/AcademicPrep/
**Combined Degree Bachelor’s/ Master’s in Public Health (M.P.H.) Program**

A combined bachelor’s/M.P.H. program is offered in conjunction with the Graduate Programs in Public Health at Tufts School of Medicine. This program allows students who are planning to pursue a career in public health the opportunity to complete a portion of their required course work as undergraduates, leaving them with only nine more courses to complete the M.P.H. program. Interested students may apply at the end of their sophomore year or the beginning of their junior year. This program is available to students in all majors and no specific courses are required before application. More information is available at [http://uss.tufts.edu/hpa/AcademicPrep/](http://uss.tufts.edu/hpa/AcademicPrep/).

**Postbaccalaureate Premedical Program**

Tufts provides the opportunity for college graduates who did not study the sciences to prepare for entrance into a health profession of their choice. A concentrated program of study, supplemented by a network of personalized advising and support, gives Tufts Postbac Program graduates the needed advantage when applying to competitive medical schools and related graduate programs. The program is flexible and allows students to develop an individualized program of study, chosen from a wide range of course offerings. This flexibility allows students to pursue careers in medicine, dentistry, veterinary medicine, physical therapy, occupational therapy, osteopathic medicine, optometry, podiatry, or as a physician assistant or nurse practitioner.

Tufts also provides a variety of workshops specifically for students in the program: applying to and interviewing at health professions programs, options for financing a health-care education, and strategies for studying science. Students may also attend public lectures at the Sackler School of Graduate Biomedical Sciences and the Schools of Medicine, Dental Medicine, and Veterinary Medicine. To be eligible, students should have a bachelor’s degree and a minimum of a 3.3 undergraduate grade point average. The typical student excelled in an undergraduate field other than science, but has recently made a commitment to pursuing a career in the health-care profession. The program is not remedial.

For more information and an application, visit [www.tufts.edu/undergradEducation/academics/postbac/](http://www.tufts.edu/undergradEducation/academics/postbac/).

**Prelaw and Prebusiness**

**Prelaw**

Prelaw students may select from a variety of majors; there is no specific prelaw major. Students considering law school are encouraged to take a variety of courses in which they may develop their writing abilities, critical thinking and reading expertise, oral communication, analytic problem-solving approaches, and research skills. Each skill offers valuable preparation for law school. Advising for prelaw is organized by the Associate Director of Pre-Professional Advising. Students thinking about attending law school are urged to direct their immediate questions to prelaw@ase.tufts.edu.

**Pre-Business Programs**

Most MBA programs welcome students from diverse backgrounds, thereby enriching the discourse and dynamics of the classroom. Thus, there is no single academic track that is recommended. Corporate employers who recruit at Tufts typically invite students from a variety of majors to interview. However, they do seek indication of a student’s interest in their business and/or industry which is most often reflected through internships or extracurricular activities. Likewise, candidates are encouraged to experience the workplace prior to business school. This employment allows individuals to better understand their interests, to discover new areas for exploration, and to contribute more fully to the program itself. To learn more about internships, recruiting, and graduate school admissions, students may visit Career Services ([http://careers.tufts.edu](http://careers.tufts.edu)) with offices located in Dowling 740.

**Experimental College**

The Experimental College will celebrate its fiftieth anniversary in 2014. This marks it as one of the nation’s oldest and most successful centers for educational innovation at work within the setting of a traditional liberal arts university. Throughout its history, the Experimental College has embodied
the commitment of Tufts University to the vitality of undergraduate education. The college has become a place where faculty, administrators, and students work together to offer a carefully selected range of courses intended to broaden and enrich the traditional curriculum.

Governed by an elected board consisting of faculty, staff, and students, the goals of the Experimental College are to introduce new, typically unavailable topics and approaches to students at a formative time in their academic careers, fill gaps in conventional curriculum, contemporize education by teaching timely, situational topics in a small class setting, and engage students in shaping their own education.

In addition to our elective courses, the Experimental College also administers two unique first year programs called Explorations and Perspectives. Both of them combine advising and academics with peer-group support and close contact among entering students, upper-level undergraduates, and concerned faculty.

Please note: the Experimental College does not offer any academic concentrations of its own. However, certain courses will sometimes be cross-registered with a specific department or program, while others may be approved in advance for distribution credit or after-the-fact, on an individual basis, by petition.

The Experimental College also provides forums for inquiry such as noncredit colloquia, conferences, and workshops that meet the expressed needs of the university community as a whole. Finally, it houses such interdisciplinary programs as Communications and Media Studies and TuftsFilmWorks.

More information regarding the programs and activities of the Experimental College is available from the office at 95 Talbot Avenue, at www.excollege.tufts.edu, or by calling 617-627-3384.

Experimental College Courses
Designed primarily for undergraduates, Experimental College courses are open to all members of the university. They are credit-bearing electives taught in accordance with university standards. Students should refer to the Ex College website for specific information, detailed course descriptions, and daily updates.

Instructors in the Experimental College are, in large measure, professionals from the greater Boston community, across a wide variety of fields, who have some special expertise to share. A few select upper-level undergraduates are also given the opportunity to teach courses of their own design, graded on a pass-fail basis.

On the average, the Experimental College offers close to sixty courses each year. A selected list of some recent offerings follows:

- A History of Documentary Film
- Forensic Anthropology
- *Al Qaeda* and Modern Terrorism
- Introduction to Game Development
- Experimenting with Philanthropy
- Sabermetrics: The Objective Analysis of Baseball
- Climate Change and the Law
- Microfinance
- The Right to Privacy in Modern America
- Medical Spanish

Explorations
Explorations are intended to both establish a sense of community and promote critical thinking. Each Exploration group consists of twelve to fourteen entering students who meet weekly in seminars designed and team-taught by two upper-level students. A faculty member or professional staff person serves as academic advisor to the first-year students. Thus, incoming students receive both immediate and sustained support.

Perspectives
Like Explorations, the Perspectives program uses upper-level students as peer teachers and advisors, but rather than each team of student leaders choosing their own subject area, all the groups attempt to answer questions about the movies as art, business, and culture. The work done by each Perspectives group will be grounded in study of how movies work as movies and how they tell stories through images, editing, and sound.

Auditing for Breadth
Auditing for Breadth allows students to broaden their education by attending courses in which they might not otherwise enroll. A student may elect to audit any three undergraduate courses during his/her tenure at Tufts. Faithful attendance is the major requirement for each audit. Students select their
own courses to audit but must have the approval of the course instructor. One course credit is awarded on completion of the three audits and a short paper. More information is available at the Experimental College office.

**Quidnuncs**
The Latin term *quidnunc* translates into English as “what next?” This program is designed in that spirit, allowing students to study as part of a peer group that will collectively investigate an interdisciplinary topic of the group’s own choosing. Previous groups have studied international health care, electronic journalism, creating a sex education curriculum, sustainable development in Nicaragua, and conflict resolution and cooperative games.

**Communications and Media Studies**
Communications and Media Studies (CMS) is an interdisciplinary program housed in the Experimental College. It administers three minors: mass communications, film studies, and multimedia arts. Intellectually, it places the study of media in critical contexts. Each semester, CMS offers courses of its own through the Experimental College, while coordinating and publicizing media courses offered in other departments. It also registers, supervises, and grants credit for communications-related internships. See Communications and Media Studies section for more information (p. 136).

**TuftsFilmWorks**
*TuftsFilmWorks* (TFW) is the university’s center for film and multimedia production. Relying on new digital video technologies, TFW is the umbrella structure under which the Experimental College nurtures student filmmakers. Among the projects recently completed are a full-length, Hollywood-style romantic comedy; an experimental film mixing found celluloid with digital video; a music video with superimposed, hand-drawn animation; and a documentary about Mongolia (filming for which was all done on location). Currently, students are finishing a feature length documentary on Tufts involvement in the federal government’s biannual Solar Decathlon Challenge. All TFW students are trained to understand and appreciate the craft of filmmaking while learning to use cutting edge digital production and editing equipment. At the same time they are engaged in ongoing studies of film history and style.

**TUTV**
The Experimental College is the administrative home of TUTV, the on-campus access channel. Faculty-sponsored and student-run, TUTV has taken its television roots to the internet, where it streams a wide range of programming. TUTV continues to attract more and more students who develop, along with location and studio production skills, the ability to manage an organization, make critical and ethical decisions, and interact in a positive manner with students, faculty, and administrators. In short, the students who run TUTV learn to become leaders.

**Special Events**
The Experimental College regularly sponsors campus-wide programs designed to bring together faculty and students. These range from films and lectures to dinner and lunch-time roundtable discussions to an “election night extravaganza” every four years. In November 2008, we filled the Campus Center, as the Tufts community came together to watch and analyze the last presidential election.

**Jonathan M. Tisch College of Citizenship and Public Service**

Nancy Wilson, Dean ad interim
Peter Levine, Director of Research, Director of CIRCLE
Shirley Mark, Director, Lincoln Filene Center for Community Partnerships
Mindy Nierenberg, Senior Programs Manager, Director of Leadership Studies Minor
Rachel Szyman, Program Coordinator
Sara Allred, Scholar Program Coordinator
Sarah Shugas, Communications Specialist
Joanne Minassian, Finance & Administration Manager

**AFFILIATED FACULTY AND STAFF**
Nancy Wilson, Tisch College
Julian Agyeman, Urban and Environmental Policy and Planning
Edith Auner, Music Community Outreach
Edith Balbach, Community Health
Linda V. Beardsley, Education
Jeff Berry, Political Science
Marina Bers, Child Development
Amahl Bishara, Anthropology
Rachel Bratt, Urban and Environmental Policy and Planning
Drusilla Brown, Economics
Doug Brugge, Public Health & Community Medicine, School of Medicine
Dale Bryan, Peace & Justice Studies
Kathleen Camara, Child Development
Downing Cless, Drama and Dance
Steve Cohen, Education
Julie Dobrow, Communications & Media Studies
John Durant, Civil & Environmental Engineering
Chris Economos, John Hancock Research Center, Friedman School of Nutrition Science & Policy
Ioannis Evrigenis, Political Science
Hugh Gallagher, Physics & Astronomy
Scott Gilbert, Clinical Medicine, School of Medicine
Robyn S. Gittleman, Experimental College
James Glaser, Political Science
Pamela Goldberg, Entrepreneurial Leadership Studies
Barbara Grossman, Drama and Dance
David Guss, Anthropology
David Gute, Civil & Environmental Engineering
John C. Hammock, Feinstein International Center, Fletcher School
Soha Hassoun, Computer Science
Hosea Hirata, German, Russian, and Asian Languages and Literatures
R. Bruce Hitchner, Classics
Elizabeth Hollander, Senior Fellow
Justin Hollander, Urban and Environmental Policy and Planning
Robert Hollister, Urban and Environmental Policy and Planning
Charles Inouye, German, Russian, and Asian Languages and Literatures
Kevin Irwin, Community Health
Shafiqul Islam, Civil & Environmental Engineering
James Jennings, Urban and Environmental Policy and Planning
Paul Joseph, Sociology and Peace & Justice Studies
Peniel Joseph, History
Gretchen Kaufman, Environmental & Population Health, Cummings School of Veterinary Medicine
Erin Kelly, Philosophy
Jonathan Kenny, Chemistry
Richard Lerner, Child Development
Carolyn Leung Rubin, Clinical Medicine, School of Medicine
Joann Lindenmayer, Environmental & Population Health, Cummings School of Veterinary Medicine
Keith Maddox, Psychology
Andrew McClellan, Art & Art History
John McDonald, Music
Lionel McPherson, Philosophy
Christine McWayne, Child Development
Gilbert Metcalf, Economics
Jayanthi Mistry, Child Development
Aviva Must, Family Medicine & Community Health, School of Medicine
Miriam Nelson, John Hancock Research Center, Friedman School of Nutrition Science & Policy
Colin Orians, Biology
Susan Ostrander, Sociology
Deborah Pacini-Hernandez, Anthropology
Mary Rose Paradis, Clinical Sciences, Cummings School of Veterinary Medicine
Jeanne Penvenne, History
Lynne Pepall, Economics
Flavia Peréa, Public Health & Community Medicine, School of Medicine
Kent E. Portney, Political Science
Merredith Portsmore, Education
Peter Probst, Art & Art History
Ann Rappaport, Urban and Environmental Policy and Planning
J. Michael Reed, Biology
Daniel Richards, Economics
Pearl Robinson, Political Science
Chris Rogers, Mechanical Engineering
Barbara G. Rubel, Tufts Community Relations
Robert Russell, Urban and Environmental Policy and Planning
Jennifer Sacheck, John Hancock Research Center, Friedman School of Nutrition Science & Policy
Debra Samdperil, Artist’s Resource Center, School of the Museum of Fine Arts
Anthony Schlaff, Family Medicine & Community Health, School of Medicine
Rosalind Shaw, Anthropology
Sarah Sobieraj, Sociology
Diane Souvaine, Computer Science
Linda Sprague Martinez, Community Health
Jeffrey Summit, German, Russian, and Asian Languages and Literatures and Hillel
Chris Swan, Civil & Environmental Engineering
Grace Talusan, English
Sherman Teichman, Institute for Global Leadership
Peter Walker, Feinstein International Center, Fletcher School of Law & Diplomacy and Friedman School of Nutrition Science & Policy
Don Wertlieb, Child Development
Maryanne Wolf, Child Development
Jean Wu, American Studies

Tufts University’s commitment to producing active, engaged, and effective citizens is driven by the Jonathan M. Tisch College of Citizenship and Public Service. All Tufts students are part of this unique college that works across Tufts schools to prepare students from every field to be lifelong active citizens. Tisch College generates an enduring culture of engagement across the university by collaborating with Tufts schools, departments, and student groups to offer extensive programming for every member of the Tufts community.

Our programs are intended to develop student knowledge, skills and values to identify and implement solutions to complex social problems. Additionally, Tisch College is a partner in helping Tufts students learn how to integrate active citizenship with their academic and professional interests. The following programs are organized by Tisch College.

**Active Citizenship Course Guide**
To help students identify courses which teach the knowledge, skills or values of active citizenship, Tisch College has compiled an active citizenship course guide. The listing includes courses from both the School of Arts and Sciences and the School of Engineering and can be used by all undergraduate students to learn about courses they may not have considered or to identify active citizenship courses in their major. Students interested in pursuing an academic program in civic leadership may want to consider the Leadership Studies Minor. This relatively new minor is led by Tisch College. Details about requirements are included in the list of Departments, Programs and Research Centers in this Bulletin.

**Tisch Scholars for Citizenship and Public Service**
An innovative leadership program that develops core civic skills over several years, Tisch Scholars are leaders for civic engagement and catalysts for change. Students start by taking a course that helps them understand community assets, identify root causes of issues, enter communities as outsiders, and manage projects. In collaboration with local organizations, Tisch Scholars annually work on projects designed to create positive change, engage University resources and build capacity in Tufts’ host communities. The developmental program consciously builds new levels of knowledge, skills and behaviors year-by-year and brings together a mentoring community of peers. With approximately 60 students participating, Tisch Scholars interact across their years, helping each other connect their community experiences back to their academic work and ultimately to a deeper understanding of the issues.

**Tisch Civic Engagement Fund (CEF)**
CEF engages individual students and student groups in innovative, self-designed projects with an active citizenship theme. CEF provides both financial and advisory support, helping students bring their concept to life. Recently through CEF: the campus center was converted into a thriving global market for a day; local teens came to campus for a theatrical performance by a Tufts student group; Tufts students testified at the Massachusetts state house, advocating for student health insurance reform; and nine Community Health students traveled to the Dominican Republic to address issues of inadequate and unreliable access to healthcare for residents. Through CEF and ACS (below), Tisch College has supported the launch and development of several strong ongoing student organizations, such as Engineers Without Borders and BUILD (Building Understanding through International Learning and Development).

**Tisch Active Citizenship Summer (ACS)**
Through ACS, students spend their summer receiving hands-on training and support in a real-world environment. Working locally, nationally, or internationally, these Tisch Fellows gain skills and experience that guide and shape their development as active citizens. Recently through ACS: students collaborated with community organizations to support economic recovery in Somerville; students worked in Pentagon positions designed exclusively for Tufts students; and nearly 20 students traveled to Guatemala to build critical infrastructure for local coffee farmers.

**Common Reading Book**
Tisch College begins working with incoming students before they even step on campus, annually selecting a common reading book with a civic engagement focus. Co-sponsored with the Office
of Undergraduate Education, this program gives Tufts undergraduates a shared experience as they explore the book’s themes through lectures and discussions during orientation. Past books have included: *This I Believe: The personal philosophies of remarkable men and women*, edited by Jay Allison and Dan Gediman; *Brother, I’m Dying* by Edwidge Danticat; *The Blue Death: The intriguing past and present danger of the water you drink* by Robert D. Morris; *Mountains Beyond Mountains* by Tracy Kidder, and *All Souls: A family story from Southie* by Michael Patrick McDonald.

**Residential Life**
Active citizenship is part of everyday life at Tufts. Through Tisch College’s partnership with the Office of Residential Life and Learning, all resident assistants (RAs) are trained to integrate active citizenship into residence hall activities.

**Leaders for Change**
Being an effective active citizen requires leadership, communication and other practical skills. To help students develop these skills, Tisch College offer Leaders for Change, a series of hands-on trainings that give students the opportunity to actively practice and expand their skills as a leader for change.

**Honos Civicus**
Active citizenship does not end with graduation. Tisch College’s *Honos Civicus Society* is a growing network of Tufts alumni who excelled in active citizenship courses and co-curricular activities during their undergraduate years at Tufts. With a third class of over 90 seniors inducted into *Honos Civicus* last spring, the Society now numbers over 250 Arts & Sciences and Engineering alumni. Society members’ names are listed in the graduation bulletin.

**Presidential Awards for Citizenship & Public Service**
The Presidential Awards are presented every spring to a dozen exceptional undergraduates and graduates students. The Awards recognize outstanding student accomplishment and celebrate the diverse meanings of citizenship and public service that Tufts seeks to support. Past recipients have been recognized for initiating programs that trained their peers in Spanish to reach new populations of community residents, developing and testing a technology to rapidly and accurately assess childhood developmental delays, courageously leading policy change on campus, launching a rabies clinic in Worcester public housing, volunteering ‘over the top’ numbers of hours in service to children in our host community, and more.

**CASE Network (Connecting Alumni and Student Experiences)**
Active in several cities around the country, the CASE Network gives Tufts students working or interning over the summer the opportunity to connect with a community of Tufts alumni mentors. These mentors help support students’ summer learning experience and share valuable insights about life after college.

**Faculty Fellows**
This program builds the capacity of Tufts faculty to integrate active citizenship into their research and teaching. Supporting faculty leadership in building active citizenship as a defining strength across the University, Faculty Fellows participate in unique interdisciplinary conversations that enhance their work. Each year, a dozen faculty from across the university are selected to participate.

**Lincoln Filene Center for Community Partnerships (LFC)**
Tisch College’s Lincoln Filene Center actively builds the capacity of students, faculty and community organizations to effectively partner in education and research to address community-identified needs in Tufts host communities of Medford, Somerville, Boston’s Chinatown and Grafton. A resource for both Tufts and its host communities, the LFC runs a wiki toolkit, an outreach portal, and hosts regular skill-building and networking workshops.

**The Center for Information and Research on Civic Learning and Engagement (CIRCLE)**
CIRCLE is the leading source of authoritative research on civic and political engagement of Americans between the ages of 15 and 25. CIRCLE’s research has begun to change public discourse and press coverage about young people as citizens, and has changed political campaigns in
America by helping to show that it is cost-effective to mobilize young voters. Additionally, CIRCLE regularly provides training and technical assistance to at least 300 organizations around the country, mostly direct providers of services to youth. Recent research has included volunteering rates of veterans, civic engagement of the many young people who don't attend college, and how social networking can strengthen civic discourse and opportunities.

CIRCLE regularly hosts public forums on civic engagement issues, offers courses through the Experimental College, and occasionally recruits Tufts undergraduates to serve as research assistants.

**Partnering for Economic Recovery Impact through Service (Project PERIS)**

Made possible by a grant from Learn and Serve America of the Corporation of National and Community Service, Project PERIS is a partnership between Tisch College, Tufts faculty, and Somerville organizations to develop and deliver an economic recovery program over three years. Through fall and spring courses, and continuing through summer fellowships, Project PERIS is engaging between 350–525 Tufts students in collaborative planning and delivery of economic recovery services to approximately 2,700 Somerville residents. PERIS is also developing a collaborative crisis response planning and service delivery system that can be shared and adapted to other communities and other situations of rapid change. Current initiatives of project PERIS include: Researching and implementing projects designed to confront housing and health disparities in Somerville; evaluating the feasibility of implementing a new community-based education model in the Mystic neighborhood of Somerville; and increasing the vitality of small, immigrant-owned restaurants in Somerville.

**Institute of Political Citizenship (IPC)**

Founded and managed by Tufts undergraduates, IPC seeks to educate and motivate students to engage in state and local government, shape policies that address local community needs, and to build their understanding of the connection between politics—electing people—and policy. IPC embraces: Beacon Hill policy internships in state legislative and advocacy organization offices; TuftsVotes, a voter education, registration, and turnout initiative; the Tufts Roundtable, which uses new and old media to bring together the diverse thoughts and opinions found at Tufts; and the Tufts chapter of the Roosevelt Institute, a national student initiative that engages young people in progressive policy development to empower them as leaders and promote their ideas for change.

**Media & Public Service Program (MPS)**

Co-sponsored by Tisch College and the Communications and Media Studies Program, MPS provides Tufts students the media tools and resources to prepare them for lifetimes of active citizenship. MPS is a concentration area for students majoring in Communications and Media studies.

**The Talloires Network**

The Talloires Network is an international collective of universities that are working together to move beyond the ivory tower, applying their human energies and expertise to repair the world and build healthy communities. Committed to promoting the civic roles and social responsibilities of higher education, the Network was launched at a conference hosted by Tufts President Lawrence S. Bacow in 2005, and has grown to 208 member institutions in 58 countries, most of them in the developing world. Tisch College serves as secretariat.

Additional active citizenship opportunities for Tufts students include:

**Jumpstart**

Jumpstart is a national early education organization that inspires children to learn, adults to teach, families to get involved, and communities to progress together with the goal of enabling every child in America to enter school prepared to succeed. Tisch College hosts Jumpstart at Tufts. Over 60 Tufts undergraduates participate as Jumpstart leaders each year.

**Leonard Carmichael Society (LCS)**

A highly active student-run volunteer organization, LCS supports active citizenship and community services through programs ranging from after-school assistance to annual fund-raisers for community organizations. LCS facilitates a wide variety of volunteer opportunities in and around the Tufts community, including hospital work, blood drives, tutoring opportunities, and work with the
elderly, the homeless, the disadvantaged, and the blind. LCS also facilitates public dialogue on issues related to volunteerism. Major LCS events include FOCUS, a pre-orientation program for incoming students; a “Faculty Waits on You” dinner benefiting the homeless, and Kids’ Day, which brings local youth to campus.

With a volunteer corps of over 1,000 and a student staff of 85, LCS serves as an umbrella organization for forty different programs. LCS’s programs, resources, and leadership capacity have become widely recognized within the Tufts community and with the hundreds of community organizations, agencies, and people they serve.

For information about additional community engagement opportunities, such as the Tufts Literacy Corps and Student Teacher Outreach Mentoring Program (STOMP) for engineering students, go to: http://activectizen.tufts.edu/?pid=765

Tisch College is located in Lincoln Filene Hall on the Medford campus. For more information, call 617-627-3453 or visit http://activectizen.tufts.edu.

Institute for Global Leadership

The mission of the Institute for Global Leadership at Tufts University is to prepare new generations of critical thinkers for effective and ethical leadership, ready to act as global citizens in addressing the world’s most pressing problems. In 2005, the IGL was designated as a university cross-school program with the objective of enhancing the interdisciplinary quality and engaged nature of a Tufts education and serving as an incubator of innovative ways to help students understand and engage difficult and compelling global issues. Due to its unique approaches and ability to create unusual partnerships and juxtapositions, IGL is at the forefront of effort that encourage “thinking beyond boundaries and acting across borders.”

To meet these challenges, the Institute emphasizes rigorous academic preparation and experiential learning. Students learn through intensive engagement in classes, global research, internships, workshops, simulations, and international symposia—all involving national and international students and leaders from the public and private sectors. These activities stress critical and normative thinking, written and oral communication skills, problem solving, and an interdisciplinary approach to learning. Students produce tangible outcomes to their studies through their research projects, the international forums, and other significant initiatives. The experience helps stimulate intellectual curiosity and build individual self-confidence and independence, while at the same time developing analytical and practical leadership and decision-making skills.

The IGL is located at 96 Packard Avenue. For more information, call 617-627-3314 or visit www.tuftsgloballeadership.org.

Programs of the Institute for Global Leadership

Education for Public Inquiry and International Citizenship (EPIIC) (1985-)
The cornerstone of the Institute, EPIIC is a rigorous, carefully integrated multidisciplinary program on a global theme that is open to students of all majors and years. Since its inception at Tufts in 1985, EPIIC has been challenging students, as well as policymakers and the public at large, to think critically about questions of pivotal importance to the world. Its main components are: a yearlong colloquium; research projects; an international symposium; professional workshops; and public service initiatives. Past topics have included: International Terrorism (1986); The West Bank and Gaza Strip (1987); Transformations in the Global Economy (1993); Ethnicity, Religion and Nationalism (1994); The Future of Democracy (1997); Global Inequities (2002); The Role of the U.S. in the World (2004); Oil and Water (2005); and The Politics of Fear (2006). The 2010-11 topic was Our Nuclear Age: Peril and Promise and the topics for 2011-12 and 2012-13, respectively, are Confronting Conflict in the 21st Century and Global Public Health.

Global Research, Projects, and Internships (1986-)
Students are encouraged to conduct original, policy-oriented research and projects that allow them to test their theories and assumptions on the ground. Since 1986, more than 900 students have conducted research or participated in an international internship in more than 85 countries. These projects often develop into significant projects and senior honors theses. One project culminated in the creation of an NGO in northern Uganda, Collaborative Transitions Africa; another, which
looked at the outreach process from the International Criminal Tribunal for the Former Yugoslavia, became the model for the outreach in Sierra Leone.

**Inquiry (1992-)**
Working with public and private schools in more than seven states, Inquiry is one of the university’s largest and most diverse public service initiatives. It provides a unique opportunity for high school students to participate in an intellectual and challenging yearlong program, culminating in a role-playing simulation on an international issue. Tufts students act as mentors for the high school students. In 19 years, more than 4,500 high school students and 700 Tufts students have participated.

**Dr. Jean Mayer Global Citizenship Lecture Series (1993-)**
This series, and its accompanying award, honors the legacy of former Tufts University President and Chancellor Jean Mayer by bringing distinguished individuals to campus who combine scholarship and public service and who are dedicated to helping students solve some of the world’s pressing challenges. Past recipients include Hon. Martti Ahtisaari, Hon. Anson Chan, Bill Drayton, Gen. Romeo Dallaire, Sylvia Earle, Shirin Ebadi, Murray Gell-Mann, Hon. Jose Ramos Horta, Sunita Narain, Sen. Sam Nunn, Conor Cruise O’Brien, Luis Moreno Ocampo, Gwyn Prins, Mary Robinson, Amartya Sen, Wole Soyinka, Ronald Takaki, and Archbishop Desmond Tutu.

**Tufts Initiative for Leadership and International Perspective (1997-)**
In 1998, Tufts University, in cooperation with Peking University (Beijing), The Chinese University of Hong Kong, and The University of Hong Kong, began this unique leadership program. Continuing its work with China, TILIP was re-conceptualized in 2008 to expand its reach to such countries as Brazil, Canada, Guatemala, Haiti, India, Israel, Rwanda, Singapore, South Africa, and South Korea—which all have sent student delegations to the IGL as part of the IGL’s commitment to the Clinton Global Initiative.

**INSPIRE (Institute Scholars and Practitioners in Residence) (1999-)**
This program brings scholars and practitioners to campus for public lectures, classroom lectures and research and career advising. Participants have included Jack Blum, Senior Counsel for Special Projects for Finance Sector Compliance Advisors Limited and an expert on controlling government corruption, international financial crime, money laundering, international tax havens and drug trafficking; Peter Droge, the Asia-Pacific Chair of the World Council for Renewable Energy and Director of Solar City for the International Energy Agency; Sanjoy Hazarika, a member of India’s National Security Advisory Board; Padraig O’Malley, the John Joseph Moakley chair of Peace and Reconciliation at the John W. McCormack Graduate School of Policy Studies at the University of Massachusetts, Boston; and Mort Rosenblum, Associated Press correspondent for more than 30 years and the former chief editor of the International Herald Tribune.

**Voices from the Field (2001-)**
On hiatus this year, for the previous years the IGL brought back to campus mid-career alumni (the Voices) who are presently working in the fields of nation building, complex humanitarian emergencies, human rights, U.N. peacekeeping, refugee assistance, preventative diplomacy, conflict resolution, and development assistance. They engage in several days of intense round-table conversation and a full day of undergraduate advising.

**Building Understanding through International Learning and Development (B.U.I.L.D.) (2002-)**
For its first six years, BUILD Nicaragua participants spent a semester learning about international development, cross-cultural exchange, the history and politics of Nicaragua and about the needs of the rural community of Siuna, Nicaragua before spending their winter break working in the community. In 2008, BUILD decided to switch its work in Nicaragua to Guatemala, where the student group now works with the cooperative Santa Anita La Union. BUILD also runs a spring semester, student-taught course on sustainable development. This is a project in collaboration with the Tisch College for Citizenship and Public Service. In 2009, BUILD was chosen as the Tufts recipient of the Davis Foundation 100 Projects for Peace. In 2010, BUILD expanded its program to India, and BUILD India was chosen as the 2011 Tufts recipient of the Davis Foundation 100 Projects for Peace.
New Initiative for Middle East Peace (NIMEP) (2003-)
NIMEP is a non-polemical student think-tank and outreach initiative aimed at finding progressive solutions to the historic conflicts in the Middle East. In 2005, NIMEP published the first edition of its journal, NIMEP Insights. The journal featured student research papers from NIMEP trips to Israel and the West Bank and to Egypt, as well as the IGL’s 2004 trip to Iran. NIMEP’s most recent trips were to Kurdistan, the Gulf, Turkey, Lebanon, Syria, and a return to Israel and the West Bank. NIMEP also initiated the web-based Soliya course, now offered through the Political Science Department, in which small groups of university students from the US and predominantly Muslim countries in the Middle East engage in intensive dialogue about the relationship between the US and the Arab and Muslim World.

EXPOSURE (2004-)
EXPOSURE is a program dedicated to mentoring and developing young, knowledgeable photojournalists and documentarians and the advancement of human rights through the facilitation, distribution, and instruction of photojournalism and documentary studies. Working with the VII Photo Agency, de.MO, a design and publishing company, and the Aftermath Project, EXPOSURE has also mounted a number of professional exhibitions and offered students the opportunity to participate in professional photography workshops in Argentina, Bali, Boston, Cambodia, Houston, India, Kashmir, Kosovo, Philadelphia, Tucson, Uganda, and Vietnam. EXPOSURE has published two books through de.MO based on the Kosovo and Argentina workshops.

Iran Dialogue Initiative (IDI) (2004-)
IDI’s mission is to facilitate educational dialogue and exchange between Tufts University students and students at the School for International Relations (SIR) in Tehran. This is a non-polemical and non-political initiative. In 2004, IDI organized the first official U.S. university visit to Iran since the 1979 revolution, where ten Tufts students spent two weeks traveling through Iran and meeting with their peers at SIR as well as at Mofid, a religious university in Qom. Given the ongoing political tensions of recent years, this program is on hold.

Engineers Without Borders (EWB) (2005-)
A collaboration with the School of Engineering, the mission of the Tufts Chapter of Engineers Without Borders is to design sustainable development projects for communities around the world and to engage students, faculty and the campus in the process. The group has worked on projects in Tibet, Ecuador, El Salvador, Haiti, and Uganda. Unique to the Tufts chapter is its emphasis on collaboration between engineering and arts and sciences students.

TEF was developed by students who participated in the 2005 EPIC Oil and Water colloquium. It is an effort to educate the campus about global energy supply and demand, alternative energy sources, and the geopolitical consequences of the world’s quest for energy sources. Research trips have been conducted in Belgium, California, Colorado, Denmark, Germany, India, South Africa, and the United Arab Emirates. TEF has also branched out to a second group, the Tufts Energy Conference, which hosts an annual symposium on the campus, partnering with a broad range of organizations. TEF also helped establish a sister program at Peking University, the Peking University International Student Energy Initiative.

ALLIES (Alliance Linking Leaders in Education and the Services) (2006-)
The objective of ALLIES is to expand and integrate the ongoing relationship between the Institute for Global Leadership and the military’s educational institutions. ALLIES fosters dialogue, encourages joint research opportunities, creates activities that bring together students at private liberal universities and future military officers, and educates about the role of the U.S. military at home and abroad. Students have conducted joint research trips to Chile, Jordan, Uganda, and Ukraine.

Synaptic Scholars (2006-)
The Synaptic Scholars program is designed to encourage and enable students interested in creative, intellectual exploration to realize their potential in intensive, interdisciplinary settings. The program creates a framework in which intellectual juxtapositions, critical thinking and self-directed
explorations are fully realized. Synaptic Scholars is a leadership program, meant to provide a forum for students to take risks, pursue passions, and challenge assumptions in an intimate, supportive and collaborative environment. It is designed to cultivate a strong sense of accountability and responsibility, while encouraging scholars to enrich the University’s intellectual life and programming.

Robert and JoAnn Bendetson Public Diplomacy Initiative (2006-)
The Bendetson Public Diplomacy Initiative is an effort to bring key global policymakers and officials to Tufts to share their experiences and perspectives with students. It also brings these policymakers and officials together to discuss their shared experiences, such as the program on “Iraq: Moving Forward” in 2007, which explored next steps in Iraq with participants from Iraq, South Africa, Northern Ireland, and Guatemala.

National Security and Civil Liberties Program (2006-)
This program is an opportunity for students to experience and understand the fundamental relationship between civil rights and national security concerns. Closely allied with ALLIES, it brings together students from the Tufts campus and from the US military academies to address controversial issues such as Guantanamo, warrantless wiretaps, and the extent of Executive Privilege. This program has collaborated with the Law Library of the Library of Congress and the Washington Law School of American University.

International Resilience Program (2007-)
This program brings together applied interdisciplinary research, and cross-sector policy and practice analysis to bear on teaching, advising and mentorship of professional, graduate, and undergraduate members of the Tufts community in the classroom and outside of the classroom through research-focused activities. It is directed by Astier M. Almedom, a Fellow of the Institute and Professor of Practice in Humanitarian Policy and Global Public Health at The Fletcher School.

EMPOWER (2007-)
This IGL initiative focuses on social entrepreneurship and poverty alleviation. Bringing together a global network of non-governmental organizations, such as ACCION, Kiva and Schwab, EMPOWER offers students opportunities for research and internships across the world. Intended to be a multidisciplinary initiative, topics can range from microfinance to education to water sanitation.

RESPE (Research and Engagement Supporting Poverty Elimination): Haiti (2007-)
RESPE: Ayiti is an interdisciplinary program aimed at assisting the rural community of Balan in Haiti develop a broad range of initiatives. RESPE has brought together Tufts students from International Relations, Community Health and Engineering to assist the community with public health and mapping projects. In 2010, RESPE was chosen as the Tufts recipient of the Davis Foundation 100 Projects for Peace.

Discourse: The Tufts Interdisciplinary Journal Dedicated to the Power of Reason and the Exchange of Ideas (2007-)
Discourse provides an inclusive platform for reasoned discussion and prescriptive analysis of issues of both international and domestic concern, while also including poetry, fiction, art and photography to illuminate the human condition. Its emphasis is on exploring a diversity of thought and perspectives from students, scholars and practitioners. The purpose of Discourse is to provide an open forum for discussion of contemporary dilemmas, not as a vehicle with any specific political or intellectual agenda.

Poverty and Power Research Initiative (PPRI) (2007-)
This program is an effort to study the relationship between extreme poverty and the nature of the national decision making process in the countries of the developing world. PPRI grew out of activities initiated during the 2007-8 EPIIC colloquium under the guidance of IGL Scholar-Practitioner Jose Maria Argueta. Students have conducted on site research in Guatemala and the Philippines, as well as in the US.

The Oslo Scholars Program (2010-)
The Oslo Scholars Program, an initiative of the Oslo Freedom Forum and the Institute for Global Leadership at Tufts University, seeks to offer undergraduate students who have a demonstrated interest in human rights and international political
issues an opportunity to attend the Oslo Freedom Forum and work with some of the world’s leading human rights defenders and activists. The Forum, now in its third year, will provide students with invaluable networking and learning opportunities.

Program on Narrative and Documentary Practice (2011–)
The Program for Narrative and Documentary Practice, directed and founded by award-winning photojournalist Gary Knight, gives students the skills to explain the world around them to the people around them. The program teaches students to shape global issues into multi-media stories that are narrative and compelling. The Program does not training journalism students. It takes students interested in politics, history, economics, international relations, conflict resolution, technology and engineering—students who wish to engage in the world—and teaches them storytelling and journalism. But it is a particular kind of storytelling, one that involves immersion in a subject and produces captivating works that draw on video, photography and writing. The program annually offers an introductory course in the fall, a seminar in the spring and a summer, on-site workshop, along with organizing public lectures for the campus throughout the year.

Pugwash International Student Chapter (2011–)
In 2011, coming out of the EPIC topic “Our Nuclear Age,” the IGL began a student chapter of Pugwash International. The program is a forum for students and faculty to discuss and debate the ethical and normative dimensions of science, technology and public policy.

Academic and Support Services
Library Resources at Tufts
The Tufts University libraries support the educational and research programs of the university by serving students, faculty, and staff. On the Medford/Somerville campus are the Tisch Library serving the schools of Arts & Sciences and Engineering; the Edwin Ginn Library of the Fletcher School of Law and Diplomacy; and the Department of Digital Collections and Archives, which manages the university's growing digital collections and houses the university’s archives. The Hirsh Health Sciences Library serves the Tufts health sciences schools on the Boston campus. The Webster Family Veterinary Medical Library serves the Grafton campus.

The Tufts libraries share one Integrated Library System (ILS). The online catalog provides access to resources physically and virtually available within the Tufts libraries and beyond. The resources of these libraries include over 3 million bibliographic items: books, journals, videos, music CDs, microforms, slides, pamphlets, and government publications. Along with the catalog of the libraries’ rapidly expanding collections, each library’s website hosts a state-of-the-art array of electronic databases, links to other websites, systems and services including a body of research tools accessible from each library’s home page using any Web browser. Web resources are selected by the libraries for their value to Tufts faculty and students and include a substantial number of electronic resources: over 40,000 electronic journals, which contain full-text articles, in over 400 electronic databases and indexes, and over 100,000 electronic books.

Students and faculty can also gain access through the university libraries to the resources of the eighteen academic and research libraries belonging to the Boston Library Consortium and, through interlibrary loan, to library collections throughout the country and abroad.

Tisch Library
The Tisch Library provides support for the instructional and research needs of the Schools of Arts & Sciences and Engineering. The physical facilities of the Tisch Library consist of the Tisch and the Lilly Music Library, and reading rooms for biology, chemistry, and physics, a universitywide Geographic Information Systems (GIS) Center, a Media Center with a new state-of-the-art Digital Design Studio (DDS) and The Tower cafe.

Special collections include the library of Hosea Ballou 2d, the Ritter collection of musicology, the P.T. Barnum collections, the Bolles collection of English history, and other rare books and manuscripts.

These special collections are housed in the Digital Collections and Archives Department on level G of Tisch Library (http://dca.tufts.edu/index.html).
The Irene Eisenman Bernstein Media Center contains facilities for viewing over 22,000 DVDs, laserdiscs, slides, films, videotapes, audiotapes, streaming video and the state-of-the-art Digital Design Studio (DDS). The DDS consists of 6 IMACs with software for video editing, sound editing and image manipulation to support course assignments, a presentation room for sharing and discussing projects with others and knowledgeable staff to provide assistance and technical support as needed. Loaner recording equipment is also available.

The Lilly Music Library is located in the Granoff Music Center connected to the Aidekman Arts Center across from the Sophia Gordon Residence Hall. The Lilly Music Library provides a modern and comfortable environment to access musical scores, sound recordings (including a very popular CD collection of over 25,000), and books on music, music periodicals covering a wide range of musical genres, and a growing number of sophisticated electronic resources for music study, including audio databases.

For more information on Tisch library services and collections, visit http://www.library.tufts.edu/Tisch.

Edwin Ginn Library, The Fletcher School
The Edwin Ginn Library of The Fletcher School is one of the largest specialized libraries in the field of international affairs. The library’s collection of primary and secondary reference and research materials has been developed with careful attention to the content of The Fletcher School curriculum and the research interests of students and faculty. The library contains over 120,000 volumes and 250 current periodicals, serials, and foreign newspapers. It has League of Nations and United Nations documents, and publications from numerous international organizations in print and online.

Ginn Library has substantial collections in the fields of international law and organizations; human rights; economic and political development; international energy resources and environmental matters; international security and peacekeeping; conflict negotiation; international business and finance; and the uses of the sea and outer space.

Librarians offer workshops throughout the year on research techniques and effective use of electronic resources. The library sponsors book talks on new faculty and student publications, and hosts exhibits of interest to the Fletcher community. Special collections donated to The Fletcher School include the Edward R. Murrow Collection; the John Moore Cabot Collection; the Philip Kingsland Crowe Collection; and the Walter Wriston Collection.

For more information visit http://www.library.tufts.edu/ginn/.

Hirsh Health Sciences Library, Boston Campus
The Hirsh Health Sciences Library (HHSL) is the primary library of the Tufts University Boston Campus, including the Schools of Medicine, Dental Medicine, the Sackler School of Graduate Biomedical Sciences, the Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy, the Jean Mayer U.S.D.A. Human Nutrition Research Center on Aging at Tufts University, and Tufts- New England Medical Center.

The HHSL maintains collections in medicine, dental medicine, nutrition, veterinary medicine, and supporting collections in the basic sciences. Tufts University libraries jointly provide access to approximately 15,800 ejournals; 6,170 of these titles are in the fields of health sciences. The library’s Special Collections Room includes works on the history of science and medicine, imprints prior to 1914, and historical artifacts. Relocated in 1986 to the Arthur M. Sackler Center for Health Communications and renamed the Hirsh Health Sciences Library in 2005, the library provides a broad range of print and electronic resources to support the Tufts Health Sciences Schools of the Boston Campus. The library undertook a two-phase major renovation project during 2004 and 2005 to meet the expanding technological and study needs of the schools it serves. Its 49,000-square-foot space seats 360 comfortably for individual or group studying. Classrooms, microcomputer labs and seminar rooms are equipped with current media presentation units for teaching and studying. Public computer workstations and nomadic and wireless computing capabilities are available throughout the library for studying or searching the Tufts Network and Internet.

For more information, visit http://www.library.tufts.edu/hsl/index.html http://www.library.tufts.edu/hhsl/.
Academic and Support Services

UIT offers access to the university wide email system, and access to the Internet. Information Technology Services (ITS) on the Medford campus provides support for students to check the status of their accounts or deal with account management issues at the computing center at Eaton Hall during walk-in hours, via telephone and email, or by appointment. UIT also supports numerically intensive research and scientific computing by providing access to high-performance cluster computing.

Information Technology Services (ITS) maintains several computer labs on the Medford campus for both teaching and course work and for general use computing. The ITS Computing Center in Eaton Hall is open to all Tufts University students, faculty, and staff. With over 85 computers and a wealth of software available, the computer lab serves as a useful resource to the Tufts community.

The ITS Instructional Lab at Eaton Hall, located in Room 208, is a PC Lab with 18 workstations available for teaching. The ITS Instructional Lab at Eaton Hall must be reserved for classes. The Mark Computer Lab in the basement of Tisch Library is also available as an instructional lab and can be reserved on a space available basis by contacting the ITS Training Department. The Mark Lab is primarily used for ITS Training Courses. The ITS Instructional Lab at Braker Hall, located in the lower level in Room 002, is a Macintosh lab available for teaching. More information about these computer labs and the other services ITS offers can be found at http://a.se.tufts.edu/its/.

Students should also check with their departments, many of which make their own computing facilities available for use by their students.

Teachers’ Resources

Writing Fellows Program

The Writing Fellows Program unites faculty and students to enhance the quality of student writing. Professors and courses participating in the program receive the support of Writing Fellows, highly trained undergraduate tutors who assist students with writing in designated courses. Nominated by faculty and selected through a competitive application process, Writing Fellows are assigned to particular classes related to their major fields of interest. They work closely with the same 12-15 students on drafts of papers and oral presentations.

Webster Family Library, Grafton Campus

The Webster Family Library, located in the Franklin M. Loew Veterinary Medical Education Center, contains the largest collection of clinical veterinary medicine literature and resources in New England. It includes materials on medicine and surgery for large, small, and exotic animals; animal welfare; wildlife diseases and ecology; infectious diseases; conservation medicine; laboratory animal science; and veterinary practice management.

The 7,000 volume John A. Seaverms Equine Collection, covering all aspects of horsemanship, is one of the largest of its kind. With representative titles covering five centuries, the collection provides valuable insight into the role of the horse through the ages. It is especially strong in horse racing, hunting, and the equestrian arts. See http://wiki.uit.tufts.edu/confluence/display/johnasevernsequinecollection/home for more information.

A state-of-the-art computer laboratory provides students and faculty with an extensive array of personal computing options and specialized user training as well as expanded access to a wide range of electronic resources. For more information, visit www.library.tufts.edu/vet/

Digital Collections and Archives (DCA)

Encompassing the university archives and managing the Tufts digital library, the DCA supports the teaching and research mission of the university through creation and maintenance of digital library collections and the tools to access those collections. It collects, organizes, preserves, and makes available records of permanent administrative, legal, and historical value in fulfillment of its mandate as the depository of archival and historical materials. The DCA provides records management services to administrative offices in all divisions and departments of the university. For more information, visit http://nils.lib.tufts.edu/.

Computer Services

Within Arts and Sciences, and Engineering, computer services are offered on the Medford/Somerville campus both by University Information Technology (UIT), the university’s central computing organization, and by Information Technology Services (ITS), a schools based computing organization.
throughout the semester. Professors participating in the program receive training and feedback on creating effective writing assignments, responding to student writing, and integrating other aspects of sound writing pedagogy into their courses. The program aims to foster the process of writing by making time and energy for review and revision. Its basic philosophy is that writing is a process and must be taught, learned, and practiced as such. Peer-to-peer collaboration within the writing process works across the curriculum and throughout the university to make students at Tufts better, more engaged writers. The Writing Fellows Program is sponsored by the Academic Resource Center, and the ARC staff is also available to consult with professors, departments, and teaching assistants about any issue related to writing pedagogy. For more information, visit [http://uss.tufts.edu/arc/writingresources/wf](http://uss.tufts.edu/arc/writingresources/wf) or contact the Director of the Academic Resource Center at 617-627-4345.

**Technology and Teaching**

Technology continuously alters what we know, just as it changes how we learn and how we express what we think we know. When used effectively, computers and other technologies can enrich the classroom experience and promote learning at all levels. Bernhard Martin (German, Russian, and Asian Languages and Literatures) is available to consult faculty members and departments wishing to incorporate new technologies for both research and teaching purposes. For more information, contact [Bernhard.Martin@tufts.edu](mailto:Bernhard.Martin@tufts.edu).

Trunk is Tufts new online environment designed to facilitate teaching, learning, and assessment at Tufts. Trunk enables the sharing of knowledge and new models of collaboration within and across disciplines, at Tufts and beyond. It is powered by Sakai, an open source collaboration and learning environment that has been developed by the educational community. Sakai is used at over 350 schools around the world to support teaching, learning and scholarly activity both inside and outside the classroom. Trunk is the version of Sakai that has been configured and customized to meet Tufts University’s diverse needs. For more information see: [http://sites.tufts.edu/trunksupport](http://sites.tufts.edu/trunksupport)

**Center for Interdisciplinary Studies**

The Center for Interdisciplinary Studies (CIS) brings together a group of programs that share a common interest in the application and integration of diverse perspectives and methodologies in order to better understand our world.

The center is committed to building links between programs, developing new courses, training faculty to employ interdisciplinary approaches in the classroom, sponsoring speakers and conferences, and promoting interdisciplinary research. Center staff also serve as a clearinghouse for information on interdisciplinary activities on campus. Programs directly administered through CIS are:

- Interdisciplinary Studies Major
- Latin American Studies
- Middle Eastern Studies

Other academic programs affiliated with the center include:

- Africa in the New World
- American Studies
- Asian Studies
- Biochemistry
- Biopsychology
- Cognitive and Brain Sciences
- Communications and Media Studies
- Community Health
- Environmental Studies
- Experimental College
- International Literary and Visual Studies
- International Relations
- Judaic Studies
- Latino Studies
- Leadership Studies
- Medieval Studies
- Multimedia Arts
- Peace and Justice Studies
- Urban Studies
- Women’s Studies

For more information, visit the CIS website at: [http://cis.tufts.edu/](http://cis.tufts.edu/)

**Engineering Project Development Center**

The Engineering Project Development Center (EPDC) is a facility at Tufts University that supports the undergraduate engineering curriculum.
This facility is a start-to-finish project center which enables students to take their projects from the initial “idea stage” to the final “product and presentation stage.”

In the Teamwork Area, students work in their project development groups brainstorming their ideas and accessing information from the Tufts main library as well as over the internet. After finalizing their design plans, they move to the Computational Design Studio. This is where the real design work takes place, as students apply their CAD skills to their project design on state-of-the-art PC workstations.

As the use of computers in engineering continues to increase, it is important that engineering students are able to develop intuitive, practical skills through hands-on testing and application of their ideas. After building and testing their prototypes, students can use the Conference Room to present their project to other students, faculty and industry worldwide.

Our facilities, of course, are for use for everyday study and homework assignments as well. For more information, please see http://ase.tufts.edu/epdc or call 617-627-2402.

Academic Resource Center
The Academic Resource Center, located in Dowling Hall, provides academic assistance to students who wish to study more effectively. Free peer tutoring in any subject is available during designated drop-in hours and by appointment in Dowling Hall, in the residence halls, and around campus. Students may obtain a tutor by accessing the online tutor finder on the ARC website.

In addition to tutoring, undergraduate tutors conduct review sessions before examinations in a large number of courses and organize study groups for interested students. They also conduct workshops on study strategies and exam preparation.

Writing assistance is available for undergraduate and graduate students at any stage of the writing process. Writing tutors hold tutoring appointments and drop-in hours for students seeking assistance with writing assignments, personal essays for applications, and larger projects such as senior theses and dissertations. Oral communications tutors help students improve their presentation skills.

ARC staff and Time Management Consultants are available to provide individualized support for students who are having academic problems or who wish to obtain advice about study strategies, exam anxiety, motivation, or time management.

For more information, visit http://uss.tufts.edu/arc or call 617-627-4345.

Services for Students with Disabilities
Tufts University is committed to providing support for all students so that they may achieve their academic potential. The university welcomes applications from students with disabilities and assures them that the university will provide access to all programs for which they are qualified.

Specific assistance is provided for students coping with serious documented illness (medical and mental health) and those with documented learning disabilities, attention deficit disorder, or impaired hearing, speech, vision, or mobility.

Information about resources to assist students with disabilities and procedures for arranging reasonable accommodations can be obtained through the Program Director of Disability Services in the Academic Resource Center at Dowling Hall and the website listed at the bottom of this entry.

Each student’s program of study is given individual attention to take personal needs into account with respect to academic assistance. The center will arrange academic support services such as readers, tutors, note takers, extra time on exams, and exam proctors.

Special effort is made to make possible participation in extracurricular activities and encourage personal development and independence.

Questions about Tufts policy may be addressed to the Academic Resource Center. For more information, see http://uss.tufts.edu/arc/disability or call 617-627-2000.

Career Services
Tufts Career Services offers resources and programs for undergraduates, graduate students, and alumni in the School of Arts and Sciences and the School of Engineering. We help students with all facets of career development and job search by providing individual career counseling, job and internship listings, on-campus interviews with recruiters, résumé critiques, career fairs, alumni presentations, networking opportunities, interviewing preparation,
Prior to registration, each student is required to submit a fully completed health form that includes a medical history, physical examination results (for undergraduates only), and immunization history. Tufts University policy requires that each student have medical coverage under an accident/sickness insurance plan with benefits comparable to the university’s student plan. The university offers a comprehensive plan at a reasonable cost for students and, if necessary, their spouses/partners and children.

All full-time students are automatically charged for the Tufts student accident/sickness insurance plan. If students are covered under their parents’ or other private insurance plan and they do not want the university’s student plan, it may be waived by submitting a waiver form to the Health service prior to the waiver cutoff date. For a complete explanation of the health fee, see Expenses. For more information, visit: http://ase.tufts.edu/healthservice/

Health Education
The Alcohol and Drug Program uses an integrated, multi-pronged approach to substance use, misuse, and abuse on campus. Focus is placed on the personal and the individual as well as the environmental factors that influence alcohol and drug use in an effort to promote wellness in our community and to optimize the academic success of our students.

Program offerings include prevention education, outreach and training programs, addiction counseling, support group services, assessments by a professional clinician, treatment referral and information, support for family members and children of addicts, information on policies and procedures, and opportunities for student leadership and campus dialogue.

The Health Education Program is located at the Tufts Health Service, 124 Professors Row. For more information, call 617-627-5495.

Counseling and Mental Health Service
The Tufts University Counseling and Mental Health Service (CMHS) is located at 120 Curtis Street, and is open Monday through Friday from 9:00 a.m. to 5:00 p.m. CMHS is staffed by professionally trained counselors who have special expertise in working with college students. Our
goal is to help students address their concerns and build on their strengths, in order to make the most of their college experience. Although we do provide services for students in mental-health crises, we make every effort to assist students before their concerns may develop into more serious problems.

At CMHS, we care about protecting students’ privacy, and believe that counseling is most effective when students feel comfortable speaking openly with their counselor. We abide by professional codes of ethics regarding confidentiality, as well as by state and federal laws protecting Private Health Information.

Counseling services are provided to eligible students at Tufts free of charge. This includes full time, undergraduate students, and those graduate students who are covered by the comprehensive health fee. If students are seen for psychiatric medication, the initial consultation with the prescribing clinician is free of charge. Subsequent visits can be charged to insurance, or paid for out of pocket.

Additionally, CMHS offers after-hours crisis intervention counseling in the case of potentially dangerous or life-threatening mental health emergencies.

CMHS also provides information and applications for graduate and professional school tests, including the Miller Analogies Test. For more information, visit http://ase.tufts.edu/counseling/.

Services for Undergraduate Commuter Students

For the incoming undergraduate student who commutes from his/her residence, it is very important to have a home base on campus. The Hillside House is a place to connect with other commuters during their time at Tufts. We encourage commuters to get involved in the mainstream of campus social life.

Tufts offers a number of resources to students in an attempt to make commuter life be a welcoming and comfortable experience. The Hillside House, located at 32 Dearborn Road in Somerville, is the headquarters and a home-like environment for the commuting population. The fifteen-room house has facilities for cooking, recreation, studying and occasional overnight stays. It serves as a gathering place for commuters throughout the day and night. It is a great location to stop in, rest or study in between classes or to have a study group in the house on campus. The commuter house has individual lockers so that students may keep their belongings safe in between classes. Hillside House is always open, while school is in session, for all undergraduates who commute from home. Staying on campus at the house maybe an important resource for students when traveling between home and campus during the winter months when weather conditions make traveling difficult. The university employs two co-managers who reside in the house whenever school is in session. They are responsible for making arrangements for commuting students to stay overnight and to plan special events for the commuting population. Students may stay overnight as often as they wish, provided space is available.

Founded in 1963, the Off-Hill Council is the campus organization for commuters. The council is responsible for coordinating academic, athletic and other special events for commuters and may include other residential students.

For more information, contact the coordinator in Dowling Hall at 617-627-3158.

Campus Life

The Office for Campus Life at Tufts University seeks to build community and inspire the growth of the whole student by being a catalyst in the lives of students through a support system of guidance, compassion, service, and leadership. The Office for Campus Life, located in the Mayer Campus Center, fosters the growth and development of students in the areas of leadership and programming, and assists students in planning and coordinating a broad range of social, cultural, and educational programs.

Students looking for opportunities to become involved on campus with affiliated student organizations should visit http://ocl.tufts.edu. Students also have the opportunity to join student organizations by attending the Student Organization Fair—held every year following the first day of classes both fall and spring semesters.

More information about the Office for Campus Life or events on campus is available at the Information Booth, 617-627-3145; the Office for Campus Life 617-627-3212; and online at http://ocl.tufts.edu.
**International Center**
The International Center provides immigration advising and visa documentation for approximately 1,000 students, faculty, and research scholars representing more than 100 countries on all campuses. Additionally, the office provides counseling and advising services to undergraduate and graduate students as needed. A small emergency loan fund exists to assist students in financial need.

The International Center issues visa documents to nonimmigrant students, faculty, and research scholars. Tufts is legally required to report to the U.S. Citizenship and Immigration Services (USCIS) when students or faculty/research scholars fall out of compliance with the USCIS regulations. For detailed information on the Student and Exchange Visitor Information System (SEVIS), refer to the website, [www.tufts.edu/programs/sevis](http://www.tufts.edu/programs/sevis).

The International Center coordinates a number of activities throughout the year, including an undergraduate preorientation program for new international students and for a number of American first-year students. This program is run by undergraduate volunteer host advisors who are both international and American. The center, in conjunction with the International Club, organizes an annual weeklong intercultural festival in the spring semester. The center serves as advisor to the International House (a special interest house) and the International Club.

The center also provides programs for graduate international students. The Intercultural Conversation Program is available for graduate students who wish to meet with a partner on a regular basis to practice spoken English and to develop a friendship.

The I-Center works closely with the Office of Career Services to provide workshops designed specifically for international students. These workshops cover interviewing skills and provide an introduction to American slang. An annual international alumni networking event provides an opportunity for international students and alumni to engage with one another as students plan their future careers.

The center is located at 20 Sawyer Avenue. For more information, visit [http://ase.tufts.edu/icenter](http://ase.tufts.edu/icenter), call 617-627-3458, or fax 617-627-6076.

**Africana Center**
Founded in 1969, the Africana Center works to enhance the university’s academic mission to ensure that students of diverse African descent clearly understand how they can have access to a variety of academic, cultural and student resources that encourages them to have a successful Tufts experience and prepares them to be leaders for a wide range of professional experiences. Working closely with academic departments, the Advising Deans, Student Services personnel, the Office of Admissions, Career Services, and Black alumni, the staff of the Center provides valuable information, advice and services to students of diverse backgrounds, ethnic affiliations, genders, sexual identities, and religious affiliations.

The Center works to implement programs designed to encourage and support the intellectual and individual growth and awareness of all Tufts Undergraduates including the Black Women’s Collective, Black Men’s Group, Peer Advisor and Ready to Go Programs and Annual Orientation Retreat for incoming freshmen. The Center also provides lectures, workshops, concerts and films, as well as a range of additional activities and programming that reflect and celebrate the intellectual and cultural tradition of Black people in the Diaspora.

The Center serves as a resource for student organizations including the Pan African Alliance (PAA), the Caribbean Club, African Student Organization (ASO), the Black Women’s Collective, Black Men’s Group, BlackOut, Envy, Emerging Black Leaders Symposium (EBLS), ONYX literary magazine, and the residential unit, Capen House.

All students are invited to visit the Africana Center (8 Professors Row). There is a library with resource materials and a computer lab for student use.

For additional information or to be added to the listserv, contact the Africana Center by phone 617-627-3372, fax 617-627-3382, e-mail africana@tufts.edu, or visit [http://ase.tufts.edu/africana](http://ase.tufts.edu/africana).

**Asian American Center**
The Asian American Center, founded in 1983, is a resource for the university and the Asian/Asian American communities and fosters a supportive environment for the academic and personal development of students through its programs and
services. The center recognizes the mono- and multi-racial East Asian, Southeast Asian, and South Asian cultures and identities present in the Tufts community, and advocates for students to ensure a successful college experience.

The center sponsors educational and cultural programs (often in collaboration with other centers/offices, academic departments, and student organizations) focusing on issues and topics pertaining to Asians in the United States and the diaspora. The Peer Leader Program, a yearlong leadership training program, is coordinated through the center, and annual programs include the Georges Island community building outing for first-years, Discover Asian America (a community learning opportunity in Boston’s Chinatown), alumni networking events, Day of Remembrance, and Asian American Jeopardy, and Asian American Month, recognized nationally during May but celebrated in November at Tufts.

The center has a resource area (study space with computers and wifi) and offers meeting space and many opportunities for intercultural learning among students of different Asian ethnicities.

The director provides academic and personal advising on course selection, majors and careers, transition to college, and identity formation and development, and works with other offices to ensure that Asian/Asian American student needs are being met.

The center staff works with student groups through the Pan Asian Council, a collaborative of presidents from the Asian student organizations (Asian Community at Tufts, Chinese Students Association, Filipino Cultural Society, Hawaii Club, Hong Kong Students Association, Japanese Culture Club, Korean Students Association, Taiwanese Association of Students at Tufts, Thai Club, Tufts Association of South Asians, and Vietnamese Students Club.) The director also serves as advisor to the Asian American House (Start House), a residential unit.

The center is located in Start House, 17 Latin Way. For more information, visit http://ase.tufts.edu/asianam/, call 617-627-3056, or e-mail asianamcenter@tufts.edu.

**Latino Center**

The Latino Center, founded in 1993, provides resources for the Latino student population at Tufts. The center’s primary mission is to create a supportive environment for students by offering programs and services that build a strong Latino community on campus.

In collaboration with the Association of Latin American Students (ALAS), the center coordinates Latino Heritage Month in October. Programs throughout the year include the Latino Peer Leader Program and Retreat for first-year students, Latina Women’s Group, Mujeres and the Latino Men’s Group.

The center offers a friendly space for studying, group meetings, or informal conversation. Resources include a computer lab; a library of books, periodicals, and videos reflecting Latino culture and experience; and a bulletin board of job listings. A newsletter, Noticias, is published by the center.

The director offers academic, career, and personal advising focusing on a wide variety of topics such as course selection, cultural identity issues, discrimination, family concerns, culture shock, and successful adaptation to the university environment. The director is the advisor to ALAS and to La Casa, the residential house on campus.

The Latino Center is located at 226 College Avenue. For more information, visit http://ase.tufts.edu/latino center or call 617-627-3363.

**Lesbian, Gay, Bisexual, Transgender Center**

Tufts LGBT Center is a welcoming and safe space which is open to the entire campus community. Founded in 1992, the Center offers a mix of social and educational events, training, and advising for all Tufts students, faculty, and staff on issues related to sexuality, sexual orientation, and gender identity/expression. The Center space includes a television lounge, computer room, library and study area. The Center staff coordinates an LGBT and ally student speakers’ bureau called Team Q, and also hosts peer-led discussion groups for Queer Students of Color and Allies (QSOSA), Bisexual Students, Queer Women and Queer Men. Working closely with the other centers on campus as well as with academic departments, the LGBT Center always strives to examine sexual orientation and gender within the context of other identity markers (such as race, ethnicity, nationality and religion).

The Center’s Queer Peers program trains LGBTQ peer mentors to serve as resources for questioning and coming out students. The Center
Beyond attending programs, The Women’s Center Student Collaborative, SAGE (Students Acting for Gender Equality) is a great way for students of any gender to get involved. SAGE’s mission is to foster a safe and collaborative community in which we educate ourselves on gender issues while gaining the skills necessary to productively work towards gender justice at Tufts and beyond. The Women’s Center also offers a mixed gendered First Year Peer Mentoring Program that is open to all first year students, is led by SAGE peers, and addresses common challenges and gender specific issues related to transitioning to college.

The director represents the special concerns of women on university committees and advocates for students regarding issues related to gender. The director also provides academic and personal advising on course selection, majors and careers, transition to college, and identity formation and development.

The Center is located at 55 Talbot Avenue. Monday–Friday, 9–5 p.m. Late night study: M, T, and W from 7–11 p.m. Please stop by, join our elist, email womenscenter@tufts.edu or find us on facebook!

Religious Centers

The Office of the University Chaplain—Goddard Chapel

A Center for All Faiths

The university chaplain is housed in Goddard Chapel which stands near the heart of the university campus. Acknowledging the religious diversity of campus life, the chaplaincy is open to people of all faiths for study, fellowship, counseling, and services. The chaplaincy serves as an umbrella for the activities of campus religious organizations, promoting dialogue and understanding among people of different faiths. To this end, it sponsors interfaith programs of a religious, cultural, and ethical nature.

In addition to the university chaplain, four other chaplains are approved by the campus ministries.

The University Chaplain, Reverend David O’Leary, has an office in Goddard Chapel. The Roman Catholic chaplain, Lynn Cooper, the Protestant chaplain (to be announced) and the Muslim chaplain, Nails Baloch all have offices in the Tufts Interfaith Center, 58 Winthrop St., Medford. Catholic mass is celebrated on Sundays in Goddard Chapel. Sunday Protestant services are
in Goddard Chapel, and there are Muslim prayer services on Fridays in the Interfaith Center. The Jewish chaplain, Rabbi Jeffrey Summit, who serves as the Director of Hillel on campus, has an office in the Granoff Family Hillel Center on Capen St. and Jewish services are held there. Other denominational groups and religious organizations also contribute to religious life on campus. For more information call 617-627-3427 or visit www.tufts.edu/chaplaincy.

The Catholic Chaplaincy
The Catholic Chaplaincy is located in the Tufts Interfaith Center, 58 Winthrop St., one block down from Carmichael Hall in Medford. There is a wide range of programs and events: Welcome BBQ in the fall, fall and spring retreats, monthly dinners, faith formation, RCIA, Confirmation, eucharistic minister and lector training, service outreach opportunities, Lenten Simple Suppers, Easter Brunch, and the annual end-of-the-year BBQ. Lynn Cooper is the Catholic Chaplain. During the academic year, mass is celebrated at 10 p.m. in Goddard Chapel, and there is a bi-weekly mass schedule for Lent.

For more information, call 617-627-2044 or e-mail at lynn.cooper@tufts.edu.

The Jewish Chaplaincy
The Jewish Chaplaincy is located in the Granoff Family Hillel Center on the main quad next to Miller Hall. Striving to create a sense of Jewish community, Hillel involves undergraduate and graduate students, faculty, staff, and administrators.

In addition to serving the needs of the Jewish community on campus, Hillel is a resource for information about Judaism. Student leadership works closely with the professional staff to conduct a variety of activities, including religious observances, cultural celebrations, study groups, and lectures. Jewish religious services of all levels of observance are provided every Shabbat and on holidays, and Kosher Shabbat dinners are held every week. Board meetings are held on Mondays and everyone is welcome and encouraged to get involved. Rabbi Jeffrey Summit, Hillel Director and Chaplain, is available to students, staff and faculty for counseling or informal conversation. For more information call 617-627-3242 or visit www.tuftshillel.org.

The Muslim Chaplaincy
The Muslim Chaplaincy at Tufts is located in the Interfaith Center, 58Winthrop St. and provides an opportunity for Muslim students to gather for worship, social activities, and education. There are weekly prayer services at 1 p.m. on Fridays during the academic year. The Muslim Chaplain, Naila Baloch, is available to the community. For more information, call 617-627-2065 or e-mail naila.balo ch@tufts.edu.

The Protestant Chaplaincy
The Protestant Chaplaincy is located in the Tufts Interfaith Center, 58 Winthrop St. Pastoral counseling and activities are provided by the Protestant Chaplain. During the academic year, a student-involved, general Protestant worship service is held at 7p.m. in Goddard Chapel with a fellowship time proceeding worship. The Protestant Chaplaincy relates to the Protestant Student Fellowship, the Tufts Christian Fellowship, the Capen Fellowship, and the Tufts Unitarian Universalists. For more information, call 617-627- 2097 or email kerrie.har than@tufts.edu.

Tufts University Art Gallery
The Tufts University Art Gallery animates the intellectual life of the greater university community through exhibitions and programs that explore new, global perspectives on art and art discourse. The Gallery is dedicated to conceiving and presenting contemporary art exhibitions and educational programs that support the academic and civic ideals of the University. These ideals include excellence, intellectual and social engagement, and the balance of scholarship and teaching (including mentoring relationships). The University and the Gallery value a worldview that encompasses both local and global perspectives.

The gallery fosters cultural exchange by creating a forum for art produced by emerging and midcareer artists, by featuring new work of established artists, and by exposing fresh interpretations and scholarship on art.

The gallery’s major constituencies include current students, faculty, and staff on the Tufts Medford/Somerville campus; the School of the Museum of Fine Arts, and the other Tufts schools; the greater university community of alumni, parents, donors, friends, and neighbors; the regional and...
The athletic program at Tufts provides students with numerous opportunities to compete in intercollegiate, intramural, and club sports, and to engage in general recreation. The intercollegiate athletics program at Tufts features thirty-one Varsity sports, most of which compete as members of the NCAA Division III, ECAC, and NESCAC. Ten Club Sports offer competitive sport that is student run and open to all who are interested. The athletic program also offers a wide selection of intramural sports that are designed to be more recreational in nature as well as a wide variety of health and fitness related activities.

The Gantcher Family Sports and Convocation Center offers a 200-meter track and four indoor tennis courts, the Ames Human Performance Center features the Lunder Fitness Center. Cousens, Chase, and Jackson Gymnasiums, Carzo Cage, Hamilton Pool, and several fields are also available for recreation except when varsity teams are practicing or hosting events. Permission and reservations may be required for some facilities. Schedules of the various recreational facilities are published in a brochure available from the athletic program office in Cousens Gymnasium. For more information, visit http://ase.tufts.edu/athletics or call 617-627-5005.

Balch Arena Theater
Every year the Balch Arena Theater presents three major productions in which students are encouraged to participate. Opportunities are provided for involvement in acting, directing, design, stage management, and arts administration.

Up to ten undergraduate-directed productions are mounted annually. The summer season offers students a chance to work in Magic Circle Theater for children ages eleven to fifteen, and in Creative Arts for children ages seven to ten. The Balch Arena Theater is the home of many of the university’s drama groups, including Pen, Paint, and Pretzels, the drama honor society.

The theater also hosts dance performances, lectures/demonstrations, and other special events. The theater’s box office, costume shop, and scene shop employ students to support the many theater-related activities throughout the year.

Athletic Facilities
The athletic program at Tufts provides students with numerous opportunities to compete in intercollegiate, intramural, and club sports, and to engage in general recreation. The intercollegiate athletics program at Tufts features thirty-one Varsity sports, most of which compete as members of the NCAA Division III, ECAC, and NESCAC. Ten Club Sports offer competitive sport that is student run and open to all who are interested. The athletic program also offers a wide selection of intramural sports that are designed to be more recreational in nature as well as a wide variety of health and fitness related activities.

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Osher Lifelong Learning Institute
The Tufts Osher Lifelong Learning Institute is a vibrant organization for “experienced” people from the Greater Boston communities and beyond offering stimulating classes, led and supported by its membership, determining its own curriculum, policies, procedures and fees. You can explore academic and general interest classes in an atmosphere that is intellectually challenging but without the stress of tests and grades. Members share the common bonds of intellectual curiosity and the experience of their generation. They are self-motivated learners, eager to share opinions, knowledge and expertise with humor and mutual respect.

Established in 2001 as the Tufts Institute for Learning in Retirement and sponsored by the Tufts Alumni Council and the College of Arts and Sciences, in 2005 the Institute received endowment support from the Bernard Osher Foundation. In recognition of its affiliation with the Osher Foundation, the Institute became the Tufts University Osher Lifelong Learning Institute (Osher LLI).

Membership is open to adults for a minimal annual membership fee. Benefits of Membership includes: priority registration for classes; reasonably priced classes and events; classes at our affiliate Brookhaven at Lexington on Wednesdays and at the Medford campus Mondays and Fridays; offering four semesters annually—fall, winter, spring and summer; e-learning study groups; tuition
assistance, if needed; Lunch and Learn series fall and spring only; OUTLOOK, our newsletter; opportunity to submit an original work for SPOTLIGHT, our annual literary magazine; travel with the alumni Travel and Learn program; attend special University and Brookhaven lectures and events; opportunity to lead your own study group (training and support available); use of Tisch Library and its many resources; participation in any of our EDventure (interest group) activities; weekly E-News; and meet new friends with similar interests.

For more information about Osher LLI visit our website: [www.ase.tufts.edu/lli](http://www.ase.tufts.edu/lli); give us a call: 617-627-5699 or email Marilyn Blumsack, Director: [marilyn.blumsack@tufts.edu](mailto:marilyn.blumsack@tufts.edu).
Departments, Programs, and Research Centers

In the following section you will find descriptions of departments and programs, with their degree requirements and lists of their faculty. Descriptions of courses can be found online at http://studentservices.tufts.edu/registration.htm.

Detailed course descriptions can also be found in handbooks issued by individual departments and programs. These handbooks often describe courses not listed in the online bulletin.

A supplement, available prior to registration each semester at Student Services, lists the courses that are offered the following semester, including their credit value and the times they are offered. Up-to-date information about which courses are offered in a given semester is available online at https://webcenter.studentservices.tufts.edu/courses/main.asp.

Courses numbered 1 through 99 are for undergraduate credit only; those numbered 100 through 199 are for both undergraduate and graduate credit; those numbered 200 through 299 are intended primarily for graduate credit, although undergraduates may take these courses for credit with permission of instructor and/or department.

Africa in the New World

DIRECTOR:
Associate Professor Paula Aymer, Department of Sociology

The Africa in the New World (ANW) interdisciplinary minor encourages students to explore Africa, the African diaspora in the Americas, and global Africa through a range of perspectives. Particular emphasis is given to three intellectual currents: diaspora studies, identity construction, and globalization. ANW sponsors an annual Africa-Diaspora lecture series to showcase these themes.

REQUIREMENTS
To fulfill the ANW minor, students must choose five courses from at least three departments or programs of the university, bringing to bear the knowledge and perspectives of various disciplines on a single subject. In addition to the five courses, a student is required to complete an appropriate project, such as a thesis, an oral presentation, or a performance, which integrates the knowledge and methodologies of the disciplines involved and must include a written analysis. The integrative project will be given one-half or one course credit under ANW 90, 91 or 95 designations and will receive a letter grade. Students interested in a Major concentration may propose a major in Interdisciplinary studies with a focus on African Studies, African American Studies, or African Diaspora Studies.

Note: Courses cannot count for both the ANW interdisciplinary minor and the African/African American culture option.

For more detailed information, please visit the website http://ase.tufts.edu/anw/.

American Studies

DIRECTOR:
Associate Professor Christina Sharpe, American Studies/English

FACULTY:
Professor Frances Sze-Ling Chew, Biology/American Studies
Associate Professor Deborah Pacini Hernandez, Anthropology
Associate Professor Eric Rosenberg, Art and Art History
Associate Professor Alice Trexler, Drama and Dance
Associate Professor Adriana Zavala, Art and Art History
Assistant Professor Heather Curtis, Religion
Assistant Professor Katrina Masuoka, Political Science
Assistant Professor Stephan Pennington, Music
Assistant Professor Sarah Sobieraj, Sociology
Assistant Professor Ichiro Takayoshi, English
Assistant Professor Sabina Vaught, Education
Assistant Professor Monica White Ndounou, Drama and Dance
Senior Lecturer Edith Balbach, Community Health
Senior Lecturer Jeanne Dillon, American Studies
Senior Lecturer Jean Wu, American Studies
Lecturer Steven D. Cohen, Education
Lecturer John F. Hodgman, American Studies/Entrepreneurial Leadership
Lecturer Kevin Irwin, Community Health
Lecturer Ronna Johnson, English/American Studies
American Studies is a quintessentially interdisciplinary endeavor that seeks to cut across disciplinary boundaries in its analysis of U.S. society and culture. It examines the historical, social and cultural underpinnings of what is commonly referred to as the ‘American experience.’ The intellectual signature of Tufts’ American Studies Program is its emphasis on how the intersecting dynamics of race, ethnicity, class and gender produce dissimilar “American” experiences for individuals and groups, and how political, economic and social systems shape crucial public domains such as education, health, work and the environment. We are also interested in critical studies of representation in the performing arts, the visual arts, humanities and popular culture. American Studies has also been increasingly concerned with the ways that other countries perceive and interpret the United States, and conversely, how people in the United States perceive and represent their neighbors inside and outside of the Western hemisphere.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
To graduate with a Bachelor of Arts degree in American Studies, a student must complete ten courses: one Foundation course AMER 10-20; one Integrative Seminar AMER 181-190; one History course with at least two-thirds of course content focused on some aspect of the U.S.; five credits that form a thematic interdisciplinary cluster, including at least two courses at the 100+ level. The last two courses are American Studies 198 Senior Special Project, taken in either the fall or spring semester of the senior year, plus one elective course (content to coordinate with coursework of interdisciplinary cluster); OR American Studies 199 Senior Honors Thesis, taken in both semesters of the senior year. The Senior Special Project or Honors Thesis must integrate or expand some aspect of the interdisciplinary cluster’s theme. Note: AP courses may not count towards the American Studies major. A grade of C- or better is required for a course to count toward the major.

Interdisciplinary clusters: The major themes of the American Studies Program can be explored in depth through interdisciplinary clusters. Students select five courses from departments throughout the university which will relate to a cluster’s theme. (Students may also design their own cluster by writing a proposal describing the theme, intellectual rationale and course content for the proposed cluster.) The capstone SSP or HT must expand on some aspect of the cluster.

The director and other faculty advisors work closely with students in tailoring individual programs reflecting particular interests and providing a framework for the continued integration of knowledge at more advanced levels.

The American Studies program office is located at 110 Eaton Hall. For more information, call 617-627-2311, visit http://ase.tufts.edu/amstud, or e-mail the program administrator, Kathy.Spagnoli@tufts.edu.

Anthropology

Associate Professor Rosalind H. Shaw, Chair;
Sociocultural anthropology, ritual and religion, gender;
West Africa, South Asia
Professor David M. Guss, Aesthetic anthropology, theory, cultural performance, myth and ritual, folklore, popular culture, urban anthropology, placemaking; Latin America
Professor Deborah Pacini Hernandez, Sociocultural anthropology, popular music and culture, comparative Latino studies; Spanish Caribbean
Associate Professor Stephen M. Bailey, Biological and nutritional anthropology; the Americas, Southeast Asia, China
Associate Professor Sarah Pinto, Medical anthropology, gender, reproduction, health care, body, caste; India
Assistant Professor Amahl Bishara, Media, human rights, the state, journalism, democracy, the politics of place, knowledge production: the Middle East
Lecturer Lauren Sullivan, Prehistoric archaeology, origins of complex societies; Mesoamerica
Lecturer Cathy Stanton, Tourism, heritage, museums, myth and ritual, cultural performance, public history

Anthropology provides an understanding of the forms and causes of worldwide human diversity. This diversity, both cultural and biological, is seen in the widest comparative and evolutionary framework. Customarily, the field is divided into cultural anthropology (a social science) and physical
anthropology (a natural science). Cultural anthropology in turn is separated into ethnology, archaeology, and linguistics. The anthropology major enables students to view contemporary social and biological problems from an anthropological perspective as part of a liberal education. It also prepares students to pursue graduate studies in anthropology or related fields.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

Major in Anthropology
Ten courses, including: One Gateway (introductory level) sociocultural anthropology course (Anthropology 10-39), One Gateway biological anthropology or archaeology course (Anthropology 40-59), Anthropology 130, Seven additional anthropology courses, at least one of which must be an area focused course numbered below 160, and two of which must be upper-level seminars (Anthropology 160-189). Please note: We strongly recommend taking the theory course (Anthropology 130) in the junior year. A maximum of two courses cross-listed in other Tufts departments may be counted toward the Anthropology major. Students must achieve a grade of C- or better for a course to count for credit toward the major. The department encourages majors to explore the possibility of undertaking a senior thesis.

For more detailed information, please visit the website http://ase.tufts.edu/anthropology.

Applied Physics
(FOR DEGREE REQUIREMENTS, SEE PHYSICS.)

Arabic
(SEE GERMAN, RUSSIAN, AND ASIAN LANGUAGES AND LITERATURES.)

Archaeology
DIRECTOR:
Professor R. Bruce Hitchner, Classics

PROGRAM COMMITTEE:
Professor David M. Guss, Anthropology

Professor Jack Ridge, Geology
Associate Professor Stephen M. Bailey, Anthropology
Associate Professor David M. Gute, Civil and Environmental Engineering
Associate Professor Steven W. Hirsch, Classics
Lecturer Lauren A. Sullivan, Anthropology

Our understanding of the majority of the human past, for which the written record is nonexistent or minimal, is based on a material record. Archaeology examines this record of human activity to recover and interpret information about past societies and cultures. There are many subdisciplines within archaeology, reflecting both the specific periods and regions into which we divide the human past, and the different approaches to the recovery and analysis of the evidence about that past.

Tufts offers a general interdisciplinary undergraduate major in archaeology, incorporating courses from the arts, humanities, natural sciences, and social sciences. Ideally, a student in archaeology will combine course work with firsthand experience in recovery, conservation, and interpretation of material remains.

The archaeology program has affiliations with several summer field schools, including the Murlo excavation in Italy, the Talloires/Mt. Musièges excavation in France, and with the Center for Materials Research in Archaeology and Ethnology (CMRAE) based at M.I.T., an alliance of Boston-area programs that offers specialized course work in the scientific dimensions of archaeological study. Students are encouraged to take appropriate course work at the universities affiliated in the Boston Consortium (Boston College, Boston University, Brandeis University).

UNDERGRADUATE CONCENTRATION REQUIREMENTS

The undergraduate major consists of eleven courses, including a core of four required courses plus a selection of seven elective courses distributed among three broad subject areas. Students are advised to complement their archaeology major with a second major or a minor in a related field. Archaeology majors are strongly encouraged to pursue some independent research project or field research component in archaeology either as part of a senior thesis or summer scholar's project. This can include, among other things, participation in excavations, museum work, archaeological preservation, etc.
Tufts offers several curricular paths for students interested in the study of architecture and the built environment. The various curricular paths in architectural studies provide opportunities to study architecture as a liberal arts or engineering major or minor and, if desired, help prepare for future graduate study and careers in architecture and other allied disciplines, such as landscape architecture, urban planning, and historic preservation. All the curricular paths emphasize architecture’s interdisciplinary character and take full advantage of course offerings in both the College of Liberal Arts and the School of Engineering.

In addition to the courses of study outlined below, students interested in pursuing graduate studies in architecture should take one or two semesters of calculus (Mathematics 11–12) and physics (Physics 11–12), and are encouraged to take Drama 10 for public speaking.

For more information, contact Professor Daniel Abramson (Art and Art History) or Professor Masoud Sanayei (Civil and Environmental Engineering).

COLLEGE OF LIBERAL ARTS
Major in Architectural Studies
The Department of Art and Art History offers an interdisciplinary major in Architectural Studies for students in the College of Liberal Arts that teaches students understanding of the built environment from multiple perspectives through the development of basic skills in analyzing, interpreting, engineering, designing, and engaging imaginatively and actively with the current and historical built environment.

The built environment is defined broadly, from stage scenery and interior design to civil engineering and urban planning, in order to reflect historical and contemporary experience and to encompass the richness of Tufts’ curricular assets, which besides the offerings of the Art and Art History Department, include the university’s School of Engineering, its graduate department in Urban and Environmental

ARCHITECTURAL STUDIES

Eleven to Thirteen courses distributed as follows:

I. Four courses in core curriculum
   1. Anthropology 39 (may substitute ANTH 20 or 27)
   2. Archaeology 30 (cross-listed as ANTH 50; formerly ANTH 30)
   3. Archaeology 27 (cross-listed as CLS 27 and FAH 19)
   4. Geology 2

II. Seven Courses from History, Natural/Social Sciences and Archaeology (Only courses which have direct content, theoretical, or technical relevance to archaeology are included here. However, other courses in History, the Natural Sciences, and Archaeology may be considered for inclusion if approved by a faculty advisor in the archaeology program. Transfer courses from other institutions limited to two unless approved by advisor.)
   a. Two History courses taken from Cls 26, 37, 38, 47, 85, 86, 142, 143, 144, 146, 147, 185, 186; Hist 6, 13, 17, 23, 40, 50, 51, 72, 76, 105, 148, 149, 151
   b. Two Natural/Social Science courses taken from Anth 40, 49 (formerly 20), 126, 132, 150, 182; Biology 7 or 10 (student may not count both Bio 7 and Bio 10), 143, 144; Chem 2, 8; Geo 32

III. Interdisciplinary Capstone (optional)—Archaeology 193 and 194 or other approved courses

GRADUATE PROGRAM
Master of Arts in Classical Archaeology
(SEE CLASSICS FOR PROGRAM DESCRIPTION.)
For more detailed information, please visit the website http://ase.tufts.edu/archaeology.

Architectural Studies
DIRECTOR:
Associate Professor Daniel M. Abramson, Art and Art History

ADVISORY COMMITTEE:
Robyn Gittleman, Director, Experimental College
Professor Rachel Bratt, Urban and Environmental Policy and Planning
Professor Masoud Sanayei, Civil and Environmental Engineering
Policy and Planning, and its affiliation with the School of the Museum of Fine Arts. The Architectural Studies major totals twelve courses: seven core classes and five multidisciplinary electives. The major’s core curriculum provides a foundation in art and architectural history and theory, in engineering and design, and in the humanistic and social science aspects of architecture. Architectural Studies majors then design their own elective program of upper-level study from designated courses in architectural history, studio art, civil engineering, the humanities, and the social sciences. (Students may take no more than three half-credit courses towards the major’s requirements.) As a capstone, senior majors in their final semester complete a senior integrative project, either as an independent research project or an internship in a professional office. Several opportunities exist for study abroad. Completion of an intensive summer architectural design course from an accredited architecture school (e.g. Career Discovery at Harvard’s Design School) exempts majors and minors from the FAM 22 requirement. For more information see http://ase.tufts.edu/art/architecture/.

Required Core Curriculum
1. **Art History 8** Introduction to Architecture, 1400 to the present
2. **Art History 1** Art, Ritual, and Culture
3. **FAM22** Architectural Design Engineering
4. **Engineering 2, 5, 23, 39, or 80; or Engineering Science 5 or 25**
5. **Humanities/Social Sciences core courses**
   (Area C* below)
6. Upper-level architectural history class
   (FAH 115, 120, 125, 126, 127, 190, 191, 195, 196, 290, or 192 [architecture]; or CE 120)
7. **Art History 98** Architectural Studies Senior Project Seminar

Multidisciplinary Electives
Five courses chosen from at least three of the following four disciplinary areas.
A. Architectural and Art History
B. Studio Art
C. Humanities and Social Sciences
D. Civil Engineering

A. ARCHITECTURAL AND ART HISTORY
   **Art History 2** Art, Politics, and Culture
   **Art History 15/115** Japanese Architecture
   **Art History 19** Classical Archaeology
   **Art History 21/121** Early Islamic Art
   **Art History 23** Art and Politics of the Middle Ages
   **Art History 25/125** Medieval Architecture
   **Art History 34/134** Renaissance Venice
   **Art History 90/190** British Architecture
   **Art History 92** Special Topics [architecture]
   **Art History 95/195** Boston: Architecture & Urbanism
   **Art History 103** Aegean Archaeology
   **Art History 104** Greek Art and Archaeology
   **Art History 105** Tyrrenian Archaeology
   **Art History 106** Roman Art and Archaeology
   **Art History 120** Armenian Art, Architecture, and Politics
   **Art History 126** Monasteries and the Arts
   **Art History 127** Cathedrals and the Arts
   **Art History 192A** Armenian Architecture and Sculpture
   **Art History 196** Museum Architecture
   **Art History 199** Senior Honors Thesis
   **Art History 290** Seminar in Architectural History and Theory
   **Civil Engineering 120** The Art of Building
   **Drama 119** History of Style and Décor

B. STUDIO ART
   **FAM 20** Design: Foundation
   **FAM 21** Design: Intermediate to Advanced
   **FAM 22** Architectural Design
   **FAM 23** Intermediate to Advanced Architectural Design
   **FAM 26** Drawing: Foundation
   **FAM 39** Graphic Design
   **FAM 63** Perspective Drawing
   **FAM 77** Sculpture: Foundation
   **FAM 93** Watercolor
   **Drama 19** Principles of Theatrical Design
   **Drama 21** Computer-Assisted Design
   **Drama 29** Scene Painting
   **Drama 93-02** Architectural Styles and Designs
   **Drama 94-02** Advanced 3-D Design
   **Drama 125** Scene Design

C. HUMANITIES AND SOCIAL SCIENCES
   (Courses with asterisk count toward core requirement.)
   ***Anthropology 20** Global Cities
   **Anthropology 128** Mesoamerican Archaeology
   **Anthropology 183** Urban Borderlands
   ***Anthropology 186** Theatres of Community
   **Economics 30** Environmental Economics and Policy
   **Economics 127** Urban Economics
SCHOOL OF ENGINEERING
BSE Degree Program in Architectural Studies
A bachelor of science in engineering with a program in architectural studies is available for students interested in a professional career in architecture or in historical, aesthetic, and engineering aspects of buildings and other structures. This program, offered jointly by the department of civil and environmental engineering and the department of art and art history provides a solid foundation in both the technical aspects of structural systems and the aesthetic and functional characteristics of buildings from an architectural and art history point of view. The flexibility of the BSE degree allows greater concentrations in both art history and studio courses than would otherwise be possible, providing a coherent basis for graduate work in architecture or design. The faculty advisor for this program is Professor Masoud Sanayei.

Degree Requirements
A minimum of 38 courses is required, to be distributed in the following categories:

1) Eleven introductory courses as required for the professional degrees in engineering (see school of engineering information);
2) Engineering science: Engineering Science 5, 9, 88, and an engineering science elective;
3) Civil engineering: Civil and Environmental Engineering 2, 22, 42; plus three from Civil and Environmental Engineering 24, 25, 81, 123, 124, 125, 146, 149, and 188;
4) Architectural Studies: Art History 1, 8, 98, 198; two studio courses, including architectural design (FAM 22) and either FAM 20, 26, or 63; one elective (selected from disciplinary areas A, B, C above);
5) Humanities and social science: five courses;
6) Free electives: five courses

UNDERGRADUATE MINOR PROGRAMS
Architectural Studies
The Department of Art and Art History offers a minor in architectural studies for both liberal arts and engineering students consisting of five courses:

Art History 1 Art, Ritual, and Culture
Art History 8 Introduction to Architecture, 1400 to the present
Studio Art (FAM 22; or 20, 23, 26)
Engineering 2, 5, 23, 39, or 80 or Engineering Science 5 or 25
Upper-level architectural history class
(FAH 115, 120, 125, 126, 127, 190, 191, 195, 196, 290, 192 [architecture]; CE 120)

Note: Engineering students minoring in architectural studies replace the engineering requirement with an approved course from the major’s disciplinary areas A, B, or C (see above)

Architectural Engineering
The Department of Civil and Environmental Engineering offers a minor in architectural engineering for students in the College of Liberal Arts. The faculty advisor for this minor is Professor Masoud Sanayei.

Art and Art History

Associate Professor Daniel Abramson, Chair, Director of Architectural Studies, architecture from Renaissance to contemporary, architectural theory, and architecture and urbanism of Boston
Professor Andrew McClellan, Dean of Academic Affairs for Arts & Sciences, baroque-roccoco art, museum history and theory
Professor Peter Probst, Contemporary African art, critical theory, visual culture, and globalization—on leave fall 2011
Associate Professor Cristelle Baskins, Italian Renaissance art, secular painting and narrative, and gender and women’s studies

Associate Professor Ikumi Kaminishi, Asian art and architecture, Buddhist painting, and narrative studies—on leave spring 2012
Associate Professor Christina Maranci, Director of Graduate Studies, Arthur H. Dadian and Ara Oztemel Associate Professor of Armenian Art and architecture, the art and architecture of the Transcaucasus (principally Armenia); Byzantine art and architecture; cultural interaction; historiography; the Vienna School.
Associate Professor Eric Rosenberg, American art, modern and contemporary art—on leave fall 2011
Associate Professor Adriana Zavala, modern and contemporary Latin American art, art of Mexico, and gender and women’s studies
Assistant Professor Eva Hoffman, Islamic art and architecture, portable arts
Assistant Professor Monica McTighe, Director of Undergraduate Studies and Museum Studies Advisor, Art since 1960, including the history of installation and site-specific art, photography, film and video
Assistant Professor Karen Overbey, Medieval art and architecture, relics and reliquaries, early Irish art

ASSOCIATED FACULTY/AFFILIATES
Susan Lush, Associate Dean of Academic Affairs, School of the Museum of Fine Arts
Patrick Carter, Tufts Studio Arts Coordinator, School of the Museum of Fine Arts
Amy Ingrid Schlegel, Director Tufts University Art Gallery; Curatorial studies

What is art history? Every human culture has produced art, and the study of visual imagery affords unique insights into our own culture and those of other nations and peoples around the globe.

The history of art is the study of form and meaning in the visual arts from their beginnings to the present. The wide range of courses offered by the department aims to familiarize students with important artists, traditions, and themes in world art and visual culture. Some courses will focus on individual achievements, great artists and schools, while others will explore significant periods, such as the renaissance or the 1960s, or themes that cut across time and cultures, for example, the treatment of nature or the fear and destruction of images (Inconoclasm and Iconophobia).

As a humanistic discipline, the history of art emphasizes scholarly investigation and critical analysis over technical training. However, majors
are encouraged to take studio courses as part of their program and to take advantage of Tufts’ affiliation with the School of the Museum of Fine Arts.

Significant portions of the western visual tradition are covered by our courses, on the introductory and advanced level, as are the arts of Africa, Asia, Islam, Latin America and the Middle East. In recent years the discipline of art history has been shifting away from the study of “great” artists and their works toward more contextual appreciation of how works of art function and are valued in society.

In addition to courses on individual figures, you will find courses offered on a range of thematic, often interdisciplinary subjects, such as iconoclasm, mentioned above, or colonialism, gender, monuments, museums, pop culture, and the role of art critics.

UNDERGRADUATE PROGRAM

The department offers the bachelor of arts degrees in art history and in architectural studies.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

For the bachelor of arts degree in art history, ten courses are required for the major: Art History 1, 2, and 100; two courses pre-1700; two courses post-1700; and three electives (one approved related course e.g. history, literature, studio art). At least one of the courses in the major must be at the 200 level. Art History AP score of 5 exempts majors from FAH 1 and 2 requirements; two other art history courses are taken in their place.

Prospective majors are encouraged to take FAH 1 and FAH 2 early in their undergraduate program and to discuss a course of study with an undergraduate advisor when they begin to consider majoring in art history, preferably in their sophomore year. FAH 100 is a required course and is normally taken in the senior year.

UNDERGRADUATE MINOR PROGRAM

For the minor in art history, five courses are required, choose EITHER:

FAH 1, two courses pre-1700, and two electives, with at least one course taken at the 100 level.

OR:

FAH 2, two courses post-1700, and two electives, with at least one course taken at the 100 level. For inquiries about the art history major or minor, please contact the department at 617-627-3567 or website http://ase.tufts.edu/art/undergraduate.asp.

ARCHITECTURAL STUDIES PROGRAM

The Department of Art and Art History offers an interdisciplinary major and minor in architectural studies for students interested in the study of architecture’s history, theory, and social practice. The major’s core curriculum provides a foundation in art and architectural history and theory, in engineering and design, and in the humanistic and social science aspects of architecture. Architectural studies majors then design their own elective program of upper-level study from designated courses in architectural history, studio art, civil engineering, the humanities, and the social sciences.

In spring of the senior year, all majors complete an integrative project, either as individual or honors study, or through an internship.

For the minor in architectural studies, students take five designated courses from the major’s core curriculum, which provide a basic foundation to architecture’s interdisciplinary aspects.

The architectural studies program is designed specifically to provide a broad-based liberal arts education in architecture. It may also help students prepare for graduate study and careers in architecture and other allied disciplines, such as landscape architecture, urban planning, and historic preservation. For details, see full description under Architectural Studies. The faculty advisor for architectural studies is Associate Professor Daniel Abramson. For more information please see the website http://ase.tufts.edu/art/architecture/. Or email daniel.abramson@tufts.edu.

STUDIO ART

Studio Art Courses

Through a cooperative agreement between Tufts University and the School of the Museum of Fine Arts, Boston (the Museum School) students may elect courses in studio art for credit at Tufts. Classes are taught both on the Tufts Campus, in studios located in Lane Hall and Jackson Gym, and at the Museum School in Boston. More than eighty studio credits are offered to Tufts students.
Entering graduate students choose one of the following tracks:
• M.A. in Art History
• M.A. in Art History and Museum Studies

Applicants for the master of arts degree are expected to have a bachelor’s degree or its equivalent. The undergraduate major in Art History is the best preparation for this program, but not mandatory. Applicants who have undergraduate degrees in other fields but have minored in Art History or have taken three or four undergraduate art history courses are also encouraged to apply. The following is required for application: a 500 or above Verbal GRE general test score, a recent writing sample, a personal statement, three letters of recommendation, and reading knowledge of a foreign language.

**Master of Arts: Art History**

The master's program in art history is designed to provide a broad historical understanding of the visual arts, in addition to developing critical thinking and methodological skills. Students engage these ideas through course work, seminars, independent research, and teaching experience. Students complete their degrees either by writing a thesis or submitting two qualifying papers; either option involves an independent research topic designed by the student in consultation with a faculty advisor. M.A. students from our program are successful in applying to and completing Ph.D. programs.

**Requirements for the M.A. degree in Art History:**
• Reading knowledge of one foreign language upon entry
• Eight semester courses in art history at the advanced (100 and above) level
• Historiography and Methodology (FAH 101)
• At least three (3) seminars
• Optional one second foreign language course in lieu of a lecture course
• Comprehensive Exam
• At least one semester TA or RA (subject to enrollments and funding)
• M.A. thesis or two Qualifying Papers

For inquiries about the program, please contact the Director of the Graduate Program, Associate Professor, Christina Maranci at (Christina.maranci@tufts.edu) or 617-627-5288.
Master of Fine Arts: Studio Art
The master of fine arts degree offers students concentration in the visual arts. Students may concentrate in a single medium or may work in an interdisciplinary manner, drawing on diverse studio offerings to expand upon their particular area of concentration. For more information on the program, please visit the School of the Museum of Fine Arts website at http://www.smfa.edu/program-overview or contact David Brown, Associate Dean of Academic Affairs - Graduate Programs - dbrown@smfa.edu.

Asian Studies
FACULTY COORDINATOR:
Associate Professor Elizabeth Remick, Political Science
Asian Studies is an interdisciplinary program that gives students an opportunity to study systematically the history and cultures of one of the world’s most important regions.

ASIAN STUDIES MAJOR
Eleven courses as follows:

a. An Asian language: 21, 22, 121, 122. Students who have placed out of one or more of these courses still need to take eleven courses to complete the major. They must either study a second Asian language through 122, or take extra Asian culture courses or Asian language courses beyond 122.

b. Six Asian Studies culture courses, which must include three from each of the following two groups:
   1. Anthropology, economics, political science, and history
   2. Art history, literature, music, drama, religion, and thought

One course in an affiliated field such as Asian American Studies or Middle Eastern Studies may be substituted in either of these two groups with the permission of the advisor, provided that it is directly relevant to a student’s category c project.

c. An independent thesis-writing course: Students must produce a thesis of creative work on an Asia related topic. The topic should be chosen in consultation with the student’s Asian Studies advisor, who should serve as his/her instructor
in a directed research, senior honors thesis, or other independent study course. A paper written for a seminar or colloquium may be used to satisfy the requirement, as long as this course is not one of the six Asian culture courses. The thesis will be graded by the advisor and another faculty reader. The latter need not be associated with the program. The program may organize opportunities for students to publicly present their research results.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
Major in Astrophysics
Four courses in astronomy more advanced than Astronomy 10; two courses in mathematics more advanced than Mathematics 13/18; four courses in physics more advanced than Physics 2 or 12, including Physics 13 and 64 or equivalent laboratory experience. One mathematics course may be replaced by approved advanced course in a related field. Research experience is strongly recommended.

UNDERGRADUATE MINOR PROGRAM
Minor in Astrophysics
The program requires the completion of five courses. The student takes Physics 11 and 12 (or 1 and 2) and any three courses from the following: Astronomy 21, 22, 101, 111, 112, 121, and 122.

GRADUATE PROGRAM
Advanced degrees (master's and doctoral) are offered in experimental radio astronomy and astrophysics. Additional advanced courses may be taken through a cooperative program with Boston University.

For more detailed information, please visit the website http://ase.tufts.edu/physics.

Astronomy
Professor Kenneth R. Lang, Astronomy
Assistant Professor Danilo Marchesini, Astronomy/Astrophysics
Assistant Professor Anna Sajina, Astronomy/Astrophysics
Senior Lecturer Robert F. Willson, Astronomy

The science of astronomy concerns the general picture of the universe in its broadest sense, from atoms to assemblages of galaxies. Courses in astronomy fall under the Department of Physics and Astronomy. Astronomy may be elected as a major field through a suitable Plan of Study. Students considering a career in astronomy or astrophysics, however, are urged to investigate the possibility of a joint major with physics or mathematics, or an undergraduate concentration in astrophysics.

Astrophysics
(FOR DEGREE REQUIREMENTS, SEE ASTRONOMY OR PHYSICS.)

Biochemistry
(FOR DEGREE REQUIREMENTS, SEE BIOLOGY OR CHEMISTRY.)

Bioengineering
Professor Mark Cronin-Golomb, Biomedical Engineering:
Optical instrumentation, laser tweezers, atomic force microscopy, nonlinear optics
Professor Sergio Fantini, Biomedical Engineering:
Biomedical optics, near-infrared spectroscopy, diffuse optical imaging
Bioengineering is the integration of physical, chemical, or mathematical sciences and engineering principles for the study of biology, medicine, behavior, or health. The bioengineering programs provide comprehensive education and research at the School of Engineering and the School of Arts and Sciences in collaboration with Tufts’ medical, dental, veterinary, and nutrition schools.

A number of part- and full-time degree programs and certificates are offered in the fields of biomedical engineering, biotechnology, and drug discovery and assessment. Biomedical engineering involves the application of state-of-the-art technology to device design and fabrication; biotechnology includes protein expression, folding and assembly, biomaterials and tissue engineering, and biofilms as examples; drug discovery and assessment includes disease markers, resistance mechanisms, and new drug discovery.

For information on programs in bioengineering, please contact the bioengineering center office at 617-627-2580.

UNDERGRADUATE PROGRAMS

Biomedical Engineering
(SEE BIOMEDICAL ENGINEERING FOR A DESCRIPTION OF THE PROGRAMS.)

Biotechnology
(SEE BIOTECHNOLOGY FOR A DESCRIPTION OF THE PROGRAMS.)

GRADUATE PROGRAMS

Graduate degree programs are tailored to the background and goals of the individual student. Degree programs may be pursued on a part-time or full-time basis. Master’s programs may be either course-based or thesis research-based. Doctoral programs may be pursued part-time, with a one-year residency requirement.

BIOENGINEERING FACULTY ADVISOR:
Associate Professor Kyongbum Lee, Chemical and Biological Engineering

The School of Engineering offers a Master’s degree program in Bioengineering. This interdisciplinary program provides a broad engineering and biotechnology curriculum, while offering a focus on a specific engineering track that best fits students’ interests and career choices. This combination gives our bioengineering graduates professional flexibility, a distinct competitive advantage in the ever-changing field of bioengineering.

The Bioengineering Master’s program has six tracks:

• Bioinformatics
• Biomaterials
• Biomechanical Systems and Devices
• Cell and Bioprocess Engineering
• Environmental Biotechnology
• Signals and Systems
Bioengineering Certificate Program

FACULTY ADVISORS:
Professor Sergio Fantini, Biomedical Engineering
Professor David L. Kaplan, Biomedical Engineering / Chemical and Biological Engineering

The booming biomedical industry demands skilled professionals whose expertise can cross traditional boundaries of science and engineering. Companies are seeking electrical engineers who understand the medical uses of diagnostic imaging instrumentation, biotechnology professionals with training in tissue engineering to develop tissue implants, and mechanical engineers who are well-versed in biomaterials to design artificial joints.

The certificate in Bioengineering addresses this need through a highly interdisciplinary course of study that allows students to focus on biomedical instrumentation, biomedical optics, biomaterials/biotechnology and tissue engineering or other related areas of study. Courses are taught by faculty in engineering as well as experienced clinical professionals from Tufts’ health science schools.

The program is open to students with at least a bachelor’s degree in engineering, science, or health science.

With this certificate engineers can launch careers in biomedical instrumentation design. Clinical practitioners and technicians can shift...
Biology

Associate Professor Juliet Fuhrman, Chair; Immunology and parasitic diseases
Professor Joanne E. Berger-Sweeney, Neurobiology, Dean, School of Arts & Sciences
Professor Frances Sze-Ling Chew, Ecology, plant-insect interactions
Professor David E. Cochrane, Cell physiology, inflammation
Professor Susan G. Ernst, Developmental biology
Professor Michael Levin, Director of Tufts Center for Regenerative and Developmental Biology, morphological and behavioral information processing living systems
Professor Sara M. Lewis, Evolutionary and behavioral ecology
Professor Sergei Mirkin, White Family Chair in Biology, Molecular genetics
Professor Colin M. Orians, Ecology, plant-herbivore-environment interactions
Professor Jan A. Pechenik, Invertebrate zoology, marine invertebrate reproduction
Professor J. Michael Reed, Conservation biology, ornithology, behavior
Professor L. Michael Romero, Physiological endocrinology, physiology of stress
Professor Barry A. Trimmer, Henry Bromfield Pearson Professor of Natural Science; Neurotransmitters and receptors in insects, intracellular signals
Associate Professor Harry A. Bernheim, Organismal physiology, immunology
Associate Professor George S. Ellmore, Draupner Ring Scholar; Plant development, experimental plant morphology, anatomy
Associate Professor Catherine Freudenreich, Molecular biology and genetics
Associate Professor Kelly A. McLaughlin, Cell biology, cell signaling of organogenesis

Associate Professor Mitch McVey, Molecular biology, genomic instability
Associate Professor Philip T. B. Starks, Evolutionary dynamics of parasite and host populations
Assistant Professor Eric B. Dopman, Evolution and genetics of natural populations
Assistant Professor Stephen M. Fuchs, Biochemistry
Lecturer Michelle Gaudette, Molecular biology, gene regulation of development
Lecturer Susan Koegel, Cell biology and immunology
Research Associate Professor Dany S. Adams, The role of ion flux during morphogenesis of vertebrate embryos
Research Assistant Professor William Woods, Ecological physiology; biomechanics, energetics and temperature relations
Adjunct Professor David L. Kaplan, Biotechnology, biomaterials
Adjunct Associate Professor Mark Pokras, Department of Environmental and Population Health, Wildlife Medicine, Grafton campus
Adjunct Assistant Professor Jun Xu, Department of Biomedical Sciences, Grafton Campus

Biology is the scientific study of living organisms. Derived from the search for organized understanding of plants and animals in their natural environments, contemporary biology is increasingly successful in characterizing the basic molecular processes that are essential to all forms of life. Modern experimental studies on the origin, evolution, and physiological mechanisms of life are of profound philosophical importance and provide the underlying foundation for research in biology and for the teaching of biology. They also provide the basic knowledge used in applied fields such as medicine, biotechnology, and environmental biology.

Biology students should aspire to understand the central principles governing life processes at both molecular and higher levels. An increased comprehension of the problem-solving methods of science, as used within the laboratory and in the analysis of contemporary environmental and biosocial problems, should be a concomitant goal. Biology majors, especially those preparing for graduate work, are expected to learn how to critically evaluate original research literature. This can be done by enrolling in seminar courses that are designed to investigate topics by utilizing the primary literature. Small class sizes in seminars...
allow students to present papers and participate in class discussions.

Laboratories are available for study and research in selected areas of biochemistry, neurobiology, immunology, endocrinology, molecular biology, cell biology, genetics, physiology, plant sciences, behavior, and ecology. Controlled-environment rooms, marine and freshwater aquaria, and a greenhouse are among the diversified resources for the experimental work. Fieldwork experience at marine laboratories or other biological stations is encouraged.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

Major in Biology
Ten courses, including eight courses in biology numbered 13 or higher (with the exception of Biology 16, 91, 93, and 94), at least six of which must be completed with a grade of C- or better, and either two courses in chemistry (chosen from Chem 1, 2, 11, 12, 51, 52) or two courses in physics (chosen from Physics 1, 2, 11, 12). At least four of the eight biology courses must be taken at Tufts. It is recommended that students take at least one seminar course. The eight biology courses must include Bio 13, 14 and 41 and at least one course each in the biology of cells (Group A), biology of organisms (Group B), and biology of populations (Group C). The particular group in which a course is categorized for this purpose is indicated at the end of the course description. Absence of such designation indicates that the course cannot be used to fulfill any group of the distribution requirements, although the credits are applicable toward the total required for a major.

At least two courses in biology must include a laboratory study, and one of these must be above the level of Biology 14. In fulfilling this laboratory requirement, students may choose from among those biology courses for which laboratory is specified in the course description, with the following exceptions: Biology 93, 94, and 187.

Biology 193 or 194 may be used as only one of the eight biology courses for completion of the concentration requirements; on approval of a petition to the department, a maximum of two such courses may be applied toward the major. In no case may more than one of these courses be used to fulfill the laboratory requirement.

The foregoing is a minimal program. For many purposes, additional preparation in related sciences and calculus is needed. A course in calculus and laboratory courses in both organic chemistry and physics are strongly advised. A course in statistics should be included when advanced work in ecology, evolution, or genetics is anticipated. Medical schools require a year of general chemistry and a year of organic chemistry—both with laboratory, a year of physics with laboratory, and a year of biology with laboratory. Calculus is recommended. Students planning to enter graduate school or seeking employment in biological research should take more than the minimal number of laboratory courses required for the biology major.

To be eligible for a summa cum laude degree, a student must have done biology research equivalent to Biology 93. Comparable research in related fields will also be considered. Participation in the Thesis Honors Program will entail writing and defending a thesis based on laboratory or field research.

Major in Biochemistry
Chemistry 1, 11, or 16; and Chemistry 2 or 12; Chemistry 51/53, 52/54, 31, 42, 171, and 172; Biology 13, 41, 50 (or Chemical and Biological Engineering 163), and 105. Course work in mathematics (Mathematics 12) and physics (Physics 2 or 12) is required as prerequisite to Chemistry 31. The following sequence of courses is suggested for students concentrating in biochemistry: first year, Chemistry 1 (or 11) and 2 (or 12), Biology 13; second year, Chemistry 51/53, 52/54, Biology 50 (or Chemical and Biological Engineering 163); third year, Chemistry 31 and 42, Biology 41 and 105; fourth year, Chemistry 171/172.

Major in Biopsychology
An interdepartmental major for students particularly interested in neurobiology and behavior. Required courses: five in biology and five in psychology. These include the following: Cells and Organisms (Biology 13), General Genetics (Biology 41), Animal Behavior (Biology 130), one course in animal physiology (chosen from among Biology 75, 110, 115, 116, 134), and an elective in biology; Statistics (Psychology 31 or Biology 132), Experimental Psychology (Psychology 32), Brain and Behavior (Psychology 103), plus two electives from among Psychology 26, 27, 29, 40, 41, 42, 45,
approved by the committee appointed to guide the student’s work. Courses taken at recognized marine laboratories or field stations may be offered for credit. No more than two credits may be transferred from another institution.

Research Master of Science Degree- A research master of science student must take six courses for letter grades (B- or better) including one required seminar (normally either Biology 243, Topics in Molecular and Cell Biology or Biology 244, Topics in Evolutionary Ecology). No more than one of these six may be guided individual study (Biology 293 or 294). Also required for the research master of science are two research courses (Biology 295 and 296) and preparation and successful defense of an original thesis. A student in a research master’s program is normally expected to serve as a teaching assistant for at least one semester.

Course-work Master of Science Degree- A course-work master of science student must take eight courses for letter grades (B- or better) including one required seminar (normally either Biology 243, Topics in Molecular and Cell Biology or Biology 244, Topics in Evolutionary Ecology). Students in the B.S.-M.S. combined-degrees program are normally required to prepare an original thesis.

The Department of Urban and Environmental Policy and Planning offers, in cooperation with the Department of Biology, a two-year interdisciplinary master’s degree focusing on environmental studies. For more information, see Urban and Environmental Policy and Planning.

Doctor of Philosophy
A candidate for the Doctor of Philosophy degree is expected to plan and undertake a program of advanced study and research in consultation with a faculty committee. The candidate is required to serve as a teaching assistant for at least two semesters.

During the first year, students are expected to complete at least two research rotations (Bio 253/254). Following completion, students must choose and be accepted into the laboratory of a faculty member under whose direction they will carry out their research and prepare their dissertations.

Entry into the Ph.D. degree program is not official until the candidate passes a qualifying procedure. The procedure includes a written
examination in the candidate's field of special interest and related areas, and the preparation and defense of a detailed written thesis research proposal.

The Department of Biology and the Department of Chemical and Biological Engineering offer a joint graduate degree program in biology/biotechnology. This program explores biological principles and problems with a chemical engineering perspective. For details, please contact the biology department or the chemical and biological engineering department.

For more detailed information, please visit the website [http://ase.tufts.edu/biology](http://ase.tufts.edu/biology).

Biomedical Engineering

Professor David Kaplan, Chair; Biopolymer engineering, biomaterials, tissue engineering, regenerative medicine

Professor Mark Cronin-Golomb, Optical instrumentation, laser tweezers, atomic force microscopy, nonlinear optics

Professor Sergio Fantini, Biomedical optics, near-infrared spectroscopy, diffuse optical imaging

Professor Fiorenzo Omenetto, Ultrafast nonlinear optics, medical optics

Associate Professor Irene Georgakoudi, Biomedical spectroscopic imaging and characterization, in vivo flow cytometry, biomedical instrumentation

Assistant Professor Lauren Black, Cardiovascular tissue engineering, tissue mechanics and visualization, computational modeling, myocardial infarction, regenerative medicine, cardiogenesis

Assistant Professor Catherine K. Kuo, Regenerative medicine, tissue engineering, stem cells, biomaterials, developmental biology

Assistant Professor Qiaobing Xu, Biomaterials, drug delivery, micro/nanofabrication, tissue engineering

Research Professor Barbara Brodsky, Collagen folding and degradation

Research Associate Professor Robert Peattie, Responses of cells and tissues to mechanical challenges

Research Assistant Professor Greg Altman, Ligament formation, impact of mechanical forces on human adult stem cell differentiation, bioreactor systems, in vitro tissue formation and development

Research Assistant Professor Bruce Panilaitis, Vaccine development, metabolic engineering, immunology

Research Assistant Professor Angelo Sassaroli, Infrared spectroscopy, functional brain activation

Adjunct Professor John Castellot, (Tufts University School of Medicine), Cellular and molecular biology, vascular systems

Adjunct Professor Ira Herman, (Tufts University School of Medicine), Cell movements required for cell division, differentiation of the body's organ systems, remodeling of tissues during disease processes

Adjunct Professor Robert Howe, (Harvard University), Human-machine interfaces, biomechanics, tactile sensing, human and robot manipulation

Adjunct Professor Krishna Kumar, (Department of Chemistry), Novel methods for the rational design and construction of artificial proteins, molecular enzymes, and self-assembling biomaterials

Adjunct Professor Michael Levin, (Department of Biology), Regenerative and developmental biology

Adjunct Professor Eric Miller, (Department of Electrical and Computer Engineering), Signal and image processing algorithms

Adjunct Professor John Richmond, (New England Baptist Hospital, Tufts Medical Center), Ligament formation, treatment of injuries of the anterior cruciate ligament, regulation and proliferation of growth factor expression in arthrofibrosis

Adjunct Professor Barry Trimmer, (Department of Biology), Central processing of sensory information by receptors, second messengers and synaptic networks in an insect model system, neural control of soft-bodied locomotion

Adjunct Professor Gordana Vunjack-Novakovic, (Columbia University), Transport phenomena, tissue engineering and bioreactors

Adjunct Professor David Walt, (Department of Chemistry), Bioanalytical chemistry, materials chemistry, biochemistry, and nanoscience

Adjunct Professor Pam Yelick, (Tufts University School of Dental Medicine), Molecular genetic analyses of craniofacial cartilage, bone, and tooth development

Adjunct Associate Professor Peter Bergethon, (Boston University School of Medicine/Tufts Medical Center), Computational neurology

Adjunct Associate Professor Luis Dorfmann, (Department of Civil & Environmental Engineering), Mechanical properties and behaviors of materials, couple field phenomena, fracture, cavitation and failure processes, characterization and modeling of soft materials

Adjunct Associate Professor James Harden, (University of Ottawa), Biomolecular assemblies, hydrogels, proteins, soft materials, computational biophysics, cell mechanics, complex fluids

Adjunct Associate Professor Carl Kirker-Head, (Tufts University School of Veterinary Medicine), Bone growth and
The biomedical engineer is responsible for design and development of the technology and devices that are at the heart of the far-reaching improvements in human health that have been occurring over the last few decades. These advances include better tools for understanding disease and health, as well as better ways to both treat disease and maintain health. The rapid expansion of the field of biomedical engineering is due to many factors, including 1) scientific and technological advances in the life sciences, materials science, and the engineering disciplines; 2) the increasing recognition of the role of interdisciplinary strategies to solve complex biomedical problems; and 3) the aging of the population leading to increasing healthcare needs and the associated demands and costs. The vision of the Biomedical Engineering Department is to promote integrative research, education, and entrepreneurship at the forefront of biomedical science and engineering. The mission of the Biomedical Engineering Department is to advance the field of biomedical engineering through an interdisciplinary approach to education, design, and research.

UNDERGRADUATE PROGRAMS

Bachelor of Science in Biomedical Engineering

The bachelor of science in biomedical engineering is a degree program that combines intensive training in design and research methods, techniques, and practical skills, with a solid math, science, and engineering curriculum to provide education with breadth and depth in the field. A key aspect of biomedical engineering is its interdisciplinary nature; introductory courses in mathematics, statistics, biology, chemistry, and physics, together with foundation/concentration engineering courses build the basis for creating the synergy among these disciplines that is required in the practice of biomedical engineering. The mission of the bachelor of science degree in biomedical engineering is to provide students with undergraduate educational experiences that provide a sound basis for professional practice in biomedical engineering, life-long learning, and leadership roles in the biomedical engineering field.

The curriculum leading to the bachelor of science degree in biomedical engineering is intended to prepare students to continue with graduate study either in biomedical engineering or medicine, or to enter professional practice as an engineer or designer of biomedical systems. The curriculum includes intensive instruction in math, sciences and engineering disciplines, as well as a unique integrated design and research experience covering sophomore to senior years, in which each student participates in interdisciplinary design/research teams to learn about open-ended biomedical engineering problems, and design approaches, research techniques, and testing methods to propose, implement, and evaluate solutions to these problems.

The student outcomes of the Bachelor of Science in Biomedical Engineering specify that, by the time of graduation, all graduates will be able to:

1. Apply fundamental knowledge of mathematics, statistics, physical sciences, biology, physiology, and engineering for the solution of problems at the interface of engineering and biology;
2. Make measurements on and interpret data from living systems, addressing the problems associated with the interaction between living and non-living materials and systems;
• Communicate effectively, work as part of a multidisciplinary team, and have an awareness of professional and ethical responsibilities to have a positive impact on society;
• Recognize the importance of life-long learning in order to expand one’s knowledge base;
• Participate in creative and integrative design projects and independent research projects.

On the basis of the program educational objectives of the Bachelor of Science in Biomedical Engineering, graduates of the program will:
• Be successful in tackling open-ended biomedical engineering problems in a quantitative and systematic fashion;
• Be motivated to continuously expand their knowledge, be creative and innovative in their contributions to the field of biomedical engineering;
• Possess the ability to perform, manage, or lead original engineering design and research projects in an ethical and professional manner; carry this out at the highest levels in private industry, research laboratories, medical school, graduate and professional schools.

Those students who are interested in applying for the Bachelor of Science in Biomedical Engineering must, by December of their freshman year, fulfill the requirement for Math 11, and take and complete for a grade at Tufts two of the following four courses (Chemistry 1 with lab, Chemistry 2 with lab, Physics 11 with lab, Physics 12 with lab), and submit an application (available at the department and on the department website) before December 1st of their freshman year. Of the students that will apply to the department, the 15 students obtaining the top cumulative grade point averages during the first semester of their freshman year will be admitted into the program. The department will notify students of their acceptance into the program during the winter break of their freshman year, after grades are posted for the fall term. A sample course schedule for the B.S.B.M.E. program (38 credits) is listed below.

First Year
FALL TERM
Mathematics 11
Chemistry 1 (+ lab)
Physics 11 (+ lab)

Sophomore Year
FALL TERM
Mathematics 13
Biology 13
Engineering Science 3
Engineering Science 5
Humanities or social sciences or arts elective
Biomedical Engineering 3 (half credit)

SPRING TERM
Mathematics 38
Chemistry 2 or Physics 12 (+ lab)
Biomedical Engineering 50
Engineering Science 7
Biomedical Engineering 4 (half credit)

Junior Year
FALL TERM
Biology 41
Engineering Science 8
Probability and Statistics elective
Engineering Science 121
Foundation elective
Biomedical Engineering 5 (half credit)

SPRING TERM
Biomedical Engineering 51
Biomedical Engineering 62
Biomedical Engineering 100
Humanities or social sciences or arts elective
Biomedical Engineering 6 (half credit)

Senior Year
FALL TERM
Biomedical Engineering 164
Biomedical Engineering 165 or concentration elective
Humanities elective
Biomedical Engineering 7

SPRING TERM
Biomedical Engineering 131 or concentration elective
Concentration elective
MINOR IN BIOMEDICAL ENGINEERING
The department also offers a minor in biomedical engineering, for which five credits are required. The requirements are the following five courses, which must all be taken for a letter grade:

1. Biomedical Engineering 50 Introduction to Biomedical Engineering
2. Biomedical Engineering 51 Introduction to Biophotonics
3. Biomedical Engineering 62 Molecular Biotechnology
4. Two Biomedical Engineering elective courses

GRADUATE PROGRAMS
The Department of Biomedical Engineering offers programs leading to the degrees of master of engineering (M.Eng.) for students seeking an education at an advanced level in biomedical engineering, and master of science (M.S.) and doctor of philosophy (Ph.D.) for students preparing for careers in which research is a central activity. Students can be accepted into either the M.Eng. program, the M.S. program, or directly into the Ph.D. program. A.M.E. or M.S. degree is not required for students to apply to the Ph.D. program. Ph.D. candidates may obtain an M.Eng. or M.S. degree during their study if the requirements for the degree are fulfilled. Students who receive the M.Eng. or M.S. degree and wish to continue their studies toward the Ph.D. need to be formally accepted into the Ph.D. program at that time.

The M.S. and Ph.D. programs in the Department of Biomedical Engineering are strongly research-oriented, with emphasis on independent research work reflected in the candidate’s thesis or dissertation. Because biomedical engineering is a multidisciplinary field, students are expected to work in collaboration with scientists in diverse fields including engineering, health, and life sciences. The required courses consist of foundation courses and elective courses. The purpose of the foundation courses is to provide a broad background in biomedical engineering, and to introduce the research activities in the department. The pur-
pose of the elective courses is to provide in-depth knowledge in specific areas of biomedical engineering as a solid basis for students to excel in their research work. It is advisable that M.S. and Ph.D. students first identify a field of interest and a research advisor, and then select elective courses around the research topic of choice. At the discretion of the research advisor, students who lack suitable preparation may be required to take additional undergraduate-level courses, and students who are already qualified may be exempt from some courses. Transfer of graduate course credits is also possible.

GRE and TOEFL (if applicable) are required for admission into the programs. Prospective students can obtain more admission information, financial-aid information and application forms at http://gradstudy.tufts.edu/.

Master of Engineering
The department offers a program leading to the master of engineering (M.Eng.) degree in biomedical engineering. The M.Eng. program is aimed at students who desire to acquire broad knowledge in biomedical engineering. The emphasis is on multidisciplinary interfaces in the areas covered by biomedical engineering.

Ten credits are required for the M.Eng. degree: two foundation courses (2 credits), seven graduate courses (7 credits), research seminars for at least two semesters (no credit), and a project (1 credit).

Master of Science
The department offers a program leading to the master of science (M.S.) degree in biomedical engineering.

Ten credits are required for the M.S. degree: two foundation courses (2 credits), three or more graduate courses—which can include special topics courses (3 to 4 credits), research seminars for at least two semesters (1 to 2 credits), and a thesis (3 credits).

Doctor of Philosophy
The department offers a program leading to the Ph.D. degree in biomedical engineering. Thirty credits are required for a Ph.D. with prior B.S. degree: three foundation courses (3 credits), graduate elective courses—may be special topics courses (at least 5 credits), research seminars for at least four semesters (2 or more credits), and a thesis (up to 20 credits). Twenty credits are required for a Ph.D. with prior M.Eng. or M.S. degree: three foundation courses (3 credits), graduate elective courses (at least 1 credit), research seminars for at least four semesters (2 or more credits), and a thesis (up to 14 credits).

For more detailed information, please visit the website http://engineering.tufts.edu/bme.

Biopsychology
(For Degree Requirements, See Biology or Psychology.)

Biotechnology

FACULTY ADVISOR:
Professor David Kaplan, Chemical and Biological Engineering, Biomedical Engineering

Biotechnology has applications in a number of diverse fields, including recent growth in applications in gene therapy, protein and tissue engineering, and bioremediation. The tools of biotechnology are now universally applied to both basic research efforts and to large-scale manufacturing processes, and the field is continuing to grow at a rapid pace.

SECOND MAJOR IN BIOTECHNOLOGY
This program is offered as a major only in conjunction with enrollment in a regular undergraduate major, ordinarily excluding interdisciplinary programs. The biotechnology program has been designed with two tracks: a science track for undergraduate students enrolled in the College of Liberal Arts, and an engineering track for undergraduate students enrolled in the School of Engineering.

Core Curriculum
Biology 1/Engineering Science 11 Introduction to Biology or Biology 13 Cells and Organisms
Biology 41 Genetics
Biomedical Engineering/Biology/Chemical and Biological Engineering 62/162 Molecular Biotechnology

One laboratory course from:
Biology 50 Experiments in Biology II
MINOR IN BIOTECHNOLOGY ENGINEERING

The minor in biotechnology engineering is offered to students in the School of Engineering and the College of Liberal Arts. Five courses are required for this minor.

One course from the following:
Biology 152 Biochemistry and Cellular Metabolism or Biology/Chemistry 171 Biochemistry I

Two courses from the following:
Chemical and Biological Engineering 161 Biochemical Separation
Chemical and Biological Engineering/162 Molecular Biotechnology
Chemical and Biological Engineering 166 Principles of Cell and Microbe Cultivation
Chemical and Biological Engineering 167 Metabolic and Cellular Engineering
Chemistry 135 Biophysical Chemistry

Up to two credits of research may be counted toward electives.

ENGINEERING TRACK

Two core courses:
Chemical and Biological Engineering 161 Protein Purification
Chemical and Biological Engineering 166 Principles of Cell and Microbe Cultivation

Four electives from:
Biology 103 Developmental Biology
Biology 104 Immunology
Biology 105 Molecular Biology
Biology 106 Microbiology
Biology 152 Biochemistry and Cellular Metabolism
CERTIFICATE PROGRAMS

Tufts Bioengineering and Biotechnology Center offers three graduate-level certificate programs to qualified students through the Office of Graduate Studies, and in conjunction with the departments of biology, chemical and biological engineering, and chemistry. The certificate programs can be completed on a part-time, nondegree basis by students who are seeking professional training in the field or preparing for a degree program. In most cases, courses taken as a certificate student can be transferred into a related master’s degree program. The programs are open to students who have already earned a bachelor’s degree. Four courses are required for each certificate.

Certificate Program in Biotechnology
Emphasizes molecular biology practices and state-of-the-art cloning and expression techniques to explore aspects of biotechnology.

Two core courses from the following:
- Biology 105 Molecular Biology
- Biology 152 Biochemistry and Cellular Metabolism
- Biology 153 Topics in Biochemistry
- Biology/Chemistry 171 Biochemistry I
- Biology/Chemistry 172 Biochemistry II
- Chemical and Biological Engineering 161 Protein Purification
- Chemical and Biological Engineering 162 Molecular Biotechnology
- Biomedical Engineering 164 Biomaterials and Tissue Engineering
- Chemistry 135 Biophysical Chemistry

One of these three laboratory courses:
- Biomedical Engineering 175 Tissue Engineering Laboratory
- Chemical and Biological Engineering 163 Recombinant DNA Techniques
- Chemical and Biological Engineering 168 Biotechnology Processing Projects Laboratory

One elective course in biology, chemical and biological engineering, or chemistry that is relevant to biotechnology.

Certificate Program in Biotechnology Engineering
Emphasizes state-of-the-art bioprocessing principles, utilizing industry-based projects and case studies.

Biology/Biotechnology (M.S./Ph.D.)
Degree programs are designed for students whose interests are in molecular biology and the applied aspects of biotechnology, and who prefer a program emphasizing biology rather than engineering (cosponsored by the Department of Biology).

Biotechnology Engineering (M.S./M.E./Ph.D.)
Degree programs are designed for students who are interested in the engineering aspects of biotechnology (sponsored by the Department of Chemical and Biological Engineering).

Chemistry/Biotechnology (M.S./Ph.D.)
Degree programs are designed for students with interests in chemistry and the applied aspects of biotechnology, and who prefer a program emphasizing the chemical aspects of biotechnology (cosponsored by the Department of Chemistry).

Engineering Management with Specialization in Biotechnology (M.S.)
The master’s degree program is designed for working professionals in management or desiring to move into management positions. The program emphasizes a project approach to learning (cosponsored by the Gordon Institute of Engineering Management).
Biotechnology and Biotechnology Engineering Certificate Program

FACULTY ADVISOR:
Professor David L. Kaplan, Biomedical Engineering / Chemical and Biological Engineering

The field of biotechnology is vibrant, with constant new developments and advances that are generating opportunities for scientific exploration and employment. New biotechnology-derived pharmaceutical products are gaining FDA approval, the sequencing of the human genome will lead to tremendous new opportunities in disease prevention, and transgenic plants and animals are offering new options in large-scale production of products. The ability to manipulate the genetic content of microbial, insect, animal, and plant cells has led to a variety of commercial applications in medicine, nutrition, materials science, and the environment.

Through industry-based projects and case studies, the certificate courses cover the fundamentals and practical considerations in the field, including construction of recombinant DNA and the production of enzymes, therapeutic proteins, vaccines and small-molecule primary and secondary metabolites. The curriculum features modern techniques for separation and purification of small and large biomolecules, including techniques specially designed for today’s biotechnology products. In addition, production and separation case studies emphasize process economics, GMP, and QA/QC.

The program is open to students with a bachelor’s degree and a background in biology, chemistry, or engineering. Students who lack the necessary biology or engineering background can take primer courses during the summer.

Two certificate programs are available. Each certificate requires four courses.

For more information and an application, contact the Office of Graduate Studies at 617-627-3395, or visit http://gradstudy.tufts.edu/.

Chemical and Biological Engineering

Associate Professor Kyongbum Lee, Acting Chair;
Metabolic engineering, tissue engineering, systems biology
Professor Linda Abriola, Joint appointment with Civil and Environmental Engineering; groundwater hydrology, contaminant fate and transport
Professor Maria Flytzani-Stephanopoulos, Environmental catalysis, clean energy technologies, nanostructured oxides, fuel cells
Professor Christos Georgakis, Modeling, optimization and process control, batch processing
Professor David L. Kaplan, Joint appointment with Biomedical Engineering; biotechnology, biomaterials, tissue Engineering
Professor Nakho Sung, Polymers and composites, interface science, polymer diffusion, surface modification
Emeritus Professor Gregory Botsaris, Crystallization, nucleation, applied surface science
Emeritus Professor Kenneth A. Van Wormer, Jr., Optimization, nucleation, reaction kinetics, VLSI fabrication
Associate Professor Jerry H. Meldon, Mass transfer, membrane processes, reaction-separation coupling
Associate Professor Daniel F. Ryder, Polymer and ceramic materials processing, inorganic/organic nanocomposite materials
Assistant Professor Matthew Panzer, Inorganic and hybrid quantum dot/organic optoelectronic devices
Assistant Professor Hyunmin Yi, Nanobiofabrication, Smart Biopolymers, BioMEMS
Professor of the Practice Steve Matson, Bioseparation and biocatalysis membrane processes

Two core courses:
**Chemical and Biological Engineering 161**
Protein Purification

**Chemical and Biological Engineering 166**
Principles of Cell and Microbe Cultivation

One laboratory course:
**Chemical and Biological Engineering 163**
Recombinant DNA Techniques or
**Chemical and Biological Engineering 168**
Biotechnology Processing Projects Laboratory or
**Biomedical Engineering 175** Tissue Engineering Laboratory

One elective course in biology, chemical and biological engineering, or chemistry that is relevant to biotechnology.

For more detailed information, please visit the website http://ase.tufts.edu/chemical.
Chemical engineering builds on the sciences, especially chemistry and biology, to design processes and products that are useful for society. Chemical engineers tend to be the broadest of all engineers and thus are employed in a wide range of industries. Besides being well-trained in sciences they appreciate the central role of economics as they are often concerned with the production of products that will be sold and bought at an affordable price. Their professional skills are required wherever engineering and chemistry or biology intersect. This occurs not only in the chemical industry but also in the biological, environmental, health, legal, and medical fields. Chemical engineers are researchers, designers, producers, and managers. Petroleum, paints, plastics, paper, detergents, pharmaceuticals, vaccines, microchips, drugs, processed foods, fertilizers, conventional and nuclear fuels, insecticides, rocket propellants, synthetic fibers, and rubber are among the many products they help create.

Students who major in chemical engineering have considerable flexibility in choosing a program and are assisted in doing so by a departmental advisor. A student may choose a curriculum leading to the professional degree of Bachelor of Science in chemical engineering or a curriculum leading to the more general Bachelor of Science in engineering. The professional degree curriculum is accredited by the Accreditation Board for Engineering and Technology (ABET) and prepares its recipients for professional practice or graduate study. Most of the recipients of this degree follow various engineering careers. Many students also use the professional degree curriculum as preparation for further study in medicine, law, business, or science.

The general engineering degree curriculum is similar to that of a science major in the College of Liberal Arts. It allows more electives than the professional degree curriculum, as well as more courses in the humanities and social sciences. This curriculum is intended for students who desire an understanding of engineering fundamentals and will make their careers in related fields such as medicine, business and law. This degree is not ABET accredited.

Undergraduates are encouraged to participate in the department’s research programs and independent study for degree credit.

UNDERGRADUATE PROGRAM

Bachelor of Science in Chemical Engineering

The mission of the BSChE degree program offered by the Chemical and Biological Engineering Department is to provide its undergraduate students:

a. A strong foundation in the pure sciences including biology, chemistry, mathematics and physics.

b. A solid understanding of the fundamental chemical engineering sciences, coupled with quantitative skills, so as to provide a basis for a successful professional career within the technology fields.

c. Training of communication skills consistent with the requirements of both the technical professions and the broader community in which they live.

d. A capacity and desire for the pursuit of lifelong learning. The faculty is committed to accomplishing this mission through the integration of teaching and research.

The goals of the B.S.Ch.E. program are to:

a. Provide students a sound technical foundation in both the traditional and emerging areas of chemical engineering. In particular, the Tufts B.S.Ch.E. program emphasizes the incorporation of the biological sciences into the technical foundation throughout the curricula.

b. Provide quality instruction emphasizing the logical identification and solution of problems; the solution of complex quantitative problems using computational methods; and the application of engineering analysis to the chemical and biological sciences.

c. Offer a high-quality instruction that encompasses not only the technical content but also makes students aware of the societal implications of technology.

d. Provide students the opportunity to formulate, analyze, and solve engineering problems within
a team structure; and to communicate their findings in both written and oral forms.

e. Encourage and provide opportunities to sample specialized areas through elective courses, minor programs, industrial internships, and independent research; and as such, to foster an appreciation for lifelong education.

A suggested program of required courses and free electives for the bachelor of science degree in chemical engineering (accredited program) follows.

**First-Year Program**

**FALL TERM**
- Engineering 2 (half credit)
- Engineering Graphics and CAD
- Engineering—Introductory elective (half credit)
- Mathematics 11 Calculus I
- Chemistry 1 or 11 Chemical Fundamentals with laboratory
- English 1 Expository Writing

**SPRING TERM**
- Engineering Science 2 Introduction to Computing in Engineering
- Mathematics 12 Calculus II
- Chemistry 2 or 12 Chemical Principles with laboratory
- Physics 11 General Physics I with laboratory
- Humanities/Social sciences/Arts elective

**Sophomore Year**

**FALL TERM**
- Chemistry 31 and 33 Physical Chemistry I with laboratory
- Mathematics 13 Calculus III
- Chemical and Biological Engineering 10 Chemical Process Principles
- Biology 13 or Engineering Science 11 Cells and Organisms with Laboratory or Fundamentals of Biological Systems
- Humanities/Social sciences/Arts elective

**SPRING TERM**
- Chemical and Biological Engineering 11 Chemical Engineering Thermodynamics
- Chemical and Biological Engineering 39 Applied Numerical Methods for Chemical and Biological Engineers
- Mathematics 38 Differential Equations
- Engineering Science 10 Introduction to Materials Science
- Humanities or social sciences elective

**Junior Year**

**FALL TERM**
- Chemical and Biological Engineering 21 Transport Phenomena I
- Chemistry 51 and 53 Organic Chemistry with Laboratory
- Engineering Science 3 Introduction to Electrical systems with laboratory
- Humanities or social sciences elective

**SPRING TERM**
- Biology 152 Biochemistry and Cellular Metabolism
- Chemical and Biological Engineering 22 Transport Phenomena II
- Chemical and Biological Engineering 102 Reactor Design
- Chemical and biological engineering elective

**Senior Year**

**FALL TERM**
- Chemical and Biological Engineering 45 Chemical and Biological Separations
- Chemical and Biological Engineering 51 Chemical and Biological Engineering Unit Operations Laboratory (half credit)
- Chemical and Biological Engineering Foundation elective
- Chemical and Biological Engineering Concentration Elective
- Humanities/Social Sciences/Arts elective
- Free elective

**SPRING TERM**
- Chemical and Biological Engineering 52 Chemical and Biological Engineering Projects Laboratory
- Chemical and Biological Engineering 60 Product and Process Design
- Chemical and Biological Engineering 109 Process Dynamics and Control
- Chemical and Biological Engineering Concentration elective

**Approved Advanced Chemistry Elective Courses**
Two advanced chemistry electives are required and are to be chosen from the following list. Exceptions must be approved by the department.

- Chemical and Biological Engineering 121 Principles of Polymerization
- Chemical and Biological Engineering 122 Physical Polymers
- Chemical and Biological Engineering 140 Surface and Colloid Chemistry
- Chemistry 32 Physical Chemistry II
- Chemistry 42 Analytical Chemistry
- Chemistry 52 Organic Chemistry
Chemistry 55 Advanced Synthesis Laboratory
Chemistry 61 Inorganic Chemistry
Chemistry Chemistry 132 Chemical Kinetics and Dynamics
Chemistry 133 Quantum Mechanics
Chemistry 135 Biophysical Chemistry
Chemistry 136 Spectroscopy and Molecular Structure
Chemistry 141 Instrumental Analysis
Chemistry 150 Intermediate Organic Chemistry
Chemistry 151 Physical Organic Chemistry
Chemistry 152 Advanced Organic Synthesis
Chemistry 155 Organic Spectroscopy
Chemistry 161 Advanced Inorganic Chemistry
Chemistry 162 Chemistry of Transition Elements
Chemistry 163 Diffraction Methods of Structure Determination

One advanced chemistry elective may be substituted by an advanced natural science elective from the following list.

Biology 41 General Genetics
Biology 46 Cell Biology
Biology 104 Immunology
Biology 105 Molecular Biology
Biology 106 Microbiology
Biology 134 Neurobiology
Biology 153 Topics in Biochemistry

Physics beyond Physics 12

For natural science courses accepted towards the Engineering degrees, refer to the School of Engineering list posted in the student services website: https://webcenter.studentservices.tufts.edu/coursedes/c/natural_sciences_engineering.aspx. The following Chemical and Biological Engineering courses are also accepted as natural science electives in addition to the School of Engineering list:

ChBE 62/162 Introduction to Biotechnology
ChBE 163 Recombinant DNA Techniques
ChBE 164 Biomaterials and Tissue Engineering
ChBE 168 Biotechnology Processing Projects Laboratory

The Senior Honors Thesis in Chemical and Biological Engineering
The Senior Honors Thesis program in ChBE is intended for those students who have a record of high performance in both Foundation and ChBE concentration courses and who have developed an interest and some background in a well-focused research topic. Students interested in writing a Senior Honors Thesis should consult their advisors, the guidelines described under Thesis Honors Program in this bulletin, and the ChBE Department web pages.

Bachelor of Science in Engineering
This general engineering degree program combines liberal arts with basic engineering education in a four-year non-accredited program. It is for the individual who may not wish to function as a professional engineer, but who wants a basic science and technology background as preparation for a career in a related field such as medicine, law, or business.

Flexibility is built into the program so that students can pursue their own interests to a greater extent than is possible in the accredited engineering programs. The thirty-eight courses required for completion of the program are listed below. Introductory Courses—ten course credits:

EN 2 (half-credit); EN Elective; ES 2
Mathematics 11, 12, 13, and 38
Chemistry 1 and 2
Biology 1 or 13
Physics 11

ES, Science, Math and Engineering: 11 credits
Chemistry 51 and 53; 9 electives
Chemical Engineering: 6 credits
ChBE 10 and 11; 4 electives
Humanities, Social Science, and Arts: 6 credits

English 1 or 3

Humanities elective
Social Science elective
3 Humanities/SS/Arts electives
Free electives: 5 credits

Premedical, Predental, and Preveterinary Preparation via the Chemical Engineering Curriculum
Students interested in entering medical, dental, or veterinary school after graduation can satisfy professional school entrance requirements while working toward a bachelor’s degree in the Department of Chemical and Biological Engineering. Modern medical practice and research is increasingly dependent on engineering methods and devices. Automatic instruments now monitor and assist body function. New synthetic materials repair and even replace body tissue. Mathematical equations that describe the flow of fluids in pipes
apply to the flow of blood in veins. The kidney, lung, and heart functions have analogies in chemical engineering process equipment.

Computers are used in diagnosis and research. Given these important areas in medicine, there is a need for students to combine undergraduate engineering with graduate medical training. Two kinds of preparatory programs are suggested by the department. The first is the professional degree program in chemical engineering; a student choosing this program must complete all the requirements for the accredited bachelor of science degree in chemical engineering. Courses required for entrance into medical, dental, or veterinary school are met through selection of electives, summer school, or an increase in course load.

The second program has greater flexibility and leads to the non-accredited Bachelor of Science degree in engineering, described above. This program gives students a foundation in engineering fundamentals and the possibility of satisfying professional school entrance requirements and pursuing individual interests in other fields through selection of electives.

UNDERGRADUATE MINOR PROGRAMS
In addition to completing the courses for the concentration requirement, an undergraduate may elect to enroll in a minor program in a different, although possibly related field. All courses used in fulfillment of the minor program must be taken for a grade. No more than two courses used to fulfill a foundation or concentration requirement may be counted toward fulfillment of the minor. Students may not complete both a minor and a concentration in the same discipline.

Biotechnology Engineering Minor
Five courses are required to obtain this minor. Biology 152 or Chemistry 156; two courses from the following: Chemical and Biological Engineering 62, 161, or 166; one course from the following: Biology 50, Chemical and Biological Engineering 163 or 168; and an elective chosen from an approved list. No more than two courses used to fulfill a foundation, distribution, or concentration requirement may be counted toward the minor.

Chemical Engineering Minor
Five courses are required: Chemical and Biological Engineering 10, 11, 39, 102; and a chemical engineering elective approved by the minor committee. All courses must be taken for a grade. No more than two courses used to fulfill a foundation, distribution, or concentration requirement may be counted toward the minor.

SECOND MAJOR IN BIOTECHNOLOGY
This program is offered as a major only in conjunction with enrollment in a regular undergraduate major, ordinarily excluding interdisciplinary programs. The biotechnology program has been designed with two tracks: a science track for undergraduate students enrolled in the College of Liberal Arts, and an engineering track for undergraduate students enrolled in the School of Engineering.

Core Curriculum
Biology 1 Introduction to Biology or Biology 13 Cells and Organisms
Biology 41 Genetics
Chemical and Biological Engineering/Biology 62 Molecular Biotechnology

One laboratory course from:
Biology 50 Experiments in Molecular Biology
Chemical and Biological Engineering 163 Recombinant DNA Techniques
Chemical and Biological Engineering 168 Biotechnology Processing Projects Laboratory

Track curricula
SCIENCE TRACK
Two core courses:
Biology 105 Molecular Biology
Biology 152 Biochemistry and Cellular Metabolism

Four electives from an approved list provided by the department. Up to two credits of research may be counted toward electives.

ENGINEERING TRACK
Two core courses:
Chemical and Biological Engineering 161 Protein Purification
Chemical and Biological Engineering 166 Principles of Cell and Microbe Cultivation

Four electives from an approved list provided by the department. One credit of research may be counted toward electives.
CERTIFICATE PROGRAMS
The Chemical & Biological Engineering Department offers three graduate-level certificate programs to qualified students through the Office of Graduate Studies. The certificate programs, Biotechnology, Biotechnology Engineering and Bioprocessing can be completed on a part-time, non-degree basis by students who are seeking professional training in the field or preparing for a degree program. In most cases, courses taken as a certificate student can be transferred into a related master’s degree program. The programs are open to students who have already earned a bachelor’s degree. Four courses are required for each certificate.

A certificate builds on the strength of existing Tufts courses and programs. As a certificate student, you have the flexibility to choose courses that were created exclusively for a certificate program, as well as the traditional Tufts graduate and undergraduate courses. In order to accommodate working professionals’ schedules, most certificate courses are offered in the late afternoon and evening.

Certificate students may apply later for a related master’s or doctoral program at Tufts. Once you have been accepted, you are permitted to transfer four applicable certificate courses into a graduate program.

GRADUATE PROGRAM
The Department of Chemical and Biological Engineering offers instruction leading to the degrees of master of science, master of engineering, and doctor of philosophy. General GRE test scores are required of all applicants to graduate degree programs.

Master of Science or Master of Engineering with Major in Chemical Engineering
Candidates for the master’s degree programs in chemical engineering usually hold a bachelor of science degree in chemical engineering or in chemistry, with a suitable background in engineering subjects. A strong background in mathematics, biology, chemistry, and physics is essential. Students with degrees in physical science or other engineering disciplines may become candidates upon satisfactory completion of certain upper-level undergraduate courses. A highly recommended alternative to formal enrollment in academic-year, undergraduate chemical engineering courses is the intensive two-course summer sequence of Chemical and Biological Engineering 1 and 2, which are offered periodically. Successful completion of these courses qualifies a student to apply to the master’s degree program.

Students enrolled in the Master of Science degree program must take seven courses for letter grades. No more than one of these seven may be guided individual study. Generally, at least five credits are from a list of chemical engineering courses; the remaining courses may be in allied fields. A thesis (three credits) is also required along with an oral examination covering the field of the student’s thesis. Only students in the Master of Science degree program may apply for financial assistance.

Students enrolled in the Master of Engineering degree program must take ten courses for letter grades. Generally, at least eight credits are from a list of chemical engineering courses; the remaining courses may be in allied fields.

Master of Engineering or Master of Science with Major in Bioengineering: Cell and Bioprocess Engineering
Cell and Bioprocess Engineering is a new track option of the master’s degrees in Bioengineering offered by the School of Engineering. Candidates for this track usually hold a bachelor of science degree in chemical or biochemical engineering with a suitable background in chemical and biological sciences. Candidates with degrees in biology, biochemistry and strong background in mathematics, chemistry, and physics will also be considered. Students with degrees in physical science or other engineering disciplines who have no background in biology may become candidates upon satisfactory completion of appropriate undergraduate courses. For students without undergraduate engineering degrees, a highly recommended alternative to formal enrollment in academic-year undergraduate chemical engineering courses is the intensive two-course summer sequence of Chemical and Biological Engineering 1 and 2, which are offered periodically. Successful completion of these courses qualifies a student to apply for the master’s program. All Bioengineering master’s degree candidates must take a common core curriculum totaling four credits. Candidates of the Cell and
Chemistry

Associate Professor Arthur L. Utz, Chair; Physical and materials chemistry
Professor Robert R. Dewald, Physical chemistry
Professor Terry E. Haas, Physical inorganic and materials chemistry

Doctor of Philosophy

Doctoral degrees are offered in both Chemical Engineering and in Biotechnology Engineering. Candidates for the Doctor of Philosophy degree, except when otherwise recommended by the department, will have completed the seven courses required for the Master of Science degree. A qualifying examination must be satisfactorily completed. This examination is usually taken after one full year of residence.

In addition to satisfying the university requirements for the Doctor of Philosophy degree, a candidate must satisfactorily complete a program of courses (established by the candidate’s committee) and write a doctoral dissertation. The doctoral dissertation is considered the candidate’s major task. It must represent a significant contribution to the field and contain material worthy of publication in a recognized professional journal.

For more detailed information, please visit the website http://engineering.tufts.edu/chbe.

Chemical Physics

(FOR DEGREE REQUIREMENTS, SEE CHEMISTRY OR PHYSICS.)
the U.S. has maintained a good international trade balance during the past decade. From community health to economic well-being, chemistry can be expected to maintain its preeminent role in shaping and protecting our nation’s future.

The study of chemistry is appropriate to many different career goals, including medicine, law, physical and social sciences, engineering, and public policy. The Department of Chemistry at Tufts is well equipped to provide basic and advanced chemistry education to undergraduates. It offers a wide variety of courses, newly expanded and improved facilities, an active teaching and research faculty, and a favorable faculty-to-student ratio. Students who participate in research receive a great deal of personal attention from their faculty advisor, and have excellent opportunities for undertaking senior projects and honors theses. They may choose from a broad range of research projects, because the faculty is involved in all the traditional areas of chemical research, as well as many of the exciting new interdisciplinary endeavors.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
The chemistry department offers four majors: 1) an American Chemical Society (ACS)—certified major, 2) a chemistry major, 3) a chemical physics major, and 4) a biochemistry major. Each of these four majors must be completed with a minimum GPA of 2.00 for the courses applied to the major. Additionally, no more than one course (of any credit value) with a grade below a C- may be applied to any of these majors. The ACS-certified degree includes a certificate issued by the American Chemical Society and is recommended for those whose career goals include employment as a professional chemist or scientist, involvement in research, or graduate school in chemistry. Courses leading to a certified major include research that offers students an opportunity to work closely with members of the department’s renowned research faculty.

The major in chemical physics is intended for those students who desire a more theoretical, physics-oriented education. The biochemistry major is recommended for those students with an interest in biologically oriented chemistry. The chemistry major offers greater flexibility in course selection.

Students with interest in any of these majors should look for more information on the department’s website at http://chem.tufts.edu.

ACS-Certified Major in Chemistry
Foundation: Chemistry 1, 11 or 16; and Chemistry 2 or 12. Core courses: Chemistry 31, 32, 33, 34, 42, 51, 52, 53, 54, 61, 63, 171, and one additional course in intermediate or advanced chemistry that has one of the following courses as a prerequisite: Chemistry 32, 42, 52, 61, or 171. Research: Chemistry 91 and 92 (or Chemistry 195 and 199, Senior Thesis). Also required are Mathematics 11 and 12 (or 17 and 18) and Physics 1 (or 11) and 2 (or 12). For more information please visit the department’s website at http://chem.tufts.edu.

Major in Chemistry
Foundation: Chemistry 1, 11, or 16; and Chemistry 2 or 12; Intermediate: Chemistry 31, 33, 42, 51, 52, 53, 54; four additional courses in intermediate or advanced chemistry, excluding Chemistry 34. Two of the four additional chemistry courses may be substituted with intermediate or advanced courses in related fields (for details, please visit the department’s website at http://chem.tufts.edu). Only one course of undergraduate research, either Chemistry 92 (Research II) or Chemistry 199 (the second semester of Senior Thesis) may be counted toward the four additional courses in intermediate or advanced chemistry. Also required are Mathematics 11 and 12 (or 17 and 18) and Physics 1 (or 11) and 2 (or 12).

Major in Chemical Physics
Foundation: Chemistry 1, 11, or 16; Chemistry 2 or 12; Physics 1 or 11; Physics 2 or 12. Concentration: Ten credits of more advanced, one credit courses—four credits in Chemistry (with a prerequisite of Chem 2 or 12), four credits in Physics (with a prerequisite of Phys 2 or 12), and two credits in mathematics (Math 46 or courses with a prerequisite of Math 13, 18, or 46). The courses must include the following: Physics 13; one credit in advanced laboratory training, either Physics 64 (counts as one advanced physics course) or both Chemistry 33 and 34 (counts as one advanced chemistry course); either Chemistry 31 or Physics 52; either Chemistry 32 or Physics 61; and either Chemistry 51 or Chemistry 61.
Faculty advisors in the chemistry and physics departments are available for consultation on the chemical physics program.

Major in Biochemistry
Chemistry 1, 11, or 16; and Chemistry 2 or 12; Chemistry 51/53, 52/54, 31, 42, 171, and 172; Biology 13, 41, 50 (or Chemical and Biological Engineering 163), and 105. Course work in mathematics (Mathematics 12 or 18) and physics (Physics 2 or 12) is also required. The following sequence of courses is suggested for students concentrating in biochemistry: first year, Chemistry 1 (or 11) and 2 (or 12), Biology 13; second year, Chemistry 51/53, 52/54, Biology 50 (or Chemical and Biological Engineering 163); third year, Chemistry 31 and 42, Biology 41 and 105; fourth year, Chemistry 171/172.

GRADUATE PROGRAM
The Department of Chemistry offers M.S. and Ph.D. degrees in chemistry, chemistry/biotechnology and chemical physics. Students interested in the joint chemistry/biotechnology or chemical physics program should look for more information on the department’s website at http://chem.tufts.edu.

In the first year of graduate study, entering students meet with the department’s graduate committee and are placed into a series of core courses in each of the traditional areas of chemistry: analytical, inorganic, organic, and physical. These courses are intended to ensure that by the end of the first year the student has an adequate grounding in the fundamentals of chemistry. Each student then takes additional advanced courses in his/her area of specialization.

Master of Science
A candidate for the master of science degree in chemistry is expected to have a satisfactory background in physics, mathematics, and chemistry.

All master’s degree candidates are required to pass (B- or better) eight formal classroom graduate courses in chemistry or approved, related fields. Four of these courses must be in chemistry. Two may be approved independent study (293, 294). Alternatively, a student may elect to take six formal classroom courses and two credits of research (295, 296). The courses must be chosen in consultation with the graduate committee. Students may also elect to prepare a master’s thesis which they must then present and defend before their research committee.

Doctor of Philosophy
The doctorate in chemistry is awarded to students who have demonstrated a broad familiarity with the science of chemistry, a thorough knowledge of their specialized field, and who have displayed competence in planning and conducting chemical research.

By the end of the third semester, each graduate student must pass (with a B- or higher) one formal classroom course in each of the four traditional areas of chemistry. At least six formal graduate courses in chemistry (exclusive of research) are required for the degree and must be completed satisfactorily by the end of the fourth semester. Additional courses in chemistry or related fields may be required by individual research supervisors.

Selection of a research supervisor is usually made during the first year on the basis of common interest. The student and research supervisor nominate two faculty members to serve on the student’s doctoral committee. The doctoral committee (in conjunction with the student’s research advisor) takes over the advisory function from the graduate committee and guides the student’s research to promote his/her development as an independent investigator.

Doctoral students must also satisfy the following requirements:
1) Service as a teaching assistant
2) Presentation of two independent study topics during the second year. One study topic is to be presented as a departmental seminar
3) By the end of the eighth semester in residence, the student must successfully defend an original research proposal that will be judged on the basis of novelty and proposed methodology
4) Completion of a dissertation reporting significant work of publishable quality.

The department is actively engaged in research in the areas of organic, inorganic, physical, and analytical chemistry, as well as the interdisciplinary areas of bioorganic, environmental, and materials chemistry. For more information concerning research interests, facilities, and financial aid, please see the booklet Graduate Program in Chemistry,

Child Development

ELIOT-PEARSON DEPARTMENT OF CHILD DEVELOPMENT

Associate Professor Jayanthi Mistry, Chair, Cultural perspectives on development; Navigating multiple cultural worlds and identities; Interpretive methods in the study of children and families

Professor M. Ann Easterbrooks, Family development, social and emotional development, infancy

Professor David Henry Feldman, Cognitive development, developmental and educational theory, creativity

Professor Richard M. Lerner, Bergstrom Chair in Applied Research in Youth Development; Director, Institute for Applied Research in Youth Development, Application of developmental science across the life span, personality and social development in adolescence, university-community collaboration and outreach scholarship

Professor Fred Rothbaum, Parent-child relationships, family and culture, child-clinical psychology, research dissemination

Professor Donald Wertlieb, Clinical aspects of family and child development, pediatric and health psychology, stress and coping

Professor Maryanne Wolf, John DiBiaggio Chair in Citizenship and Public Service; Director, Center for Reading and Language Research; Dyslexia, cognitive neurosciences, cognition, developmental psycholinguistics, reading development and intervention

Emeritus Professor David Elkind, Cognitive development, play, family development

Emerita Professor Sylvia G. Feinburg, Teacher education, early childhood education, child art

Associate Professor Marina Bers, Math, Science and Technology/Engineering Initiative; Educational technology, impact of new technologies for personal, social and moral development, use of technology in hospitals, museums, schools and communities

Associate Professor Kathleen A. Camara, Family relationships, social development, research methodology

Associate Professor Calvin Gidney III, Linguistics, literacy, sociolinguistic development, language of African-American children, language in children's television, development of children's language attitudes

Associate Professor Francine Jacobs, Child and family policy, program evaluation

Associate Professor Tama Leventhal, Neighborhood influences on children, youth, and families; Social policy

Associate Professor Christine McWayne, Early Childhood Education, Low-income, urban-residing children's school success, Community-based research collaborations

Associate Professor Ellen E. Pinderhughes, Influences on family socialization processes among families with children at risk for problematic outcomes; adoption and foster care

Senior Lecturer W. George Scarlett, Deputy chair; Children's play; Religious and spiritual development; Approaches to managing children's problem behavior; Organized youth sports

Lecturer Mary Eisenberg, Director, Evelyn G. Pitcher Curriculum Resource Laboratory, Teacher education, early childhood curriculum development, the arts in child development

Senior Lecturer Martha Pott, Coordinator of Capstone Internships for M.A. Applied Program; Education, personal-social development

Lecturer Carlota Schechter, Professional Development Coordinator, Early Childhood Education, Teacher Preparation

Julie Dobrow, Director Communication and Media Studies; Effects of media on children, ethnic and gender representations in media

Deborah Lee-Keenan, Director, Eliot-Pearson Children's School; Multicultural and antibias education, curriculum development and implementation, special needs

Assistant Professor (part-time) Martha Julia Garcia-Sellers, Cross-cultural studies, parent-child interaction, preventive intervention, school adaptation

Adjunct Associate Professor Lynn Meltzer, Learning disabilities and assessment

Associate Research Professor Jonathan Zaff, Youth development, Communities as youth support systems

Lecturer (part-time) Jana Chaudhuri, Program evaluation, and culture and child development

Lecturer (part-time) Terrell Clark, Deaf studies; sign languages

Lecturer (part-time) Jim Lipsky, Sign language

Lecturer (part-time) Marion Reynolds, Children's literature

Lecturer (part-time) Cynthia Smith, Child art

Lecturer (part-time) Laura Vanderberg, Children with special needs

Lecturer (part-time) Jenny Weiss, Interdisciplinary study of children's policy within a legal framework; special focus on children living in poverty and children at risk for care and protection or probate guardianship proceedings

Noted for its interdisciplinary work and for its integration of research and practice, the Eliot-Pearson Department of Child Development prepares students to become leaders in a variety of fields, including education, developmental science,
early intervention, advocacy and the law, program evaluation, fields focusing on the arts and technology as they relate to children's development, and health-related fields such as pediatrics and child mental health. The Department offers an interdisciplinary array of courses and experiences, which are complemented with observations and work with children in a wide range of applied settings, including schools, hospitals, clinics, day care centers, educational television studios, museums, and juvenile courts. These field experiences are essential for the concentration in child development, where the integration of theory, research, and practice is Eliot-Pearson's overall goal.

Undergraduates who major in child development receive a strong foundation in applied developmental science, an interdisciplinary field that generates and uses theory and research about human development to improve the lives of children, youth, and families around the world. Students who complete the major continue to graduate work in child development, or employment in various fields, such as early childhood education, clinical psychology, pediatric psychology, law, public policy, and other disciplines that have the health, education, and welfare of children as a primary goal.

Students completing the Child Development major can select specific areas of specialization. For example, students can choose to prepare for careers in early childhood education. This program places dual emphasis on contemporary child development theory and research, as well as the role of collaborative inquiry in early childhood teacher education. Embedded throughout course work and practical experiences is a commitment to preparing teachers to work in urban education settings, with children from diverse linguistic backgrounds, and including those with special needs. Students may seek Massachusetts licensure as an early childhood teacher (Pre-K to grade 2). This program has been approved by the Massachusetts Department of Education, and the certificate is reciprocated in the majority of states.

Another orientation takes child development as a starting point for a career in human services or work with children in clinical, pediatric, or other community settings, in health allied fields, including early intervention. Yet other areas of specialization include a focus on arts, technology, and media and lead to careers in children's media, theater, and creative arts education for children, and curriculum and technological innovations for children. Students are also able to specialize in child advocacy, and prepare for graduate study or careers in social policy, child and family law, and social services for children and families.

DEPARTMENT FACILITIES
Eliot-Pearson Children's School
Architecturally attached to the Department of Child Development, the Eliot-Pearson Children's School is a laboratory school serving eighty children ages 2.9 to 8 (preschool through second grade). Classrooms are fully integrated, including children with special needs and children and families from diverse cultural and economic backgrounds. The school is an exemplary early-childhood program, modeling innovative developmental education and curricula. Observation facilities and practicum sites provide exceptional training and research opportunities for Tufts undergraduate and graduate students and early-childhood professionals from across New England. The children's school also offers a range of programming for parents and families. For more information, visit http://ase.tufts.edu/epcs/.

Tufts Educational Day Care Center
The center is an associated facility that offers an innovative, year-round, full-day educational preschool and kindergarten program for approximately eighty-five children from within the Tufts community and its surrounding cities. The center is a direct service and laboratory school housing four classrooms. It serves an ethnically diverse, international population of youngsters and eagerly seeks to serve children with a wide variety of special needs. Tufts students and faculty, particularly within the Department of Child Development, can observe, conduct research, and participate in a variety of practice teaching experiences. The Special Friends Program, jointly sponsored and supervised by the center and the university's Leonard Carmichael Society, offers an opportunity for any interested undergraduate to form a close one-to-one relationship with a preschool or kindergarten child. Parents are encouraged to participate in a program tailored to the needs of working families. For more information, visit http://ase.tufts.edu/tedcc.
Adjoining the department and the children’s school is the Evelyn G. Pitcher Curriculum Resource Laboratory, with studio, shop, and audiovisual spaces. The laboratory allows space for the department’s multidisciplinary work with mathematics, science, and technology education—a new initiative that involves the Eliot-Pearson Department of Child Development as well as computer science, engineering, and education departments. Within the curriculum laboratory, child development majors can study and develop materials that are then used with young children in a wide range of settings, including classrooms, museums, libraries, clinics, and others. For more information, visit http://ase.tufts.edu/clab.

The institute creates programs and projects that use the framework of applied developmental science to promote healthy, positive development among diverse children, adolescents, families, and communities. For more information, visit http://ase.tufts.edu/iaryd.

The center offers a variety of research, teaching, and internship opportunities to students and faculty and a range of services to the surrounding communities. For more information, visit http://ase.tufts.edu/crlr.

Ten courses, including Child Development 1, and two of the following: Child Development 51 or 151, 61 or 161, and 155. Two courses can be from outside the department, either from the approved list of related fields courses, or with departmental approval. Introductory courses in other departments may not substitute for Child Development 1. Please see the Child Development handbook or website for complete information on requirements.

This program, designed for students who plan to teach in public and private early childhood settings, is approved by the Massachusetts State Department of Education and leads to teacher licensure that is reciprocal in the majority of states. A specific course of study is required for completion of the program. The program is also beneficial to those who anticipate entering such fields as guidance counseling, school psychology, technology, museum education, school administration, mental health, social welfare, and child advocacy.

Students interested in becoming licensed as teachers in Massachusetts are required to complete a two-stage licensure process. The requirements for completing the first stage, leading to initial licensure, may be satisfied by completing an undergraduate degree with a major in child development and by completing all teacher licensure program requirements. Initial licensure allows the recipient to be employed by the public schools as an early childhood teacher, pre-K to grade 2.

The Department of Child Development offers a minor in child development. Five courses are required, two of which are to be chosen from Child Development 1, 51 or 151, 61 or 161, and 155. Three additional electives are to be chosen from other course offerings from within the department.

The department offers three levels of American Sign Language. Undergraduates completing all three can have ASL fulfill Part II of the foreign language (foundation) requirement.

The Department of Child Development offers the master of arts degree, a joint master of arts degree with the Department of Urban and Environmental Policy and Planning, the master of arts in teaching (M.A.T.) degree, and the Ph.D. degree. Along with the standard material sent to the graduate school, applicants for admission to these graduate programs must include a statement of two to three typewritten pages describing their motivation for applying for graduate work in child development and the ways in which they envision using the education received at Tufts. Scores from the Graduate Record Examination are required. The deadline for applications is January 1st, although applications received after that time are considered, based on the availability of places.
Master of Arts (M.A.)
The master of arts degree requires the satisfactory completion of a ten-credit course of study. Students interested in engaging in child development research conclude the program by writing a thesis; students interested in the more applied, practical aspects of child development conclude the program with an intensive supervised internship. Each route offers a combination of required and elective courses. The master of arts program offers two options for completion of degree requirements. For students who wish to conduct research, the program entails four required courses and six additional elective courses. Students must also complete a thesis.

The M.A. degree program serves child development students with a broad range of professional and intellectual interests. Graduates enter positions in human services agencies, research organizations, schools and early childhood programs, advocacy groups, and institutions of higher education. A significant percentage of graduates continue their studies in law schools, medical schools, Ph.D. programs in developmental or clinical psychology, or public policy. Initial licensure teachers wishing to obtain professional licensure may enroll in the master of arts program, which includes a 400-hour apprenticeship in the schools.

Master of Arts (M.A.) Program with Urban and Environmental Policy and Planning
The master of arts degree offered jointly by the Department of Child Development and the Department of Urban and Environmental Policy and Planning is a fourteen-credit graduate program in child and family policy. Students matriculate in two nationally renowned departments at Tufts and fulfill the general requirements for each, including courses in developmental psychology, policy planning and analysis, and research methods and statistics. In addition, they follow a specific course of study in child and family policy, culminating in a master’s thesis. Contact either department for more information.

Master of Arts in Teaching (M.A.T.) Early Childhood
The degree of master of arts in teaching is offered for students who seek Massachusetts State Department of Education initial licensure as an early childhood teacher (pre-K to grade 2).

Doctor of Philosophy (Ph.D.)
The doctoral program in child development prepares individuals for either academic or applied settings involving children and their families. Such settings include schools, hospitals, social service agencies, the arts and media, courts, clinical research centers, and policy organizations, as well as colleges and universities. Accordingly, intensive training in theory and research methodology is involved, as well as extensive field experience. Applicants should have strong preparation in the behavioral sciences.

Course work during the first two years emphasizes the major theoretical orientations of the field and research methods and statistics. The remaining courses are selected in accordance with the student’s academic plan, which is decided by the student and his or her advisors.

On completion of course work and an internship, students are required to undergo a qualifying review. Two major papers related to theory and research in child development are submitted and the student’s progress and course of study in the doctoral program are reviewed. Successful completion of this review is a prerequisite to further doctoral study.

Internships are selected according to the participant’s career interests, with students serving as supervised trainees in the service and research functions of the particular setting. The remainder of the program is devoted to participation in research and the completion and defense of a dissertation.

For more detailed information, please visit the website http://www.ase.tufts.edu/epcd.

Chinese
(FOR DEGREE REQUIREMENTS, SEE GERMAN, RUSSIAN, AND ASIAN LANGUAGES AND LITERATURES.)

Civil and Environmental Engineering
Professor Kurt D. Pennell, Chair; Environmental remediation, neurotoxicology, engineered nanomaterials
Professor Linda M. Abriola, Dean, School of Engineering, Groundwater hydrology, multiphase flow and transport in porous media
Civil and Environmental Engineering (CEE) is one of the most diverse engineering disciplines, encompassing environmental and water resources engineering, geotechnical and geo-environmental engineering, public health engineering, and structural engineering. Civil and environmental engineers are responsible for the planning, design, construction, and operation of structures and facilities that are essential to the environment and infrastructure of a sustainable society. Traditionally these structures included buildings, highways, water and waste treatment plants, tunnels, airports, harbors, railroads, bridges, and dams. Today, civil and environmental engineers are involved in a wide range of engineered and natural systems that contribute to a modern society and protect the environment and public health. These activities include the development and testing of new materials, structural health monitoring and rehabilitation, management and protection of watersheds and water supplies, mathematical modeling of built and natural environments, bioremediation and exposure assessment.
Structural engineers are involved in the planning, design and monitoring of buildings, bridges, dams, vehicle frames, and special structures such as power transmission towers and wind turbines. The activities of structural engineers range from analysis and design of basic structural components such as beams, columns and floor slabs, to the study of material properties and biomechanics.

Geotechnical engineers specialize in the study of soil and rock mechanics, the analysis of soil response to applied loads, groundwater flow, and geohazards such as earthquakes and landslides. Geotechnical engineers design a variety of earthen structures such as dams, embankments, and containment systems for hazardous wastes, as well as foundations for bridges, buildings, and offshore platforms.

Environmental engineers seek to protect human health and the environment through the planning and design of air and water pollution control facilities, treatment and disposal of hazardous wastes, and the development of treatment technologies for persistent and emerging contaminants such as nanomaterials and chlorinated solvents. Water resource engineers are concerned with the planning, design and operation of water resource systems and the restoration of rivers and watersheds. Water resource engineers are involved in projects ranging from flood control works, hydropower stations, water supply systems, and storm-water systems.

Public health engineers assess the impacts of environmental exposures on human health, design engineered controls for water-borne diseases, and predict the effects of environmental factors on occurrence and transmission of disease.

UNDERGRADUATE PROGRAM
The Department of Civil and Environmental Engineering (CEE) offers two primary undergraduate degrees; the Bachelor of Science in Civil Engineering (BSCE) and the Bachelor of Science in Environmental Engineering (BSEVE). The programs leading to the BSCE and BSEVE degrees are accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET), and satisfy the degree requirements needed to take the Fundamentals of Engineering (FE) examination, an important step toward registration as a licensed professional engineer. Depending upon a student’s background and interests, there are numerous opportunities to utilize advanced placement credits, obtain a minor (e.g., Engineering Management), complete dual majors, and participate in study abroad and internship programs. The overall goals of the BSCE and BSEVE programs are for students to learn the fundamental engineering principles, to master engineering methods for solving challenging problems, and to effectively communicate engineering solutions to both technical and non-technical audiences. The CEE faculty is dedicated to accomplishing these goals through the integration of teaching, research, and professional practice.

Bachelor of Science in Civil Engineering
The Bachelor of Science in Civil Engineering (BSCE) degree program prepares students for a career in civil and environmental engineering. The BSCE allows students to specialize in one of four areas; environmental engineering, geotechnical engineering, structural engineering, and water resources engineering. The mission of the BSCE program is to provide students with an educational experience that builds a sound foundation for professional practice and provides technical skills that serve as a basis for career advancement and life-long learning. Program objectives are achieved by developing a broad understanding of civil and environmental engineering, fundamental engineering principles, and connections with the humanities, arts, and social sciences. The curriculum emphasizes the application of basic sciences, computing, and mathematics for engineering design. Students completing the BSCE program are also well qualified for graduate study in engineering, architecture, construction, business management, and law.

DEGREE REQUIREMENTS
Following the guidelines of the School of Engineering, a total of thirty-eight courses are required to fulfill the BSCE degree requirements. Introductory science and engineering requirements account for ten courses, with six humanities, social science and arts electives, and two free electives. Eight courses provide an engineering foundation, including two electives. Twelve courses fulfill the degree concentration requirements. Within the concentration requirement, there are five required core
courses (CEE 1, 12, 22, 32, and 42), three concentration electives, three design electives, and a capstone design course (CEE 81). The three design electives are selected from at least two sub-disciplines in structural engineering, water resources engineering, environmental engineering and geotechnical engineering. An example sequence of courses for the BSCE degree is provided below.

**Freshman Year**

**FALL TERM**
- EN 2 Eng. Graphics and CAD (half-credit)
- EN Elective (half-credit)
- ENG 1 Expository Writing
- MATH 11 Calculus I
- PHY 11 General Physics I

**SPRING TERM**
- ES 2 Intro. to Computing in Eng.
- MATH 12 Calculus II
- PHY 12 General Physics II
- Humanities Elective

**Sophomore Year**

**FALL TERM**
- CHEM 1 Chemical Fundamentals
- ES 5 Intro. to Mechanics: Statics and Dynamics
- MATH 13 Calculus III
- Engineering Foundation Elective
- Natural Science Elective

**SPRING TERM**
- CEE 1 Intro. to Civil and Environmental Eng.
- ES 9 Applied Mechanics: Strength of Materials
- MATH 38 Differential Equations
- Engineering Foundation Elective
- Social Sciences Elective

**Junior Year**

**FALL TERM**
- CEE 22 Structural Analysis
- CEE 42 Intro. to Geotechnical Eng.
- CEE 53 Eng. Economics or
- CEE 55 Numerical Methods for Engineers
- ES 8 Fluid Mechanics
- Humanities, Arts or Social Sciences (HASS) elective

**SPRING TERM**
- CEE 12 Hydraulic Eng.
- CEE 32 Environmental Eng. Principles
- ES 56 Probability and Statistics

**Bachelor of Science in Environmental Engineering**

The Bachelor of Science in Environmental Engineering (BSEVE) is designed for students who desire focused instruction in environmental engineering, including greater emphasis on chemical and biological principles. The BSEVE degree program emphasizes the development of an in-depth understanding of environmental engineering principles, with applications to water and wastewater treatment, water resources engineering, environmental remediation, and public health engineering. The mission of the BSEVE program is to provide students with undergraduate educational experiences that provides a sound basis for professional practice in environmental engineering, as well as the necessary preparation for advanced study at the graduate level.

**DEGREE REQUIREMENTS**

Following the guidelines of the School of Engineering, a total of thirty-eight courses are required to fulfill the BSEVE degree requirements. Introductory science and engineering requirements account for ten courses, with six humanities, social science and arts electives, and two free electives. Eight courses serve as engineering foundation, including two foundation electives. Twelve courses fulfill the degree concentration requirements. Within the concentration requirement, there are five required core courses (CEE 12, 30, 32, 132 and ES 27), four concentration electives, two design electives, and a capstone design course (CEE 81). The two design electives are selected from CEE
112 (Water Resources Engineering), CEE 133 (Water and Wastewater Plant Design), CEE 136 (Air Pollution Control), and CEE 143 (Site Remediation). An example sequence of courses for the BSEVE degree program is provided below.

**Freshman Year**

**FALL TERM**
- CHEM 1 Chemical Fundamentals
- EN 2 Eng. Graphics and CAD (half-credit)
- EN Elective (half-credit)
- ENG 1 Expository Writing
- MATH 11 Calculus I

**SPRING TERM**
- CHEM 2 Chemical Principles
- ES 2 Intro. to Computing in Eng.
- MATH 12 Calculus II
- PHY 11 General Physics I

**Sophomore Year**

**FALL TERM**
- BIO 13 Cells and Organisms or
- ES 11 Fundamentals of Biological Systems
- CHEM 31 Physical Chemistry
- ES 5 Intro to Mechanics: Statics and Dynamics
- MATH 13 Calculus III
- Humanities Elective

**SPRING TERM**
- CEE 32 Environmental Eng. Principles
- EM 52 Technical Communication
- ES 27 Public Health Eng.
- GEO 2 Environmental Geology
- MATH 38 Differential Equations

**Junior Year**

**FALL TERM**
- CEE 30 Environmental Chemistry
- ES 8 Fluid Mechanics
- ES 56 Probability and Statistics
- Engineering Foundation Elective
- Social Sciences Elective

**SPRING TERM**
- CEE 12 Hydraulic Eng.
- CEE 132 Environmental Eng. Processes
- CEE Concentration Elective
- CEE Design Elective
- Humanities, Arts or Social Sciences (HASS) Elective

**Senior Year**

**FALL TERM**
- CEE Concentration Elective
- CEE Concentration Elective
- CEE Design Elective
- Humanities, Arts or Social Sciences (HASS) Elective
- Free Elective

**SPRING TERM**
- CEE 81 Capstone Design
- CEE Concentration Elective
- CEE Design Elective
- Humanities, Arts or Social Sciences (HASS) Elective
- Free Elective

In addition, to the BSCE and BSEVE, the department also offers the following undergraduate degree programs.

**Bachelor of Science in Engineering (BSE)**
The Civil and Environmental Engineering department administers several programs of study that lead to the Bachelor of Science in Engineering degree (BSE). These programs offer students a curriculum that replaces the engineering concentration and design requirements with focused study in a related discipline, such as architectural studies and environmental health.

**Bachelor of Science in Engineering - Program in Architectural Studies**
A Bachelor of Science in Engineering (BSE) program in architectural studies is available for students interested in a professional career in architecture or in the historical, aesthetic, and engineering aspects of buildings and other structures. This program, offered jointly by the Department of Civil and Environmental Engineering and the Department of Art and Art History, provides a solid foundation in both the technical aspects of structural systems and the aesthetic and functional characteristics of buildings from an architectural and art history perspective. The flexibility of the BSE degree allows greater concentrations in both art history and studio courses than would otherwise be possible, while providing a coherent basis for graduate work in architecture or design. The faculty coordinator for this program is Professor Masoud Sanayei.
DEGREE REQUIREMENTS

A minimum of thirty-eight courses is required, distributed in the following categories:

1) Introductory Engineering: eleven courses required for professional degrees in engineering (see School of Engineering section),
2) Architectural studies: seven courses, including Art History 1, 8, 98, and one 100-level architectural history class (selected from discipline area A listed in Architectural Studies section of this bulletin); two studio courses including architectural design FAM 22) and either FAM 20, 26, or 63; one elective (selected from discipline areas A, B, C listed in Architectural Studies section)
3) Engineering Science: four courses, including Engineering Science 5, 9, 88, and one engineering science (ES) elective,
4) Civil Engineering: six courses, including CEE 1, 22, 42; and three of the following: CEE 24, 25, 81, 123, 124, 125, 129, 146, 149, or 188,
5) Humanities, Arts and Social Sciences Electives: five courses (see School of Engineering section) 
6) Free Electives: five courses

BSE Degree Program in Environmental Health

A Bachelor of Science in Engineering (BSE) program in environmental health is offered for students wishing to pursue professional careers in public health, the health sciences, and such activities as risk assessment and regulatory affairs. Historically, programs in environmental health were established to promote research on the control of infectious disease, the purification of water supplies, and the sanitary disposal of human waste. Today, focal points of concern have been broadened to such challenging issues as non-point source environmental pollution, the influence of the built environment on the health of populations, epidemiological aspects of chronic illnesses, occupational health, risk assessment and risk management.

The specific requirements for the BSE degree in Environmental Health are developed on an individual basis with your advisor, but are based on the general 38 course distribution for engineers as specified in the bulletin of Tufts University. The faculty coordinator for this program is Associate Professor David M. Gute.

DEGREE REQUIREMENTS

A minimum of thirty-eight courses is required, to be distributed in the following categories:

1) Introductory Engineering: eleven courses required for professional degrees in engineering (see School of Engineering Information),
2) Engineering Science: four courses, to include a minimum of two courses from Engineering Science 3-9, and a maximum of one course from Engineering Science 11-30,
3) Humanities, Arts and Social Sciences: five courses (see School of Engineering Information),
4) Civil and Environmental Engineering: six courses,
5) Free Electives: twelve courses to be selected from the above categories to form a coherent program

A fifth year of study will provide the opportunity for a student to qualify for a bachelor of science degree in civil engineering, or a master of science degree with emphasis in environmental health or environmental engineering.

Bachelor of Science

The Bachelor of Science (BS) degree program provides a broad liberal education within the School of Engineering, but a less technical one than either the bachelor of science in civil engineering (BSCE) or the bachelor of science in engineering (BSE). Students working toward this degree normally place a heavier emphasis on the humanities and social sciences than students working in the other programs. This degree program, along with the bachelor of science in engineering, recognizes the unique value of engineering as preprofessional education for architecture, business administration, city planning, dentistry, medicine, law, public health, and other professions, as well as for the student who wishes to combine engineering with nonengineering disciplines. Faculty from the Department of Civil and Environmental Engineering will supervise, with consent, programs of study in their areas of expertise. For details, see the School of Engineering section.

UNDERGRADUATE MINOR PROGRAMS

Architectural Engineering Minor

The Department of Civil and Environmental Engineering offers a minor in Architectural Engineering for students in the College of Liberal
Arts. This minor provides curricular recognition for the technological track in Architectural Studies (see Architectural Studies section). The faculty advisor for this minor is Professor Masoud Sanayei. The Liberal Arts faculty contact is Associate Professor Daniel Abramson.

Of the five course credits that are required for this minor, three are required:

- **ES 5** Intro to Mechanics: Statics and Dynamics
- **ES 9** Applied Mechanics: Strength of Materials
- **ES 88** CAD for Engineers

Two elective course credits selected from the following:

- **EN 2** Eng. Graphics and CAD (half-credit)
- **EN 5** Skyscrapers: Architecture and Eng. (half-credit)
- **EN 39** Bridge Design (half-credit)
- **EN 75** Geohazards Eng. (half-credit)
- **EN 76** Climate Change in Eng. (half-credit)
- **EN 80** Structural Art (half-credit)
- **ES 2** Intro. to Computing in Eng.
- **CEE 1** Intro. to Civil and Environmental Eng.
- **CEE 22** Structural Analysis
- **CEE 24** Design of Steel Structures
- **CEE 25** Reinforced Concrete Design
- **CEE 42** Intro. to Geotechnical Eng.
- **CEE 120** The Art of Building
- **CEE 188** Eng. Design with CAD

**ARCHITECTURAL STUDIES MINOR**
The Department of Art and Art History offers a minor in architectural studies that is open to students from both the School of Engineering and the College of Liberal Arts. For details, see full description under Architectural Studies. The faculty advisor for this minor is Associate Professor Daniel Abramson. The Engineering contact faculty is Professor Masoud Sanayei.

**Geoengineering Minor**
The Department of Civil and Environmental Engineering offers a geoengineering minor that is available to all non-CEE majors. The faculty advisor for this minor is Professor Lewis Edgers.

Five courses are required:

- **ES 5** Intro. to Mechanics: Statics and Dynamics
- **ES 9** Applied Mechanics: Strength of Materials
- **CEE 12** Hydraulic Eng.
- **CEE 42** Intro. to Geotechnical Eng.

One elective course selected from the following:

- **CEE 112** Hydrology and Water Resource Eng.
- **CEE 113** Groundwater Hydrology
- **CEE 146** Foundation Eng.
- **CEE 149** Earth Support Systems

Prerequisites for the above courses are **MATH 12** and **PHY 12**.

**Geology Minor**
The Department of Geology offers a minor in geology available to students in the School of Engineering. For details, see the Department of Geology section. The faculty advisor for this minor is Professor Anne Gardulski. The Engineering contact faculty is Professor Lewis Edgers.

**GRADUATE PROGRAMS**

**Doctor of Philosophy (Ph.D.)**
Students entering the doctoral program in Civil and Environmental Engineering should meet the admission requirements of the graduate school, gain acceptance by the Civil and Environmental Engineering faculty, and hold a Master of Science or Bachelor of Science degree in Civil and Environmental Engineering or a related discipline.

**PROGRAM OF STUDY**
Students are required to complete the equivalent of a three-year program of full-time graduate study for the doctoral degree. In general, the first two years of the Ph.D. program will be devoted to course work; a minimum of fifteen courses beyond the baccalaureate level must be completed. Students who enter the program with a Master of Science degree may complete a reduced course load, depending on the master's degree field of study.

Each individual in the doctoral program will select a minor subject of study that consists of a sequence of three courses in an area that is considered relevant to the student's overall program of study.

**QUALIFYING EXAMINATION**
For admission to doctoral candidacy, a Ph.D. student must successfully complete a qualifying examination. Typically, this examination is taken after the student has completed the major part of their required course work, preferably within eighteen months of matriculation. The qualifying examination is administered by faculty members in
the student’s subdiscipline area and consists of a written exam, which may be closed- or open-book, and may include an oral exam. The qualifying examination is designed to evaluate the student’s overall knowledge of their discipline based on their program of study, ability to interpret and critique relevant research concepts, and formulate responses to both fundamental and applied problems.

**Dissertation**
The final requirement for the doctorate degree is a dissertation. The dissertation demonstrates the candidate’s ability to perform independent research of high quality and conveys expertise in relevant research techniques and methodologies. The Ph.D. candidate must prepare a written dissertation proposal that describes their research topic in detail, including, but not limited to, a justification, objectives and hypotheses, methods, anticipated results, and schedule. The dissertation research proposal must be presented to and approved by a dissertation committee that consists of the student’s faculty research advisor and at least three additional faculty members with relevant expertise. At least one member of the committee must be from outside the Department, and one member must be from outside Tufts University. It is also required that the majority of the committee members be graduate faculty (full-time faculty holding a doctoral degree). The dissertation committee evaluates the research proposal based on technical merits and potential contributions to the field of Civil and Environmental Engineering, and the ability of the student to successfully complete proposed research. Upon completion of the approved research, scholarly competence is demonstrated through the preparation of a written dissertation of the research. The doctoral candidate must orally defend the content and conclusions of the dissertation in an open forum before the dissertation committee.

For more information, please refer to the graduate handbook available at CEE website: [http://ase.tufts.edu/cee](http://ase.tufts.edu/cee).

**Master of Science (M.S.)**
Instruction leading to the Master of Science degree is offered with concentrations in environmental and water resources, environmental health, geotechnical and geoenvironmental, infrastructure, and structural engineering and mechanics. Candidates for the master’s degree program in environmental, infrastructure, geotechnical and geoenvironmental, and structural engineering and mechanics are expected to have an adequate background in science, mathematics, and engineering science. Candidates for the master’s degree program in environmental health should have a background in the biological and health sciences. The School of Engineering requires that graduate applicants submit Graduate Record Examination scores.

Of the ten courses required for the M.S. degree, at least seven must be earned in civil and environmental engineering, with the remainder in related fields. Students who lack adequate undergraduate preparation in related field, such as biology for environmental engineering, mathematics for structural engineering, or fluid mechanics for water resources engineering, may be required to take such course work in addition to their graduate program of study.

A written thesis is required for the M.S. degree program, and up to two of the seven courses required in Civil and Environmental Engineering may be taken as Master’s thesis research. Students are expected to form a thesis committee and present a thesis proposal to their committee within twelve (12) months of entering the M.S. program. The thesis committee should be composed of at least three members, with the chair being the student’s advisor within the Department. One of the committee members may be from outside the Department of Civil and Environmental Engineering. As part of the degree program, the master’s candidate must complete a written thesis, which must be defended orally and approved by the committee.

For more information, please refer to the graduate handbook available at CEE website: [http://ase.tufts.edu/cee](http://ase.tufts.edu/cee).

For information on the Civil and Environmental Engineering graduate program in Environmental Health, see the Environmental Health Program. For graduate students who are interested in Urban and Environmental Policy, the Department of Civil and Environmental Engineering Participates in a special program offered in association with the Department of Urban and Environmental Policy and Planning.
Master of Engineering (M.Eng.)
The Master of Engineering (M.Eng.) degree program provides a practice-oriented alternative to the Master of Science program offered by the Department of Civil and Environmental Engineering. Students are admitted to a specific track within the Master of Engineering Program and assigned an advisor. The M.Eng. degree is designed to be completed in one year; however, depending on individual student schedules and needs, a longer program of study may be appropriate. M.Eng. degrees are also well suited to part-time study, with many courses offered in the early morning, late afternoon, or evening.

The outcomes for the M.Eng. graduate program are: (1) an ability to apply knowledge of technical skills when working in one of the Civil and Environmental Engineering tracks (Environmental Health, Environmental Engineering and Water Resources, Geotechnical and Geoenvironmental Engineering, and Structural Engineering and Mechanics); (2) an ability to use both engineering tools and management tools acquired during M. Eng. study when practicing in Civil and Environmental Engineering; (3) engagement in life-long learning related to the technical discipline.

INTERDISCIPLINARY PROGRAMS

Water: Systems, Science and Society (WSSS)
The Water: Systems, Science and Society (WSSS) graduate program was established to provide the interdisciplinary perspectives and tools to manage water related problems throughout the world. Students participating in the WSSS program must enroll in and fulfill the requirements of a graduate degree within one of the participating schools to ensure a strong knowledge base in their chosen field. WSSS students take courses in three of four core areas and participate in cross-cutting seminars. Students in the Research Track work on interdisciplinary, problem-focused projects in one of six research areas. Students in the Practicum Track complete a Professional Interdisciplinary Experience and participate in a special WSSS Research Practicum.

The WSSS requirements are completed in addition to the student’s degree requirements, but through the use of electives and co-listed courses, the WSSS program usually will not add significant time to a graduate degree program. Upon satisfac-
Concentration Elective (select one):
CEE 12 Hydraulic Eng.
CEE 22 Structural Analysis
CEE 32 Environmental Eng. Principles
CEE 42 Intro. to Geotechnical Eng.

Civil and Environmental Engineering Electives (select 2):
In consultation with your advisor select two additional CEE undergraduate courses that satisfy your program of study.

Students in the post-bac program must satisfy all course prerequisites listed on Tufts Bulletin. Courses numbered above 100 can be used for graduate credit, and are transferable into the Tufts graduate program. Completion of the post-bac program does not guarantee admission into the graduate program. Students may take ES 5 and/or ES 9 during the summer session. Please see the Tufts Summer Session for more information:
http://ase.tufts.edu/summer/.

Certificate Program in Environmental Management
A five-course graduate-level certificate program in Environmental Management is designed for students with a bachelor's degree and two years of work experience. Additionally, students should have some knowledge of current environmental issues, and should have undergraduate coursework in natural or physical science, math, or engineering. The certificate programs can be completed on a part-time, non-degree basis by students who are seeking professional training in the field or preparing for a degree program. In most cases, courses taken as a certificate student can be transferred into a related master's degree program.

Certificate students must complete five graduate course credits from the clusters listed below. Students must take at least one course from each concentration area listed below.

Environmental Technology
CEE 103 Water Quality Modeling
CEE 113 Groundwater Hydrology
CEE 136 Air Pollution Control
CEE 138 Hazardous Waste Treatment
CEE 139 Bioremediation
CEE 143 Site Remediation
CEE 172 Fate and Transport of Environmental Contaminants

Environmental Law, Management, and Policy
CEE 185 Environmental Law, Management, and Policy
CEE 193G Geographic Information Systems (GIS)
CEE 202 Environmental Statistics
CEE 201 Land Use Planning and Policy
CEE 207 Environmental Law
CEE 264 Hazardous Materials Management and Policy
CEE 265 Corporate Management of Environmental Issues
CEE 267 Methods in Environmental Impact Assessment

Health, Safety, and the Environment
CEE 154 Principles of Epidemiology
CEE 158 Occupational and Environmental Health
CEE 164 Epidemiological Methods
CEE 167 Environmental Toxicology
CEE 168 Exposure Assessment
CEE 173 Health Effects and Risk Assessment
CEE 175 Hazardous Materials Safety

For more detailed information, please visit the CEE department website http://ase.tufts.edu/cee.

Certificate Program in Epidemiology
Offered in collaboration with Tufts' School of Medicine, the Friedman School of Nutrition Science and Policy, and the Department of Civil and Environmental Engineering, this interdisciplinary program is designed to help students understand, integrate, and apply epidemiologic methods and research. The program is especially appropriate for clinicians, professionals in public health and human service agencies, lawyers, industrial hygienists, pharmaceutical or biotechnology professionals, environmental engineers or scientists, and individuals involved in citizen activist groups focusing on human health issues. It's also useful for individuals who are considering a career in epidemiology and/or public health but are not yet ready to commit to a full Master's degree program. Open to individuals with a Bachelor's degree, the certificate requires the completion of five courses as follows:

Two required foundation courses:
CEE 154 Principles of Epidemiology
CEE 164 Epidemiologic Methods

One course in biostatistics (may be exempted by prior coursework):
BIO 132 Biostatistics
MPH 205 Principles of Biostatistics
MPH 259 Fundamentals of Biostatistics
Two elective courses in your area of interest or expertise. Examples include:

- MPH 204 Occupational and Environmental Health
- MPH 209 Applications in Epidemiology
- MPH 220 Cardiovascular Epidemiology
- MPH 222 Survey Research Methods and Data Mgt.
- MPH 224 Infectious Disease Epidemiology
- MPH 226 Cancer Epidemiology
- MPH 240 Environmental Epidemiology
- CEE 137 Public Health
- CEE 158 Occupational and Environmental Health
- CEE 167 Environmental Toxicology
- CEE 173 Health Effects and Risk Assessment
- CEE 241 Biology of Water and Health
- UEP 281 Chemicals, Health and the Environment

Other courses may be selected with the approval of the Program Director. Also, an optional internship is available to students desiring a professional experience in the use of epidemiology. The internship would count as an elective and be started after all other coursework is completed. For more information, please visit the Epidemiology Graduate Certificate program website: http://gsas.tufts.edu/academics/certificateprograms/epidemiology.htm. The Certificate Faculty Advisor is Mark A. Wood (617-627-3640).

Classics

Professor Gregory R. Crane, Chair; Winnick Family Chair in Technology and Entrepreneurship; Greek literature, computers and classics
Professor R. Bruce Hitchner, Roman history and archaeology, international relations
Associate Professor Steven W. Hirsch, Greek, Roman, and Near Eastern history
Associate Professor Joanne H. Phillips, Latin and Greek literatures, Greek and Roman medicine
Assistant Professor Marie-Claire Beaulieu; Greek Religion, Epigraphy, Medieval Latin
Lecturer Betsey J. Halpern, Latin and Greek literatures
Lecturer Anne Mahoney, Latin and Greek literatures
Lecturer Regina Merzlak, Latin and Greek literatures
Lecturer Susan E. Setnik, Greek and Latin language
Professor Emeritus Peter L. D. Reid, Latin and Greek literatures, medieval Latin

The Department of Classics is dedicated to the study of Greek and Roman culture and to clarifying and assessing its continuing impact on contemporary life. Classics is more than the study of the Greek and Latin languages; it can liberate the student from the parochialisms of both time and place. The role of the contemporary individual in relation to society can be examined through the history, archaeology, art, architecture, science, philosophy, religion, mythology, and especially through the literatures of Greece and Rome.

Classics constitutes an interdisciplinary study of the cultures of the ancient Mediterranean, Near East, and Europe. Despite the period of antiquity in which it concentrates, the field of classics is constantly changing in light of new discoveries, new methodologies, new interpretations, and new relationships with other areas of study. In many ways, classics offers the undergraduate student an ideal educational opportunity to integrate different fields and methodologies, and to study intrinsically interesting and time-tested topics in the literature, mythology, art, archaeology, history, and science of Greece and Rome.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

Majors in the Department of Classics meet the requirements of four classes of students:

1) those who have no professional interest in classics but who wish to bring together disparate distribution and foundation requirements for a coherent liberal arts major;
2) those who want a combined major in Latin, Greek, or Classical Studies and one of the natural sciences, social sciences, or humanities;
3) those who want an intensive study of Greek or Latin preparatory to postgraduate study in another field, such as law, theology, medicine, philosophy, history, English, or modern languages;
4) those who are professionally interested in the classics and who plan to do postgraduate study in the field and then teach or engage in research or museum work.

Major in Classical Studies

Ten courses are required, usually distributed as follows: Classics 31 and 32; two courses from either Classics 37, 38, or Classics 27, 164, 168; two additional classics courses numbered above 100; two other courses offered by the Department of Classics (strongly recommended are Latin 3 and
With a score of three, students will be placed into Latin 21 or above; with a score of two, into Latin 3. During orientation every student is encouraged to discuss any unusual placement problem with members of the department so that in every case the student is placed in the appropriate course.

Students with two years of secondary school preparation in ancient Greek are normally placed into Greek 2 or Greek 7. Students with three or four years of preparation in ancient Greek are normally placed in Greek 7 or above, depending on previous records, together with placement examination and individual consultation. In ancient Greek, as in other languages, the student is urged not to prejudge his or her college courses on the basis of secondary school experience.

UNDERGRADUATE MINOR PROGRAM
The Department of Classics offers minors in Latin, Greek, Greek archaeology, Roman archaeology, Greek civilization, and Roman civilization. Details are available from the departmental office.

GRADUATE PROGRAM
Master of Arts in Classics
The master’s program in classics at Tufts is designed for students who wish to go beyond the bachelor’s level to attain a broader and deeper knowledge of the classics for one or more of the following purposes: teaching background, further graduate study, or cultural enrichment. With its strong language component; faculty strength in literature, history, and archaeology; and access to computer applications, this program particularly suits those who want either to consolidate and improve their language, research, and teaching skills in preparation for a Ph.D. degree at another institution or to teach classics at the secondary level.

REQUIREMENTS
1) Applicants will usually have completed the equivalent of an undergraduate Latin or Greek major. If not, additional courses will be required for completion of the master's degree.
2) Candidates must successfully complete eight graduate courses, of which a minimum of two must be in Latin and a minimum of two must be in Greek. Candidates who are in-service teachers, and they alone, may meet the Greek requirement in two...
undergraduate courses above Greek 1, 2; however, only courses in Greek at the graduate level may be counted toward the eight courses required for the degree.

3) A candidate for the master's degree must be in residence for the equivalent of one academic year. The master's degree may be earned on a part-time basis through courses offered by the department during the regular academic year and by summer school courses. No degree is granted on the basis of summer school work only.

4) Reading knowledge of Latin or Greek and one modern foreign language (usually German or French) is tested by examination.

5) To demonstrate research and presentation the candidate may submit for evaluation by a faculty committee either two papers (written for courses at Tufts and revised as necessary after completion of the course) or a thesis. The thesis normally counts as two of the required eight courses.

6) A comprehensive written examination integrating course work with a general knowledge of Greek and Latin literatures. An oral examination based primarily on the papers or thesis. Candidates accepting assistantships (i.e., work in the department) should anticipate a more extended time schedule; furthermore, students usually find that writing a thesis takes a full term of uninterrupted work.

Master of Arts in Classical Archaeology
The master's program in classical archaeology provides students with the artistic, cultural, social, and historical context for the materials of classical antiquity and has successfully prepared students for work toward a doctorate, or for fieldwork or museum work.

REQUIREMENTS
1) Applicants will usually have completed the equivalent of an undergraduate Classics major or Ancient Art or Archaeology major with intermediate levels in Latin or Greek in both languages.

2) The candidate must successfully complete nine graduate courses (credits) as follows:
   a. three graduate courses in Latin or Greek;
   b. three graduate courses in art and archaeology (Tufts currently alternates courses yearly between concentrations on Greece and Rome)
   c. one graduate course in ancient history;
   d. and a two-credit thesis or two additional courses.

In addition both fieldwork and laboratory work are requirements, either as documented past experience or to be fulfilled during completion of the master's degree.

3) Reading knowledge of Latin or Greek and one modern foreign language (usually German, French or Italian) is tested by examination.

4) To demonstrate research and presentation, the candidate may submit for evaluation by a faculty committee either two papers (written for courses at Tufts and revised as necessary after completion of the course) or a thesis. The thesis normally counts as two of the required nine courses.

5) A comprehensive written examination integrating course work with a general knowledge of classical archaeology is required, as well as an oral examination based primarily on the papers or thesis.

6) Residency for the equivalent of one academic year is required. The degree may be earned on a part-time basis through courses offered by the department during the regular academic year and through summer school courses. No degree is granted on the basis of summer school work only.

7) Candidates accepting assistantships (i.e., work in the department) should anticipate a more extended time schedule; furthermore, students usually find that writing a thesis takes a full term of uninterrupted work.

For more detailed information, please visit the website http://ase.tufts.edu/classics.

Clinical Psychology
(FOR DEGREE REQUIREMENTS, SEE PSYCHOLOGY.)

Cognitive Science
DIRECTOR:
Matthias Scheutz, Computer Science

A Ph.D. in Cognitive Sciences is offered through the departments of Child Development, Computer Science and Psychology. Prospective students apply to one of the departments participating in the cognitive science Ph.D. program and indicate in
Communications and Media Studies

DIRECTOR:
Julie Dobrow, Child Development

ASSOCIATE DIRECTOR:
Susan Eisenhauer, Communications and Media Studies

CORE FACULTY:
Professor John Conklin, Sociology
Professor Lee Edelman, English
Professor James Glaser, Dean of Academic Affairs for Arts and Sciences, Political Science
Professor Barbara Grossman, Drama and Dance
Professor David Guss, Anthropology
Professor Deborah Pacini Hernandez, Anthropology
Professor Hosea Hirata, German, Russian, and Asian Languages and Literatures
Professor Charles Inouye, German, Russian, and Asian Languages and Literatures
Professor Vida Johnson, German, Russian, and Asian Languages and Literatures
Professor Joseph Litvak, English
Professor Susan Napier, German, Russian, and Asian Languages and Literatures
Professor Colin Orians, Biology, Environmental Studies Program
Professor Karen Panetta, Electrical and Computer Engineering
Professor Christiane Zehl Romero, German, Russian, and Asian Languages and Literatures

Communications and Media Studies is an interdisciplinary program that educates students about mass media and communications. In our contemporary world, the omnipresence of mass communications demands a basic understanding of its workings and effects by every citizen. The mission of the Communications and Media Studies program is to provide students with the necessary critical tools to participate actively and knowledgeably as informed world citizens and to give them a background in media literacy to make them more careful and critical consumers and producers of media. This program is designed to aid all students in acquiring this knowledge, while also providing interested students with the opportunity to make communications and media studies a major part of their academic career at Tufts.

Each semester the program offers courses of its own through the Experimental College and lists all media-related courses available in the College of Liberal Arts. The program also offers three interdisciplinary minors: Mass Communications and Media Studies, Film Studies (with two
tracks—Film Criticism and Film Practice), and Multimedia Arts. It also registers, supervises, and grants credit for internships in all fields of communications and mass media. Special events and lectures are organized annually and are open to the entire university community.

For more information, contact the program office at 95 Talbot Avenue, 617-627-2007, cms@tufts.edu.

INTERDISCIPLINARY MINOR IN MASS COMMUNICATIONS AND MEDIA STUDIES

Students pursuing the interdisciplinary minor in Mass Communications and Media Studies must take Media and Society (Sociology 40) and four courses from the program's approved elective courses list. In addition, during their senior year CMS students must either complete a senior project (Experimental College 194C) or take an additional media course from the CMS list (the CMS course option).

The four elective courses mentioned above must be from at least three departments, and they must include at least one course in the disciplinary area of social sciences and at least one course in the disciplinary area of humanities and the arts. Except with the written consent of the director, only one of the four electives may be a media practice course or credited internship where students learn skills in media production (e.g., photography, journalism, video, film, multimedia, graphic design, advertising copy). With the exception of the internship (Experimental College 99C) and the senior colloquium (Experimental College 190C), all courses taken for the MCMS minor must be taken for a letter grade. In accordance with Tufts policies, students cannot double count a course for fulfillment of a foundation requirement and for the MCMS minor, and they may use a maximum of two credits from the minor to count also toward a major, another minor, or distribution requirements.

The senior project (Experimental College 194C) is a substantial work, which can include the use of one or more forms of media (e.g., print, film, video, recorded sound, website, blog, etc.). The project may take the form of either a more traditional written thesis or an audiovisual project with a written component. The focus of the work will be a critical exploration of mass communications in the past, present, and/or future. Either one-half credit or one credit will be given, at the discretion of the faculty advisors. Students doing a project must take the CMS senior colloquium (Experimental College 190C), a half-year, one-half credit, pass-fail course that assists them in developing their senior projects through group study and analysis of each student's work in progress.

The CMS course option to the senior project is an additional CMS-approved media-related course taken in the senior year. Students completing the course option must submit a paper (minimum 15 pages) focusing on a media- or film-related topic written in conjunction with that course. The paper must be approved, advised, and graded by the course instructor. Students pursuing this option must also get approval from the CMS director. Students are strongly encouraged to take at least one media-related internship.

INTERDISCIPLINARY MINOR IN FILM STUDIES

Students pursuing an interdisciplinary minor in Film Studies must take a core course, either Introduction to Film Studies (Drama 50/ILVS 50) or an approved alternative. Students will also take four film-related courses from approved course lists. As of the 2010–2011 academic year, there are two tracks within the Film Studies minor. Students interested in film theory and/or film history should pursue the Film Criticism track. Those students interested in film production and/or screenplay writing should pursue the Film Practice track.

During their senior year students doing the Film Criticism track must either complete a Senior Project (EXP 194C) or take an additional film related course from the Film Criticism elective list in which they can write a paper of at least 15 pages on a film-related topic (the CMS Course Option). Students doing the Film Practice track must complete a Senior Project that is either a film or screenplay.

For students pursuing the Film Criticism track, the four elective courses mentioned above must be from at least three departments. Except with the written consent of the CMS director, no more than one of the four electives may be a Film Practice course or credited internship in which students learn skills in film production or practice. With the exception of the internship (Experimental College 99C) and the senior colloquium (Experimental College 190C), all courses taken for the MCMS minor must be taken for a letter grade. In accordance with Tufts policies, students cannot double count a course for fulfillment of a foundation requirement and for the MCMS minor, and they may use a maximum of two credits from the minor to count also toward a major, another minor, or distribution requirements.
For a list of approved elective courses for the Film Criticism track and the Film Practice track, please go to the “Film Studies Minor” link on the CMS website: [http://ase.tufts.edu/cms/filmstudies.html](http://ase.tufts.edu/cms/filmstudies.html).

**INTERDISCIPLINARY MINOR IN MULTIMEDIA ARTS**

The multimedia arts program provides a framework for the analysis of and practical training in emerging digital media. The minor includes—and often mixes—work in animation, filmmaking, photography, music, text, drawing, collage, graphic design, software development, website construction, user interface strategies, and human factors theory.

Through course work and collaboration on the part of students in liberal arts and students in technical disciplines, the minor aims to foster the development of a body of shared knowledge and ideas and, in so doing, to break down barriers that have traditionally hindered such cross-fertilization.

The interdisciplinary minor in multimedia arts requires a minimum of five courses within the guidelines noted below. Students pursuing the minor must take the Communications and Media Studies senior colloquium and complete a senior project. Prior to that, they need two multimedia practice courses (selected from the program’s approved courses list) which introduce students to the tools, methods, and theories current in the field, and two electives selected from courses offered by the supporting departments—Art and Art History, Drama and Dance, Music, Electrical and Computer Engineering—or those listed and approved by the program (e.g., Experimental College courses).

Except for the senior colloquium, all courses taken as part of the multimedia arts minor must be taken for a letter grade.

In accordance with Tufts policies, students cannot “double count” a course for fulfillment of a foundation requirement and for the Film Studies minor, and they may use a maximum of two credits from the minor to count also toward a major, another minor, or distribution requirements. Students may use accepted courses transferred from another institution toward the Film Studies minor with consent of the CMS director. A maximum of three courses taken outside of Tufts can be applied toward the minor.

The Senior Project (EXP 194C) is a substantial work that may take the form of either a more traditional written thesis or a practice-based project (e.g. screenplay, film, video) with a written component. Students doing a project must also take the CMS Senior Colloquium (EXP 190C), a half-year, half-credit, pass-fail course that assists them in developing their senior projects.

The CMS Course Option is an additional CMS-approved film-related course taken in the senior year. Students completing the Option course must submit a paper (minimum 15 pages) focusing on a film-related topic written in conjunction with that course. The paper must be approved, graded, and advised by the course instructor. Students pursuing the Course Option to the senior project also must get approval from the CMS director.

To indicate their intent to minor, students should consult the CMS director, Julie Dobrow, or the CMS associate director, Susan Eisenhauer, about requirements and the filing of appropriate paperwork. Students are encouraged to begin this process as soon as possible.

For specific information about the policies governing requirements and electives, visit [http://www.excollege.tufts.edu/mma](http://www.excollege.tufts.edu/mma).
to work a minimum of 150 hours (approximately 12 to 15 hours each week), complete a writing requirement, and meet regularly with the faculty advisor. Contact CMS Associate Director Susan Eisenhauer (susan.eisenhauer@tufts.edu) for eligibility and course requirements.

For more detailed information, please visit the website http://ase.tufts.edu/cms.

Community Health

DIRECTOR:
Senior Lecturer Edith D. Balbach, Community Health

POLICY BOARD:
Carol Baffi-Dugan, Associate Dean for Undergraduate Education, Director of Health Professions Advising
Associate Professor Harry Bernheim, Biology
Associate Professor David Gute, Civil and Environmental Engineering
Associate Professor Joanne Phillips, Classics
Associate Professor Rosemary C. R. Taylor, Sociology/Community Health
Assistant Professor Raymond Hyatt, Tufts University School of Medicine
Lecturer Kevin Irwin, Community Health
Lecturer Linda Sprague Martinez, Community Health
Pamela Schoenberg Reider, Program Administrator

The Community Health Program (CHP), established in 1975, is one of the oldest multidisciplinary programs within the university. CHP touches on diverse aspects of health and society and encourages students to explore health issues from a variety of perspectives.

Courses approved to satisfy the CHP major span many disciplines, including anthropology, nutrition, classics, sociology, biology, psychology, history, economics, engineering, philosophy, political science, and public health. Through courses and fieldwork, CHP students analyze: 1) the factors that influence health and illness, 2) how communities define and try to resolve health-related problems, 3) the formation of health care policy in the United States with a comparative look at other countries, and 4) the institutions that plan, regulate, and deliver health care services and public health programs.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

Second Major in Community Health

The major in Community Health offers undergraduates an opportunity to explore issues surrounding health, health care, community and society. In addition to a broad academic experience encompassing nine courses, students complete a 150-hour internship for which they receive one academic credit. The major in Community Health is a second major, which means students complete

Community Environmental Studies

FACULTY ADVISOR:
Rusty Russell, J.D., Lecturer, Urban and Environmental Policy and Planning

Environmentalists and concerned citizens alike face the challenge of keeping pace with politically and technically complex issues. The growing sophistication of the environmental movement creates new challenges for conservation and preservation, environmental justice, and safety and health in the workplace and community.

The certificate in Community Environmental Studies (CES) provides professional training for careers in today’s rapidly evolving environmental field. CES’s interdisciplinary curriculum is designed to clarify career goals for those who may be considering environmental work, as well as to enhance the skills of professionals already in the field. The certificate is offered in collaboration with the Department of Urban and Environmental Policy and Planning and the Office of Graduate Studies.

The certificate requires the completion of four courses in such varied subjects as environmental policy, land use planning, sustainability, mediation, law and economics.

The program is open to individuals with a bachelor’s degree and is especially appropriate for people in community and environmental organizations who want to increase their expertise about issues and methods, midcareer professionals who want to apply their skills to environmental work, and business people working with communities on environmental issues.

For more information and an application, contact the Office of Graduate Studies at 617-627-3395, or visit http://gradstudy.tufts.edu/.
it in addition to completing their primary major. All courses submitted for credit in the major must be passed with a C- or better, with the exception of the internship. The internship (Community Health 180) must be passed with a B- or better. In completing an internship, a Tufts student is representing Tufts University to an outside agency and is helping to provide a service to Boston area communities. Students are expected to take their placement seriously, to represent CHP effectively, and to render a valuable service. For these reasons, credit for the internship is contingent on the student receiving at least a B-. No course submitted for credit in the major may be taken on a pass-fail basis.

CORE REQUIREMENTS
To pursue a second major in community health, students complete ten courses that encourage a breadth and depth of learning. There are five required courses:

1. **Community Health 1** Introduction to Community Health
2. **Community Health 2** Health Care in America: Policies and Politics
3. **Community Health 30** Internship Seminar: Inquiry in the Social World
4. **Community Health/Civil Engineering 54** Fundamentals of Epidemiology
5. **Community Health 180** Internship

The five remaining electives are selected from a diverse mix of courses. All CHP majors are required to take five electives across three clusters: Science of Health, Frameworks for Understanding Health, and Health/Health Care Policy. Students must at least complete one course in each cluster (see below). At least one of these five courses must be approved as a Research course and at least one must be approved as a Comparative/Cross-cultural Course.

1. **SCIENCE OF HEALTH**
   One course in the Science of Health cluster.

   The sciences have a particular lens for looking at health issues that focuses on the biological or technological causes and cures for disease. Although health and health care result from a complex mix of biological, social, political, and cultural phenomena, anyone claiming a thorough knowledge of health issues must have some basic knowledge of the scientific/technological framework for looking at them.

2. **FRAMEWORKS FOR UNDERSTANDING HEALTH**
   One course in the Frameworks for Understanding Health cluster.

   In Community Health 1 and 2 students are introduced to a broad range of health concepts and health areas. By taking at least one course in this cluster, students will have an opportunity to explore one area in greater depth.

3. **HEALTH/HEALTH CARE POLICY**
   One course in the Health/Health Care Policy cluster.

   The policy environment controls how resources are distributed and helps to determine how communities perceive their options. Students need to understand current U.S. and/or international policy and have the opportunity to learn methods for developing further understanding.

4. **CROSS-CULTURAL OR COMPARATIVE VIEWS OF HEALTH**
   CHP majors are required to take at least one course with a cross-cultural or comparative focus that encourages understanding health in different cultures or communities. Courses approved for this requirement fall into two broad categories: within the United States and outside of the United States (International).

5. **RESEARCH**
   All CHP majors must complete a major research paper or project. This requirement can be satisfied by taking a course with a research component, by completing a research-based fieldwork or independent study focused on health, or by completing a thesis focused on health issues. Students may petition to have an independent study (conducted under Community Health 193) or a fieldwork experience (conducted under Community Health 199) count toward the Research requirement if the student’s project has a substantial research component. Such a course will be assigned to a cluster depending on the topic. Work completed in Sociology 102, Civil and Environmental Engineering 164, or Community Health 197/198 will
similarly be assigned to a cluster based on the topic of the research. Students may petition to have honors theses or independent studies from their primary major count toward the Research requirement if the project involves research in a health area and a member of the CHP faculty is on the student’s committee. Permission to count such a course must be obtained in advance. In accordance with university rules, students may not double count more than half of their primary major credits with their second major. Students may petition courses taken abroad for major credit but no more than three courses taken at other institutions may count toward the major. Students may petition a course to count for major credit when they have a course syllabus, which is typically after they return. This process is a separate one from that of transferring the credit to Tufts, which students do through the on-line system. The CH Transfer of Credit representative will advise them on what will likely count for CH credit.

EXPERIENTIAL LEARNING: INTERNSHIP

The internship is an integral part of the CHP. For many students, the 150-hour internship proves to be one of the most valuable learning experiences in the program, establishing a link between theory and practice. CHP assists students in finding an internship, and students have considerable latitude in selecting a placement. Placements have included the Greater Boston Elderly Legal Services, the Boston Childhood Lead Poisoning Prevention Program, the Dana-Farber Cancer Institute, the Massachusetts Coalition for Occupational Safety and Health, Children's Hospital, neighborhood health centers, Public Health AIDS Services, and the Five City Tobacco Collaborative. In addition to evaluating the progress of students, site supervisors maintain contact with the CHP internship coordinator. Students must complete CH 1 and CH 2 before the Internship (CH 180) and must complete CH 30 before or during the Internship (CH 180).

More information may be obtained from the program office at 112 Packard Avenue or by calling 617-627-3233, or by e-mail (chp@tufts.edu). Visit our website at http://ase.tufts.edu/commhealth.

Computer Engineering

(FOR DEGREE REQUIREMENTS, SEE ELECTRICAL AND COMPUTER ENGINEERING.)

Computer Science

Professor Carla Brodley, Chair; Artificial intelligence, machine learning
Professor Lenore J. Cowen, Computational biology, theory of computation, algorithm design and analysis
Professor Robert J. K. Jacob, Human-computer interaction
Professor Diane L. Souvaine, Computational geometry, algorithm design and analysis
Professor Kathleen Fisher, Programming Languages
Associate Professor Anselm C. Blumer, Artificial intelligence, machine learning, computational biology
Associate Professor Alva Couch, Network and system administration, scientific computing and visualization
Associate Professor Soha Hassoun, Computer-aided design, VLSI design; computational systems biology
Associate Professor Roni Khardon, Machine learning, artificial intelligence, computational learning theory
Emeritus Associate Professor David Krumme, Parallel and grid computing
Associate Professor Norman Ramsey, Programming languages and systems, functional programming
Associate Professor Matthias Scheutz, Artificial intelligence, cognitive science, human-robot interaction
Associate Professor Donna Slonim, Computational biology, artificial intelligence, machine learning
Assistant Professor Remco Chang, Visualization, visual analytics, computer graphics
Assistant Professor Samuel Z. Guyer, Compilers, programming languages
Senior Lecturer/Research Assistant Professor Benjamin Hescott, Computational complexity, approximation and parallel algorithms, computational biology
Senior Lecturer/Research Assistant Professor Judith A. Stafford, Software engineering
Lecturer Ming Chow, Computer games, computer security and privacy
Research Assistant Professor Ethan Danahy, Technology solutions for engineering education

SECONDARY APPOINTMENTS:

Professor Bruce Boghosian, Mathematics; Quantum computing, scientific and distributed computing
Professor Christoph Börgers, Mathematics; Applied mathematics and computing
The department offers undergraduate programs in computer science for both liberal arts and engineering students, M.S. and Ph.D. degree programs, and several non-degree graduate programs. The department offers undergraduate programs in both the School of Arts and Sciences and the School of Engineering. Both the Arts and Sciences and Engineering programs are included in the general accreditation conferred on the University by NEASC. In addition, the BSCS program offered through the School of Engineering is accredited by the Computing Accreditation Commission (CAC) of the Accreditation Board for Engineering and Technology (ABET).

UNDERGRADUATE CONCENTRATION REQUIREMENTS— COLLEGE OF LIBERAL ARTS

Major in Computer Science

Ten courses: eight courses in computer science and two courses in related fields. The computer science courses must be more advanced than Computer Science 11 and must include Computer Science 15, 40, 105, 160, and 170. Only one of Comp 80 or Comp 105 may be counted toward the major. The related fields’ courses are Mathematics 12 or 17 and Computer Science 22 (Mathematics 22 may be substituted for Computer Science 22). The introductory courses Computer Science 10 and 11 as well as Mathematics 4, 5, 6, and 11, do not count toward the major. No more than one Directed Study (93, 94, 193, 194) may be counted toward the major. All ten courses to be counted toward the major must be completed with a grade of C- or better. The above are minimal requirements for the concentration. For students who desire a stronger program, the following courses are recommended: Computer Science 111, 180, 181, 190; Mathematics 46, 145, 161 and 162.

For an ABET/CAC accredited program, see the BSCS in the School of Engineering, described below.

UNDERGRADUATE CONCENTRATION REQUIREMENTS— SCHOOL OF ENGINEERING

Bachelor of Science in Computer Science

The mission of the Computer Science in Engineering (BSCS) program is to provide graduates with the durable knowledge necessary to become future leaders in the rapidly evolving discipline of Computer Science as well as in other computer related fields. We aim to give each graduate a solid foundation in both Computer Science theory and programming practice, and to prepare each graduate for further advanced study in Computer Science and related fields. We aim to expose each graduate to the challenges and research problems involved in creating new kinds of computer software. We aim to give graduates the skills and commitment to lifelong learning necessary to prepare them to be effective employees or graduate students in computer-related fields. The faculty is dedicated to accomplishing this mission through integration of teaching and research.

The Bachelor of Science in Computer Science (BSCS) offered through the School of Engineering is accredited by the Computing Accreditation Commission (CAC) of the Accreditation Board for Engineering and Technology (ABET).

Objectives of the BSCS program include that:

1) Graduates should be prepared to pursue a professional career in or related to computing or software.
2) Top graduates should be prepared to succeed in graduate study in computer science.
3) Motivated graduates should have the preparation needed to mature into technology leaders in industry or academia.

Outcomes of the BSCS program include that:

1) Graduates should be able to use computer-science theory to analyze algorithms and to reason about properties of programs, including structure, behavior, and performance.
2) Graduates should be able to solve problems by using principled methods to create, extend, and improve software.
3) Graduates should have had practice applying their knowledge and skills to open-ended problems with more than one good answer.
4) Graduates should have practice working in teams

As well, the BSCS Degree aims to empower our students with ABET Computing Accreditation Commission outcomes a-k, including:

a. An ability to apply knowledge of computing and mathematics appropriate to the discipline.
b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
c. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
d. An ability to function effectively on teams to accomplish a common goal.
e. An understanding of professional, ethical, legal, security and social issues and responsibilities.
f. An ability to communicate effectively with a range of audiences.
g. An ability to analyze the local and global impact of computing on individuals, organizations, and society.
h. Recognition of the need for and an ability to engage in continuing professional development.
i. An ability to use current techniques, skills, and tools necessary for computing practice.
j. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
k. An ability to apply design and development principles in the construction of software systems of varying complexity.

The Bachelor of Science in Computer Science (BSCS) requires thirty-eight courses including introductory, foundation, breadth, and concentration courses. Introductory courses (11 credits) include En2 and Es2; one half-credit EN course; Math 11, 12, 13, and 22 (Computer Science 22 may be substituted for Mathematics 22); and Physics 11, Chemistry 1, Physics 12 or Chemistry 2, and a fourth science elective. The science elective may be one of Astronomy 21 or 22; Biology 1 or 13; Chemistry 2; Geology 1, 2, or 5; Physics 12, 13, or 31; or any course in any of these departments with one of these courses as a prerequisite. The foundation requirement (5 courses) includes Computer Science 11 and 15, Engineering Science 3 and 4, and a statistics course chosen from Engineering Science 56, Electrical Engineering 104, Mathematics 162, Biology 132, or Physics 153. The breadth requirement (10 courses) includes English 1; one course in ethics and social context (Philosophy 24 or Engineering Management 54); five courses in Humanities, Arts, or Social Sciences, and three courses chosen either from Humanities, Arts, and Social Sciences, or from selected courses covering the broader context of engineering. Allowable courses in Humanities, Arts, and Social Sciences are those listed as fulfilling the distribution requirement in those categories in the School of Arts and Sciences. A list of selected courses appropriate for the last three credits of the breadth requirement is available from the department, and includes courses in Humanities, Arts, Social Science, Engineering Management, Engineering Psychology, and introductory courses in selected School of Engineering departments. The concentration requirement (11 courses) includes Computer Science 40, 105, 160, 170, and 180; five elective courses in computer science, three of which must be numbered above 100; and a one credit senior project approved by the department. Normally the senior project is completed by enrollment in Comp190 (Software Engineering Project). Only one of Computer Science 80 or Computer Science 105 may be counted toward the degree.

The following sample program is one way of satisfying the above requirements; further information regarding options and procedures is available from the department.

First Year
FALL TERM
Mathematics 11
Physics 11
English 1
Engineering 2 (half credit)
Half-credit (EN) course in engineering
SPRING TERM
Mathematics 12
Computer Science 11 Introduction to Computer Science
Chemistry 1 or 16
Engineering Science 2

Sophomore Year
FALL TERM
Mathematics 13 Calculus III
Computer Science 15 Data Structures
Engineering Science 3 Introduction to Electrical Engineering
Physics 12 or Chemistry 2
Breadth elective (humanities, social sciences, arts, or engineering)

SPRING TERM
Computer Science 22 or Mathematics 22 Discrete Mathematics
Computer Science 105 Programming Languages
Engineering Science 4 Introduction to Digital Logic Circuits
Science elective
Breadth elective (humanities, social sciences, arts, or engineering)

Junior Year
FALL TERM
Computer Science 40 Machine Structure and Assembly-Language Programming
Computer Science 160 Algorithms
Engineering Science 56 Statistics
Humanities, social sciences, or arts elective
Breadth elective (humanities, social sciences, arts, or engineering)

SPRING TERM
Computer Science 170 Theory of Computation
Engineering Management 54 Engineering Leadership
Computer science elective
Computer science elective
Humanities, social sciences, or arts elective

Senior Year
FALL TERM
Computer Science 180 Software Engineering
Computer science elective
Computer science elective
Humanities, social sciences, or arts elective

SPRING TERM
Computer Science 190 Senior Design Project
Humanities science elective
Humanities, social sciences, or arts elective
Free elective

UNDERGRADUATE MINOR PROGRAM
Minor in Computer Science
The undergraduate minor in Computer Science consists of five courses, including Computer Science 15; two courses chosen from Computer Science 40, 105, 160, and 170; Computer Science/Math 22 and one additional course in computer science numbered above 15. Only one of Computer Science 80 or 105 may be counted toward the minor.

POSTBACCALAUREATE PROGRAM IN COMPUTER SCIENCE
The postbaccalaureate program in computer science offers the student with a bachelor's degree, but few computer science courses, the opportunity to earn the equivalent of an undergraduate minor in computer science by completing the requirements for the minor. It is designed to give the student with a nontechnical, liberal arts degree the introductory knowledge base to enter the technology field or continue on for graduate study in computer science. For more information, contact the Office of Graduate Studies at 617-627-3395 or visit the website http://gradstudy.tufts.edu/.

The program requires five Tufts courses. Required:
COMP 15 Data Structures*, plus
Choose two:
COMP 40 Machine Structure and Assembly Language Programming
COMP 105 Programming Languages**, ***
COMP 160 Algorithms***
COMP 170 Theory of Computation***
Choose one:
MATH 22 or COMP 22 Discrete Math or
COMP elective numbered higher than
COMP 15

One elective:
One computer science elective 100-level or above***
*Prerequisite course COMP 11: Introduction to Computer Science is available for individuals without a previous programming course.
**Only one of Computer Science 80 and 105 may be counted toward the program.**

***Courses numbered above 100 award graduate credit, and are transferable into the Tufts Master of Science in Computer Science program upon acceptance to the program.***

CERTIFICATE PROGRAMS

**Certificate Program in Computer Science**

The four-course, graduate-level certificate program in computer science is for the student with a bachelor’s degree in computer science or a closely related field with approved work experience. The program is designed for those who wish to update their skills and broaden their knowledge to meet the challenges of and opportunities available in today’s rapid-pace technology field. For more information, contact the Office of Graduate Studies at 617-627-3395 or visit [http://gradstudy.tufts.edu/](http://gradstudy.tufts.edu/).

The certificate requires four graduate-level courses in Computer Science. This flexible program allows the student to cluster course electives around a particular interest or specialty area. Course may be chosen from our regular department offerings or from our COMP 150 Special Topics offerings, which are offered in particularly “hot” area of interest, or in a unique specialty area of Tufts faculty.

**CERTIFICATE PROGRAM IN HUMAN-COMPUTER INTERACTION**

In an interdisciplinary collaboration between the Department of Psychology, the Department of Computer Science and the Department of Occupational Therapy at Tufts, this four-course, graduate-level certificate is designed to train the next generation of computer professionals for tomorrow’s complex challenges. The program is open to individuals with a bachelor’s degree, and is designed to be pursued on a part-time basis by computer programmers, Web designers, human factors professionals, software engineers, and user interface designers who wish to develop or enhance their user interface design and implementation skills. For more information, see Human-Computer Interaction, or contact the Office of Graduate Studies at 617-627-3395, or visit [http://gradstudy.tufts.edu/](http://gradstudy.tufts.edu/).

The certificate requires four courses.

1. **Two foundation courses:**
   - **COMP 171** Human-Computer Interaction
   - PSY 53/ENP 61 Engineering Psychology

2. **One or more of the following:**
   - **COMP 106** Object Oriented Programming for GUIs
   - **ENP 161** Human Factors in Product Design
   - **ENP 162** Man-Machine System Design
   - **ENP 166** Applied Design of Software User Interfaces
   - **PSY 130** Advanced Engineering Psychology

3. **Electives**
   - **COMP 20** Multimedia Programming
   - **COMP 175** Computer Graphics
   - **EE 120** Computer Animation for Technical Communications
   - **OTS 105** Assistive Technology

(Students may substitute other Tufts graduate courses, subject to the approval of the certificate advisor.)

GRADUATE PROGRAMS

**Master of Science**

The Master of Science degree requires ten course credits at the 100 level or above. At least eight credits must be earned by taking approved courses. The remaining two credits may be earned in several ways, including taking approved courses, completing a master’s thesis, or participating in an independent study or research experience. At least four of the courses must be in computer science, and at least two of the courses must include a serious programming component. To use courses offered outside the Department of Computer Science, the student must obtain the approval of the department. Students must also demonstrate competency as expected from a high quality undergraduate program in computer science in particular in the areas of: Discrete Mathematics, Computer Architecture and Assembly Language, Programming Languages, Data Structures and Analysis of Algorithms, and Theory of Computation.

These topics are covered, respectively, in Computer Science 22, 40, 105, 160, and 170. The courses 105, 160 and 170 may be taken as part of the master’s degree program. Each student must complete a master’s project or thesis demonstrating mastery of computer science research and/or software development skills. The project requirement includes a written report which must be
approved by a member of the faculty. Substantial projects, typically involving research, can count up to one-credit through the courses Computer Science 293 and 294. The project requirement may also be satisfied by a written master’s thesis, defended orally, counted as between one and two credits, through the courses Computer Science 295 and 296.

Doctor of Philosophy
Students must have a master’s degree in computer science or a related field to be admitted to the Ph.D. program. Applicants to the Ph.D. program who do not have a master’s degree will instead be considered for admission to the M.S./Ph.D. program.

Doctoral study consists of preliminary coursework and study, qualifying exams, and creative research culminating in a written dissertation. Areas available for dissertations in computer science include algorithm design and analysis, artificial intelligence, CAD and VLSI design, cognitive science, compilers, computational biology, computational geometry, computer graphics, human-computer interaction, human robot interaction, machine learning, network and system administration, programming languages, software engineering, theory of computation, visual analytics, and visualization. Detailed requirements and procedures for the Ph.D. program are outlined on the department Web pages at http://www.cs.tufts.edu.

For more detailed information, please visit the website http://www.cs.tufts.edu.

Computer Science Certificate Program

FACULTY ADVISOR:
Associate Professor Anselm C. Blumer

With technology advancing at a rapid pace, opportunities for advanced applications of computer science are limitless. Professionals with experience and knowledge of the “hottest” topics in computer science—databases, Linux, object-oriented programming, software engineering, network and systems administration, parallel and distributed computing—are rapidly advancing in salary and opportunity. This four-course graduate-level program will update your skills and broaden your knowledge in computer science, through a “design your own specialty certificate” taught by Tufts’ renowned faculty in computer science. Completion of the certificate requires grades of B- or better in all courses. Courses are transferable into the Tufts M.S. program upon acceptance to that program.

The program is open to individuals with at least a bachelor’s degree in computer science, or a closely related field with approved work experience.

Individuals completing the Post-Bac Computer Science Minor Program are also encouraged to apply.

For more information and an application, contact the Office of Graduate Studies at 617-627-3395, or visit http://gradstudy.tufts.edu/.

Dance

Associate Professor Alice E. Trexler, Director of Dance,
Dance studies
Senior Lecturer Daniel McCusker, Dance technique and repertory
Half-time Lecturer Mila Thigpen, Dance technique and salsa
Part-time Lecturer Gretchen Hayden, North Indian classical dance
Part-time Lecturer Gregory Coles, West African dance
Part-time Lecturer Daniel Swain, Hip hop fusion

The Department of Drama and Dance offers dance courses that are appropriate for the general student body and for those with dance experience. The objectives of this non-conservatory program are to foster the development of creative resources and techniques, to introduce performance analysis, and to contextualize dance as an element of culture. This liberal arts approach encourages students to create integrative links with other disciplines. Students may minor in dance, and dance courses may be used toward the drama major (see Drama). Dance performances choreographed by faculty and students are presented in the Jackson Dance Lab and other spaces on campus each semester.

Dance Minor
Five credits of six to eight half- and full-credit courses. Techniques and processes for performing, creating, and analyzing movement materials in and
The Department of Drama and Dance provides a strong liberal arts approach to the creative, historical, and aesthetic dimensions of performance. The curriculum fosters critical thinking and imaginative challenges, whether through experiences with literature and history or participation in performance. The department offers a variety of courses, complemented by an active season of productions. Students have the opportunity to apply the artistic and analytical skills they develop in class to the demands of live performance. Courses and productions are open to all Tufts students, regardless of major. Whether in the classroom, the dance lab, or the theatre, every course in the department fulfills the arts distribution requirement. The only exception is Drama 27: Public Speaking, which is considered a Humanities course.

PERFORMANCE ACTIVITIES
Each year the department produces a full and varied season of performances in the Balch Arena Theater, a flexible theatre-in-the-round. The season consists of three faculty-directed productions, as well as a number of student-directed shows. Several student groups are active throughout the year in the theatre and other spaces on campus. These include Pen, Paint, and Pretzels (3Ps), the largest theatre organization at Tufts, Torn Ticket II, which is dedicated to musical theatre, and Bare Bodkin, specializing in student-written work. There are other performance opportunities with Cheap Sox (improvisational comedy), HYPE! (mime), and Traveling Treasure Trunk (children’s theatre).

The production program allows students to explore all areas of theatre and dance outside the classroom. They are involved in every aspect of production, from backstage work as stage managers and crew members, to directing and/or choreographing shows, designing, performing, even producing. They experience the joys and challenges of live performance, as well as the satisfaction of working as part of a creative ensemble on a project for a significant period of time.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
Major in Drama
The major in drama provides a balanced mix of study and practice, understanding and process, thinking and doing. It demands much of and gives much to students in the development of creativity,
adaptable, and analytical thinking. With its emphasis on effective communication and imaginative exploration, a drama major is one of the best preparations for a variety of careers, as well as for graduate professional training and work in a theatre arts specialization. Drama majors often complete double majors in combination with many other departments and programs.

The drama major consists of eleven course credits and related requirements, including:
1) Five course credits in history, literature, and/or theory of drama, four of which are required: Drama 1 (Comedy and Tragedy), 4 (Modern Drama), 137 (Theatre and Society I: Prehistory to 1700), 138 (Theatre and Society II: The Early Modern Period). The fifth is an elective from an approved list.
2) A theatre technology course chosen from the following offerings: Drama 16 (Costume Technology), Drama 17 (Theatre Technology), or Drama 29 (Scene Painting).
3) A design course chosen from the following offerings: Drama 18 (Lighting Design), Drama 125 (Scene Design), or Drama 126 (Costume Design).
4) Two course credits in acting/directing/movement or studio dance/voice (excluding Drama 80).
5) Two electives in the student’s specific area of interest, at least one of which must be an upper-level course. A maximum of two one-half course credits of Drama 80 and/or 81 may be used to fulfill the requirements for the major.
6) A noncredit run crew on a faculty-directed major production (assistant stage manager, light board operator, sound board operator, costume crew, deck crew).
7) A noncredit prep crew on a faculty-directed major production consisting of thirty hours of production-related preparatory work in a given semester.
8) Each drama major is expected to gain experience in the creative aspects of drama and/or dance through involvement in the production program of the university. Graduating magna cum laude or summa cum laude with a drama major is contingent not only on scholastic achievement, but on significant participation in productions.

Students considering a drama major will find it advantageous to complete Drama 1, the crew requirement, and an introductory-level course in either studio dance/acting or design/technology by the end of the sophomore year. This will allow greater flexibility in scheduling course work and more opportunities for advanced-level production responsibilities later on.

We strongly recommend that students who plan to pursue professional training or graduate school take more than the eleven-course credit minimum, especially in an area of specialization.

UNDERGRADUATE MINOR PROGRAMS

Minor in Drama
The drama minor consists of a minimum of five courses taken in the department: two in literature/history (including Drama 1 or 4) and three other courses selected in a plan approved by the designated minor advisor. Drama minors have the option of choosing an emphasis in acting, directing, design, technical theatre, or theatre studies. Drama minors are also required to serve on either one prep crew or one run crew for a departmental major production.

Interdisciplinary Minor in Film Studies
This interdisciplinary minor is offered through the Communications and Media Studies program. For more information, see Communications and Media Studies.

Interdisciplinary Minor in Multimedia Arts
This is an interdisciplinary minor of the Departments of Art and Art History, Drama and Dance, Electrical and Computer Engineering, and Music. For more information, see Multimedia Arts.

GRADUATE PROGRAM
For admission to graduate work in drama, a prospective student must present a completed undergraduate record of high scholastic proficiency with a firm grounding in drama and theatre arts. Other desirable foundation subjects include cultural studies, art history, music, philosophy, psychology, sociology, history, and literature.

The program of study leading to the doctor of philosophy or master of arts degree in drama embraces dramatic literature, dramatic theory and criticism, and theatre history and research. It is expected that applicants for admission will already have attained a level of proficiency in the creative and/or performance aspects of theatre.
Courses of study for the satisfaction of the residence requirement do not include theatrical practice or stage performance. Dramaturgy for a faculty-directed play may be used for credit once. Depending on the individual student’s educational background, intellectual capabilities, and professional aims, certain courses in other disciplines—anthropology, art history, Chinese, classics, English, French, German, history, Italian, Japanese, music, philosophy, Russian, sociology, and Spanish—may be taken for credit toward advanced degrees in drama, upon consent of the graduate advisor of the Department of Drama and Dance.

Master of Arts
In general, the student is expected to offer for admission the equivalent of a Tufts bachelor of arts degree with a major in drama. A student whose undergraduate preparation is not equivalent may be admitted provisionally and may be required to complete more than the minimum eight courses or make up deficiencies at no degree credit.

REQUIREMENTS AND RESIDENCE
A minimum of eight courses of graduate-level work in residence is required for the degree. Additionally, the student must satisfy the following requirements to qualify for the master of arts degree in drama:

1) The student must demonstrate a reading knowledge of a foreign language by passing an examination or an approved course no later than the end of the first year. A student whose undergraduate record indicates successful performance in a language course at the advanced level may be exempt.

2) Understanding of the basic principles and practices of design and technical theatre is to be demonstrated in the student’s prior experience or by satisfactory completion of Drama 17, 125 or 126 taken without credit during the first year of residence.

3) The student must demonstrate an understanding of the principal theories and methods of acting. This requirement may be fulfilled either by satisfactory completion of Drama 10, taken without credit during the first semester of residence, or by presentation of evidence of study and experience in acting.

4) Unless a student’s undergraduate record indicates completion of two courses or their equivalent in history of the theatre, Drama 137 and 138 must be taken for credit.

5) The student must take a minimum of four courses in graduate seminars selected from the following: Drama 220, 231, 235, 236, 240, 244, 248, 249, 251, 252, 254, 255, 258, 259, 261, 262, or 263. Also, certain related courses in other departments may be credited toward the master of arts degree in drama (not more than one in a semester), with prior consent of the advisor.

6) The student must demonstrate an ability to deal with the concepts and problems of a particular area of scholarly specialization at a level of distinction. The student must satisfy this requirement by completing a scholarly thesis (one semester of Drama 295 or 296).

POLICY ON INCOMPLETE GRADES
Any graduate student with more than one incomplete grade at the end of a term’s study will receive warning that his or her status in the program is in jeopardy. Any student on financial aid or assistantship who has more than one incomplete grade at the end of a term’s study will have his or her appointment withdrawn.

All incomplete grades must be completed no later than six weeks after the end of the semester or summer session in which the incomplete was awarded or the student will be required to withdraw from the program.

The above stipulations may be waived only by petition of the student, duly supported, and the voting consent of the graduate faculty.

Doctor of Philosophy
For admission to the program the applicant is generally expected to offer the equivalent of a Tufts master of arts degree in drama and to give evidence of experience in theatrical production in the resume. A student whose prior preparation is not equivalent may be admitted provisionally and required to take additional courses achieving a grade not lower than B+ to make up deficiencies at no degree credit.

REQUIREMENTS AND RESIDENCE
Course work extending approximately three academic years beyond the B.A. degree, normally 18 courses (including two courses for dissertation research), is required. Part-time study or less than full-time residence in the Ph.D. program is
discouraged. Eight seminars within the department are required of all Ph.D. students, including two seminars in dramatic or performance theory and Drama 220: Introduction to Research Methods and Materials (to be taken on entering). With prior consent of the advisor, certain advanced courses outside the department may be credited toward the Ph.D. degree (not more than one course in a semester).

Students with a master’s degree may be credited toward the doctorate with up to six courses in their previous graduate study that satisfy course requirements for the Tufts doctorate in drama. However, acceptance into candidacy for the doctoral degree ordinarily depends on the quality of work done in the student’s first year of residence at Tufts. Transfer of courses is not automatic, and each case is judged on its individual merit by the graduate faculty. A student may apply for transfer of courses earned through graduate work in other schools only after the satisfactory completion of at least one semester of residence at Tufts.

POLICY ON INCOMPLETE GRADES
Doctoral candidates should note the restrictions on incomplete grades stated in the section on the master’s degree.

FOREIGN LANGUAGE
A student must demonstrate a reading knowledge of two foreign languages. Because a significant amount of material in this program can be read only in primary sources, the student is expected to satisfy the language requirements by passing an examination or accepted course in one language no later than the end of the first year of residence, and the other language prior to taking the comprehensive examinations. A student whose undergraduate record indicates successful performance in a language course at the advanced level may be exempt.

COMPREHENSIVE EXAMINATIONS
After the last semester of courses, the student will complete comprehensive examinations to establish his or her candidacy for the doctoral degree. These examinations will be both written and oral.

DISSERTATION
The candidate for the doctoral degree must prove competence in independent research by preparing and completing a dissertation on a subject chosen and planned with the approval of the department’s graduate faculty and written under the supervision of an advisor. Ordinarily the student will complete the dissertation while in residence, although for special reasons he or she may be permitted to finish it elsewhere within the time limit established by the graduate school.

COURSES AVAILABLE IN THE DOCTORAL DEGREE PROGRAM
Although each course is not offered every year, the student may expect to find most of them available during the period of residence. A doctoral candidate is expected, as part of the course load, to enroll in two seminars each semester (200-level courses).

For more detailed information, please visit the website http://ase.tufts.edu/drama-dance.

Economics

Professor Enrico Spolaore, Chair; Political economics, international economics, macroeconomics, public finance
Professor Yannis Ioannides, Max and Herta Neubauer Chair in Economics; macroeconomics, growth, urban economics, housing
Professor Michael Klein, International economics, macroeconomics
Professor Linda Datcher Loury, Labor, income distribution
Professor Gilbert E. Metcalf, Public finance, applied microeconomics
Professor George Norman, William and Joyce Cummings Family Chair in Entrepreneurship and Business Economics; industrial organization, spatial economics, microeconomics
Professor Lynne Pepall, Industrial organization, applied microeconomics
Professor Daniel Richards, Industrial organization, macroeconomics
Professor Jeffrey Zabel, Director of Graduate Studies; Econometrics, labor economics
Associate Professor Marcelo Bianconi, Macroeconomics, international economics
Associate Professor Drusilla Brown, International trade theory and policy
Associate Professor David Dapice, Economic development, macroeconomics, public finance
The handbook contains information on grading standards, acceptability of courses taken at Tufts and elsewhere, and other details of the concentration requirements.

There are two options available for the student who wishes to concentrate in economics. Option I, the major in economics, is less structured and allows more flexibility in the choice of courses. Option II, the major in quantitative economics, is designed for students with an interest in mathematics and statistical methods. This option is best for those who are contemplating graduate study in economics or the more quantitative areas of business and finance.

Each economics major must complete three levels of courses: mathematics courses, normally completed by the end of the sophomore year; core courses, which cover the elements of economic theory and method; and elective courses. Elective courses are selected by the student but must meet criteria summarized below and detailed in the handbook. Normally, students should satisfy the prerequisite prior to enrolling in any core course, and should complete the core courses prior to taking elective courses. A minimum grade of C- is required for all core and elective courses used to satisfy these concentration requirements.

Both Option I and Option II place restrictions on the student’s choice of electives; these restrictions are summarized below.

**Option I: Major in Economics**

**PREREQUISITE**
Principles of Economics (Economics 5) or equivalent.

**MATHEMATICS COURSE(S)**
Mathematics 11, or any higher-level mathematics course approved by the department. Students can waive all or part of this requirement by showing adequate prior preparation as determined by the Departments of Economics or Mathematics (for example, through the Advanced Placement tests). Students may substitute Mathematics 5 and 6 for Mathematics 11. Students who make this substitution and who complete a second concentration must keep in mind that, for purposes of determining the number of courses that can overlap between the economics concentration and the second concentration, the economics concentration requires ten courses.
CORE COURSES
Four core courses are required: Intermediate Microeconomics (Economics 11), Intermediate Macroeconomics (Economics 12), Statistics (Economics 13), and Basic Econometrics (Economics 15). These courses serve as prerequisites for most upper level economics courses. In place of Economics 13, students can take Mathematics 162, Engineering Science 56, Electrical Engineering 104 or Economics 201. Courses in other Tufts departments are normally not accepted as substitutes for Economics 13. In place of Economics 15, students can take Economics 107 or Economics 202. In place of Economics 18, students can take Economics 205.

ELECTIVE COURSES
Majors must successfully complete five upper level economics courses numbered Economics 20 or above. At least three of these five courses must be suitable courses numbered at the 100 level or above. See the handbook for details.

Option II: Major in Quantitative Economics
PREREQUISITE
Principles of Economics (Economics 5) or equivalent.

BASIC MATHEMATICS COURSES
Mathematics 11 and 12. Students can waive all or part of this requirement by showing adequate prior preparation as determined by the Departments of Economics or Mathematics. Students should be aware that Mathematics 17 and 18 can be offered as substitutes for Mathematics 11, 12, and 13.

CORE COURSES
Five core courses are required: Intermediate Microeconomics (Economics 11); Statistics (Economics 13), Quantitative Intermediate Microeconomics (Economics 16 or 203), Quantitative Intermediate Macroeconomics (Economics 18 or 205), and Econometrics (Economics 107 or 202). Students must complete Economics 11 before taking either Economics 16 or Economics 203. One core mathematics course is also required: Mathematics 46 or 54. No course offered as a core course can also be used as an elective course. Students in the classes of 2008 and 2009 who have not completed Economics 16 are strongly encouraged to pursue this option when completing their major. In place of Economics 13, students can take Mathematics 162, Engineering Science 56, Electrical Engineering 104 or Economics 201.

ELECTIVE COURSES
Quantitative economics majors must complete four additional upper-level economics courses numbered Economics 20 or above. There are three restrictions on choice. First, at least three of these four courses must be suitable courses at the 100 level or higher. Second, at least one of the four elective courses must be a 100-level economics course with a research paper, or a senior thesis credit. Third, at least one elective course must be open only to students who have completed the relevant quantitative prerequisite course (Ec 16, 18, or 107) or its equivalent.

Recommendations for Honors
To receive the department’s recommendation for summa or magna cum laude, eligible candidates must demonstrate outstanding intellectual force. Included in the ways the department judges this attribute are: active contribution in classes; superior performance in the core courses of intermediate micro and macro theory, statistics, and econometrics; quality of projects pursued, especially class and seminar papers; and quality of a written thesis and its defense. Students wishing to be reviewed for magna or summa honors must complete at least one economics course in which a research paper or project is required, and which has Economics 11/16, 12/18, or 13 as a prerequisite.

UNDERGRADUATE MINOR PROGRAM
Minor in Economics
The minor in economics is designed for students who have done substantial work in economics but who do not choose to complete all the requirements for a concentration. The structure of the minor is similar to that of the concentration in economics. The basic course provides a foundation for the treatment of theory and method that are used in the core courses, and these core courses are prerequisites for most elective courses. This hierarchy of courses makes it difficult to complete the minor in fewer than three semesters. The five course requirement for the minor is given below. Please note that no more than one course can be transferred to meet the minor requirements.
The Master of Science Program in Economics has two tracks: Course-Based and Research-Based. The M.S.-Course-Based track is an eight-credit program, which can be completed in one year, without a thesis. The M.S.-Research-Based track is a twelve-credit program to be complete in two years, with a master’s thesis.

All entering students will be admitted to the Master of Science program in Economics and will be asked about their potential interest in pursuing either the M.S.-Course-Based or the two-year M.S.-Research-Based degree. All students are required to complete the three core sequence classes: Statistics and Econometrics; Microeconomic Theory I and II; and Macroeconomic Theory I and II. The standard course load for a full-time student is four courses per semester.

Course-Based Master of Science in Economics
The Course-Based track requires completion of six core courses (Economics 201- Economics 206), and two electives, for a total of eight credits. Electives include courses offered in the Department of Economics, courses offered in other departments at the School of Arts, Sciences, and Engineering, and at the Fletcher School, as well as at other consortium schools (Boston College, Boston University, and Brandeis University). In order to receive the Master of Science Course-Based degree, a student must complete a one-year residency requirement and must pass eight semester courses.

Research-Based Master of Science in Economics
The requirements for the Research-Based degree, in addition to the eight-credit course requirements of the Course-Based track, include four extra credits: two master thesis credits, an Economics Research Seminar, and an Applied Econometrics course. To be admitted into the Research-Based Master of Science degree in the second year, students must demonstrate good standing in the first year of the program.

Specifically, a full-time M.S.-Research-Based students will have to: 1. Show Math Competency by the end of the first (Fall) semester. 2. Receive a final grade of B or better in all six courses (Economics 201- Economics 206), and a grade of A or better in at least two of those classes. 3. Demonstrate ability to conduct independent research. Students in the M.S.-Based-Research
degree must complete twelve credits. The thesis must be a major research project conducted under the supervision of the member of the department. The completed thesis must be presented and successfully defended in an oral examination administered by a thesis committee. In order to receive the Master of Science Research-Based degree, a student must complete a two-year residency requirement and must pass twelve semester courses.

Financial aid, scholarships, teaching and research assistantships and other opportunities are available. The department considers all teaching and research experience to be an integral part of the program.

In addition to the regular Master's program, the Economics Department also offers a two-year program, in conjunction with the Department of Urban and Environmental Policy and Planning, leading to the joint degree of Master's in Economics and Urban and Environmental Policy. Applicants to this program must be accepted by both departments.

For more detailed information, please visit the website: http://ase.tufts.edu/econ/.

Education

**Associate Professor Bárbara M. Brizuela**, Chair, cognitive development, mathematics education

**Professor David Hammer**, Science education

**Professor Kathleen Weiler**, Foundations of education, gender and education

**Assistant Professor Sabina Elena Vaught**, Urban education

**Assistant Professor Michelle Wilkerson-Jerde**, Mathematics education

**Senior Lecturer/Co-Director Steven Luz-Alterman**, School psychology

**Lecturer/Director Linda Beardsley**, Teacher education and school partnerships

**Lecturer/Director Patricia Bode**, Art education

**Lecturer Steve Cohen**, History and Political Science/Political Philosophy education

**Lecturer/Director Brian Gravel**, STEM Elementary education

**Lecturer Silas Pinto**, School psychology

**Lecturer/Director Cynthia Robinson**, Museum education

**Lecturer/Co-Director Laura Rogers**, School psychology

**Lecturer Erin Seaton**, Learning and development

**Lecturer Martha Trudeau Tucker**, English education, middle and secondary education

**Research Professor Ronald K. Thornton**, Director, Center for Science and Mathematics Teaching

**Research Assistant Professor Morgan Hynes**, Engineering education

**Research Assistant Professor Merredith Portsomore**, Engineering education

**PART-TIME FACULTY:**

**Professor of the Practice Ross Greene**, School psychology

**Professor of the Practice Judah Schwartz**, Science and mathematics education

**Susan Barahal**, Art education

**Pamela Bower-Basso**, Art education

**Denise Carver**, School psychology

**Judith Curcio**, School psychology

**Jennifer DePrizio**, Museum education

**Winfried Feneberg**, School psychology

**Diana Finer**, School psychology

**Paul Hackett**, School psychology


**Nancy Kassabian**, Foreign language education

**Michael Niewiecki**, School psychology

**James Olson**, Museum education

**Saskia Stoessel**, Coordinator of German language courses

**Robert Trant**, School psychology

**Tara Young**, Museum education

The Department of Education offers courses in educational theory, practice, and research. Courses explore how students of all ages learn in different content areas, examine the institutions that serve children and youth, and study the cultural, historical, and philosophical influences that shape educational theory and effective professional service. Course offerings are complemented with opportunities for students to observe and work in a variety of educational settings as teachers, school psychologists, museum educators, curriculum developers and researchers. Opportunities to participate in curriculum development and research are provided by faculty in the department and by the Center for Science and Mathematical Teaching and the Center for Engineering Educational Outreach. Through applied experiences, an essential part of the programs in education, students learn to integrate theory and research into their practice.
The department does not have an undergraduate major, but offers a number of courses for undergraduate students interested in exploring the field of education, as well as a Minor in Education.

The department’s graduate programs prepare candidates for Massachusetts Department of Education licensure as elementary school teachers and as middle and high school teachers of English, political science/political philosophy, history, engineering mathematics, general science, earth science, biology, chemistry, physics, French, Spanish, German, Japanese, Latin and the classical humanities, and visual art. The department also offers a graduate degree program in preparation for state licensure and national certification as school psychologists. These licenses for teaching and school psychology are recognized by the majority of states.

The M.A. in educational studies provides an opportunity for graduate students to pursue an individual course of study. The M.A. in museum education prepares students for careers in museum settings. The M.A. in Science Education as well as the M.S. and Ph.D. programs in mathematics, science, technology, and engineering education prepare students for careers in higher education and research institutions through the development of original research about teaching and learning in these areas.

DEPARTMENT FACILITIES AND AFFILIATED PROGRAMS

Media Center
The Media Center provides students with information and hands-on experience with state-of-the-art curricula, technological tools, and other educational materials.

Educator Licensure
The Department of Education offers students in Tufts’ professional licensure programs the opportunity to apply for initial licensure as teachers and school psychologists in Massachusetts. Students who complete these programs must take the appropriate Massachusetts Tests for Educator Licensure and submit their applications to Tufts’ institutional representative for licensure.

Center for Science and Mathematics Teaching
The center is an associated facility of the department located in the Science and Technology Center at 4 Colby Street on the Medford campus. The center is involved in evaluating and developing new methods and materials for the teaching of science and mathematics, particularly in the area of microcomputer-based instruction. Research Professor Ronald Thornton is the director of the center. For more information on the center’s activities, call 617-627-2825 or visit http://ase.tufts.edu/csmt/.

UNDERGRADUATE MINOR IN EDUCATION

The Department of Education offers a Minor in Education. Five courses are required. There are two possible concentrations: Educational Studies OR Teaching and Learning.

Students pursuing a Minor in Education with a concentration in Educational Studies have an opportunity to explore education as a site of critical analysis through disciplines including history, sociology, anthropology, psychology, and philosophy. Students pursuing this Minor concentration will develop critical understandings of school as a site of inquiry and study. They will become broadly familiar with the bodies of scholarship that constitute the foundations of education as a field.

Students pursuing a Minor in Education with a concentration in Teaching and Learning have an opportunity to explore the processes of teaching and learning both empirically and theoretically. This concentration is especially well suited to students wanting to pursue possible teaching careers and those wanting to better understand these processes from different perspectives.

For more information on the Minor in Education, please call the Department of Education at 617-627-3244 or visit http://ase.tufts.edu/education/programs/minor/index.asp

GRADUATE PROGRAMS

The department offers the following programs leading to the degrees of master of arts (M.A.), master of arts in teaching (M.A.T.), master of science (M.S.), educational specialist (Ed.S.), and doctor of philosophy (Ph.D.). Degree programs may be completed on a part- or full-time basis. To accommodate employed teachers who must conduct advanced work on a part-time basis, a considerable portion of the department’s graduate instruction is offered during late afternoon, evening, and summer sessions.
Admission Requirements
All applicants must provide three letters of recommendation. At least two of the letters should be from the applicant’s former college professors. For M.A.T. candidates, these two letters should be from college or university professors representing the subject area in which the candidate seeks licensure. GRE general test scores are required of all applicants except Tufts current undergraduates and art education candidates. Art education applicants must submit a portfolio to the School of the Museum of Fine Arts. Applicants seeking licensure as teachers of French, German, Spanish, or other languages must also submit a writing sample in the language of specialization, and must also complete an interview in that language. School psychology candidates must have completed coursework in personality or developmental psychology, abnormal psychology, and statistics and should have experience in a human services setting or with children and adolescents in other settings. Ph.D. applicants must submit, besides a personal statement, a writing sample that illustrates the research they would like to develop toward their dissertation.

Massachusetts Tests for Educator Licensure
Students who plan to teach in Massachusetts must pass the Massachusetts Tests for Educator Licensure (MTEL) that is required for the area in which they wish to be licensed. Students who wish to be licensed as school psychologists in Massachusetts must pass the communication and literacy portion of the MTEL. Tufts degree candidates who took the MTEL in 2009-2010 demonstrated an aggregate pass rate of 97% on the communication literacy reading and writing tests and a 94% pass rate in the academic content areas. Complete testing information has been submitted and validated by the Title II program. During the fall semester, information sessions are scheduled to help students know what to expect on these tests. Written materials and study guides are provided. Tutoring or additional preparation sessions are offered as needed through consultation with the student’s advisor.

Master of Arts in Teaching (M.A.T.) Degree
Offered to students seeking teacher licensure, the department’s state-approved M.A.T. degree program prepares candidates to teach in academic fields at the elementary, middle, and secondary school levels. At the completion of their program, students may apply for initial licensure in Massachusetts. Students interested in urban education may participate in the Fenway Pilot High School/Boston Arts Academy Program. This collaborative program focuses on preparing teachers to work in innovative urban high schools. Successful applicants work as interns in either of the two sites throughout the entire school year.

Master of Arts (M.A.) in German with Teaching Licensure
Tufts University offers a master of arts degree in German with initial teaching licensure. It requires two academic years plus one summer and is offered in conjunction with the Department of German, Russian, and Asian Languages and Literatures. Students take six credits in German (four of the six credits may be taken in Tübingen, Germany), two credits in the methods and practices of teaching foreign language (Education/ German 114 and 124), and six credits in education—including a one-semester teaching practicum. For details, students should contact Professor Bernhard Martin, faculty advisor in the Department of German, Russian, and Asian Languages and Literatures.

Master of Arts (M.A.) Degree: Tufts/Shady Hill Cooperative Program
In this program, participants work and study as apprentices at the Shady Hill School in Cambridge throughout the entire school year. Shady Hill apprentices are eligible to apply for Massachusetts licensure for grades 5 to 8. Apprentices who wish to be licensed for grades 8 through 12 must complete at least 150 hours of additional student teaching.

Master of Arts (M.A.T.) degree: Newton Teacher Residency (NTR)
This collaboration makes it possible for NTR candidates to complete an M.A.T. degree at Tufts after completing their practicum in Newton Public Schools (see http://www.newtonteacherresidency.org/).

Master of Arts (M.A.T.) degree: Advanced Math and Science Academy Charter School (AMSACS)
This collaboration makes it possible for AMSACS candidates to complete an M.A.T. degree at Tufts after completing their practicum at a Marlborough charter school.
Master of Arts (M.A.)/
Educational Specialist in School Psychology
This three-year program offers advanced course work integrated with a specific sequence of field-based training and supervision in core competency areas of assessment, consultation, counseling, and intervention. Students are exposed to a broad spectrum of assessment and intervention techniques from various theoretical perspectives and are challenged to develop their own perspectives and models of assessment and intervention for working with diverse learners found in contemporary schools. Assessment and intervention strategies are anchored in a developmental perspective that stresses the social, intellectual, and emotional growth of the individual from childhood through the early adult years. A core feature of the program is an emphasis on problem solving as a major model for approaching, understanding, and proposing solutions to challenges in educational settings. Students in this program complete a minimum of a 150-hour pre-practicum during the first year and a 600-hour practicum in school psychology during the second year. During the third year, students complete a 1,200-hour advanced internship, 600 hours of which must be in a school setting, which is accompanied by a supervision seminar. Attendance during the summer is required. The three-year program of study culminating in the M.A./Ed.S. degree in School Psychology leads to initial licensure as a school psychologist in Massachusetts and eligibility for national certification.

Master of Arts in Teaching (M.A.T.) Degree in Art Education
The Master of Arts in Teaching Art Education (M.A.T.) program prepares the artist to teach in elementary, middle, and high schools with a critical focus on both contemporary visual culture and traditional arts. Offered in affiliation with the School of the Museum of Fine Arts, Boston, this program leads to licensure as a teacher of visual art for grades pre-K to 8, or 5 to 12. The M.A.T. is a 12-month program of study in education foundations, art theory and curriculum, and studio art. Many M.A.T. students start with three education classes at Tufts in the summer, then take four studio classes and two art education classes in the fall. They then complete their course of study in the spring with a student-teaching internship. For more information, please contact the Director of Art Education Patty Bode at patty.bode@tufts.edu or 617-369-3613.

Master of Arts (M.A.) Degree: Educational Studies
This individualized program allows students to explore a variety of areas in education. Graduates of the program have found careers in such settings as independent schools, educational research groups, nonprofit organizations, and curriculum development; others have entered doctoral programs upon completion of this degree. Possible fields of study include urban education; gender studies in education; science, mathematics, and engineering education; and cognitive, cultural, and social analysis of learning.

The program consists of 10 or 11 courses, described at http://ase.tufts.edu/education/programs/research/eduStudiesCourseReqs.asp.

Master of Arts (M.A.) Degree: Museum Education
A program for candidates interested in careers as education directors or education coordinators in museum settings. This program prepares students for work in museums in a variety of areas.

Master of Science (M.S.), Doctor of Philosophy (Ph.D.) in Mathematics, Science, Technology, and Engineering Education (M.S.T.E. Education)
The graduate program in MSTE education at Tufts grants M.S. and Ph.D. degrees in three areas: mathematics education, science education, and engineering education. At the M.S. level, students are prepared to work in research, curriculum development, and teacher development in school districts, research institutions, and other educational settings. The Ph.D. in MSTE education prepares researchers and educators who will contribute to MSTE Education through research and university teaching. The program involves the collaboration of faculty from Tufts University Departments of Education, Child Development, Mechanical Engineering, Computer Science, Biology, Chemistry, Mathematics, and Physics and Astronomy, and the Center for Engineering Educational Outreach, and the Center for Science and Mathematics Teaching. Participants in the program are committed to theoretically sound research in MSTE education that is directly relevant to the practice of education and aim at the effective promotion of diversity and equity in MSTE education.
Master of Arts (M.A.) in Science Education
This strand of the graduate program in Mathematics, Science, Technology, and Engineering education is aimed at students whose primary interest lies in classroom instruction. The program is designed for currently practicing K-8 classroom teachers with a minimum of two years teaching experience and with Initial Teacher Licensure at Pre-K-2, 1-6 levels, or 5-8 level in math/sciences. The program is of particular interest to those teachers who are seeking a graduate degree to fulfill requirements for Massachusetts Professional Licensure as they continue to teach. For more detailed information, please visit the website http://ase.tufts.edu/education.

Electrical and Computer Engineering

Professor Jeffrey A. Hopwood, Department Chair, Microelectronics, plasma engineering
Professor Mohammed Nurul Afsar, Microwaves, design and measurements
Professor Eric L. Miller, Associate Dean of Research, School of Engineering; Signal processing, image processing
Professor Joseph P. Noonan, Communications, coding and information theory, digital processing
Professor Karen Panetta, Simulation, multimedia
Professor Douglas Preis, Electromagnetics, signal processing, audio engineering
Professor Aleksandar Stanković, Energy processing systems, control and estimation
Professor of the Practice Ronald Lasser, Product development and innovation management
Associate Professor Chorng Hwa Chang, Computer engineering, communication networks
Associate Professor Sameer Sonkusale, Mixed-signal VLSI design, sensor electronics
Associate Professor Valencia Joyner, High-speed/low-noise integrated circuits for optical RF communications, optoelectronic VLSI, radiation effects in integrated circuits
Assistant Professor Shuchin Aeron, Statistical signal processing in sensor networks, network information theory
Assistant Professor Usman Khan, Signal processing and control, graph theory
Research Professor Mary Beth Ruskai, Mathematical physics, quantum computing
Research Assistant Professor Brian Tracey, Signal processing, image processing, acoustics
Research Assistant Professor Alan Hoskinson, Plasma physics, electromagnetics, chemical sensors
Lecturer Brian Aull, Semiconductor devices, optical detection and imaging
Lecturer Thomas Bates, Recording engineering
Lecturer Steven Best, Antennas, engineering design, wireless communications
Lecturer Robert J. Mailloux, Antennas
Lecturer Gregory Sonek, Photonics and optical communications
Adjunct Professor Mark Cronin-Golomb, Optical instrumentation, laser tweezers, atomic force microscopy, nonlinear optics
Adjunct Professor Sergio Fantini, Biomedical instrumentation, medical optics, near infrared imaging of the brain, optical mammography, muscle hemodynamics
Adjunct Associate Professor Alva Couch, Parallel computing, computer graphics
Adjunct Associate Professor Soha Hassoun, CAD, VLSI design
Emeritus Professor Denis W. Fermental, Control engineering, analog electronics
Emeritus Professor Ronald B. Goldner, Applied optics, optoelectronic materials and devices, solar energy conservation, conversion, and storage
Emeritus Professor Robert A. Gonsalves, Digital image processing, phase retrieval and diversity
Emeritus Professor Arthur Winston, Instrumentation and measurement

The Electrical and Computer Engineering Department educates tomorrow’s technical leaders. Our students invent and design the high tech devices, mathematical algorithms, and communications networks used by our society.

The department offers degree programs in electrical engineering and computer engineering for students in the School of Engineering. Minors in biomedical engineering, music engineering, computer science, and multimedia arts are also available.

The electrical engineer applies concepts from physics and mathematics to create useful electrical devices and systems. Some examples of engineered electrical systems include communications systems, power generation, integrated circuits and electronics, fiber optic data transmission, medical image processing, and radar.

The computer engineer designs devices and systems for the management of information in
digital form, such as audio and video systems, microprocessor control systems, digital communications, and computer networks. As software is as crucial to robust design as hardware, the computer engineer is also a knowledgeable programmer.

The department teaches courses in digital circuits and systems, microelectronics and very large-scale integrated circuit design, computer architecture, circuits, linear systems, signal and image processing, microwaves and microwave devices, electronic materials and solar cells, power and energy systems, communications, and control. Design is integral to all of our engineering degree programs, each of which culminates in a senior design project.

By careful selection of course work, students who follow the standard curricula listed below may also satisfy admission requirements for professional schools of medicine, dentistry, business, or law.

UNDERGRADUATE PROGRAMS
The mission of the Department of Electrical and Computer Engineering is to provide our students with educational experiences which give them a sound basis for professional practice, advanced education, active citizenship, and lifelong learning. At its core is the goal that students learn the fundamental principles of electrical and computer engineering and master engineering methods to solve challenging and diverse problems. Further, the department strives to have each student develop the leadership and communications skills necessary to relate these solutions to both technical and non-technical communities. The faculty is dedicated to accomplishing this mission through the integration of teaching and research.

Bachelor of Science in Electrical Engineering
The accredited curriculum leading to the degree of bachelor of science in electrical engineering is intended to qualify students to begin a professional career in electrical engineering or to proceed to advanced study. The departmental concentration electives and free electives permit the undergraduate to select additional courses in the core areas. Students may study a wide variety of topics, including sustainable energy systems, semiconductor integrated circuits, VLSI design, biomedical engineering, microwaves and telecommunications, antennas and antenna systems, digital image processing, semiconductor and optoelectronics materials, signal processing, power electronics and power systems, computer architecture, parallel processing, computer systems, and multimedia.

The core courses of the degree program contain elements of design as well as analysis, and include associated laboratory work. They involve concepts of circuits and systems, digital and analog electronics, microprocessors, electromagnetic fields, automatic control and communication.

The objectives of the Electrical Engineering program are:

• The EE graduate will have demonstrated a professional impact in her/his employment or graduate work.
• The EE graduate will be a leader among his/her peers or a leader in innovation.
• The EE graduate’s work product will reflect a concern for others.

The program leading to this degree is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). The required courses for the electrical engineering program are listed below. They are presented in one of many possible arrangements for completing the program.

First Year
FALL TERM
Mathematics 11
Physics 11 with lab
Engineering 2 (half credit)
Elective (half-credit course in Engineering)
English 1

SPRING TERM
Mathematics 12
Physics 12 with lab
Engineering Science 2
Humanities, arts, or social sciences elective

Sophomore Year
FALL TERM
Engineering Science 3 Introduction to Electrical Systems
Department foundation elective
Mathematics 13
Chemistry 1 or 16
Humanities, arts, or social sciences elective
The analysis and design of digital computers more intensively, as well as the analysis, design, and operation of systems in which computers are an integral part, may follow the computer engineering program.

The objectives of the Computer Engineering program are:

- The CompE graduate will have demonstrated a professional impact in her/his employment or graduate work.
- The CompE graduate will be a leader among his/her peers or a leader in innovation.
- The CompE graduate’s work product will reflect a concern for others.

The program leading to this degree is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). The required courses for the computer engineering program are listed below. They are presented in one possible arrangement for completing the program.

First Year
FALL TERM
Mathematics 11
Physics 11 with lab
Engineering 2 (half credit)
Elective (half-credit course in Engineering)

SPRING TERM
Mathematics 12
Physics 12 with lab
Engineering Science 4
Introduction to Digital Logic Circuits
Computer Science 11
Introduction to Computer Science

Bachelor of Science in Computer Engineering
In both required and elective courses throughout the curriculum, computer analysis is used extensively in the study of electrical systems, components, and materials. Students wishing to investigate
Electrical Engineering 21 Electronics I with lab
Mathematics 38
Humanities, arts, or social sciences elective

Junior Year
FALL TERM
Electrical Engineering 14 Microprocessor Architecture and Applications
Electrical Engineering 23 Linear Systems
Computer Science 15 Data Structures
Mathematics 22
Free elective

SPRING TERM
Electrical Engineering 18 Electromagnetic Waves
Electrical Engineering 26 Digital Logic Systems
Electrical Engineering 31 Junior Design Project
Natural science elective
Humanities, arts, or social sciences elective

Senior Year
FALL TERM
Electrical Engineering 97 Senior Design Project
(half credit)
Electrical Engineering 103 Introduction to VLSI Design
Probability and Statistics (see department list)
Electrical Engineering 126 Computer Engineering
Electrical Engineering 128 Operating Systems
Computer engineering elective*

SPRING TERM
Electrical Engineering 98 Senior Design Project
(half credit)
Computer engineering elective*
Computer engineering elective*
Humanities, arts, or social sciences elective
Free elective
*Computer engineering electives are selected from a list provided by the department. The selections are subject to the approval of the departmental advisor.

Bachelor of Science in Engineering
Alternatively, students in the electrical and computer engineering department may follow programs of study leading to the bachelor of science degree in engineering. These programs of study differ from the regular programs only in the selection of the twelve required departmental concentration courses and the eight required departmental foundation courses. In the bachelor of science in engineering program, these twenty courses are selected by the student, with the approval of the departmental advisor, to satisfy student interest or professional objectives. Normally, five are engineering or engineering science courses, while the remaining fifteen are selected from engineering, engineering science, computer science, mathematics, natural sciences, and other related areas.

Bachelor of Science
If a student wants to create a degree program with a strong computer engineering or electrical engineering component, the faculty advisor will normally be from the Department of Electrical and Computer Engineering. (See School of Engineering Information.)

UNDERGRADUATE MINOR PROGRAMS
(See Disciplinary Minor Programs for restrictions.)

Biomedical Engineering
The department offers a minor in biomedical engineering. Details are available from the Department of Biomedical Engineering.

Computer Science
The department offers a minor in computer science for those students pursuing the B.S.E.E. degree. Details are available from the Department of Computer Science.

Music Engineering
The minor in Music Engineering provides students with experiences at the intersection of music and technology. Students learn the technologies behind music-making, both traditional and modern, and how new technologies can be applied to musical goals. The minor is available to students both in the School of Engineering and the School of Arts & Sciences. The minor replaces the minor in Musical Instrument Engineering.

Multimedia Arts
The department offers an interdisciplinary minor in multimedia arts, administered jointly by the Departments of Music and Electrical and Computer Engineering. (See Multimedia Arts for description of this minor.)
Certificate Program in Microwave and Wireless Engineering
The department offers a graduate-level certificate in microwave and wireless engineering. The certificate is offered on a part-time, nondegree basis for students seeking professional training. In most cases, courses taken in a certificate program can be transferred into a graduate degree program. For more information, see Microwave and Wireless Engineering in this bulletin, contact the Office of Graduate Studies at 617-627-3395, or visit http://gradstudy.tufts.edu/.

The certificate requires five courses. Two required courses:
EE 107 Communications Systems I
EE 117 Introduction to Microwave Devices

One or both of the following:
EE 118 Microwave Semiconductor Devices and Circuits
EE 160 Computer-Aided Design of Microwave Circuits

Two graduate-level elective courses in microwave engineering or related fields:
EE 108 Communications Systems II
EE 136 Antennas for Radar, Avionics, and Communications
EE 137 Radar Engineering
EE 148 Silicon Radio Frequency IC Design
EE 161 Microwave Integrated Circuits
EE 193SBC Satellite-Based Communications
EE 194W Wireless Communications
EE 127 Information Theory

(Students may substitute other Tufts graduate courses, subject to the approval of the certificate faculty advisor.)

Graduate Program
Master of Science
The department offers a program leading to the M.S. degree in electrical engineering. The master of science degree requires ten credits, usually one credit per course, and all courses must be at the 100-level or above. For full-time students, at least seven credits must be from approved, lecture-based courses. One additional credit must be the Electrical Engineering Seminar. The two remaining credits usually are a creative thesis work, written and defended orally, and performed under the supervision of a faculty member. Alternatively, these two credits can be a supervised master’s project plus another approved lecture-based course. Grades in all courses must be B- or better.

The ECE department also offers a specialized Signals and Systems track within the MS degree in Bioengineering. This track educates biotechnology engineers in (1) analysis and processing of signals with an emphasis on biomedical image processing and image formation and (2) design, control and synthesis of systems for biotechnology, e.g., development of miniaturized devices, circuits and systems, or controller design for bioreactors.

Doctor of Philosophy
The department offers a program leading to the Ph.D. in electrical engineering. Students in the program must already have a master of science degree in electrical and computer engineering or a related field. Applicants to the Ph.D. program who do not have the M.S. degree will instead be considered for admission to the master of science degree program, and on completion of that program will automatically be considered for admission to the Ph.D. program.

The department differentiates between admission to the Ph.D. program and Ph.D. candidacy. No students are accepted as formal doctoral candidates until (a) they have exhibited merit in a qualifying examination process and (b) have identified a faculty member who has agreed to be their dissertation supervisor. The qualifying examination is comprised of both a written examination and oral examination that must be taken within one academic year of admission to the Ph.D. program (within two academic years for part-time students).

Doctoral candidates are expected to plan a program of research under the direction of their dissertation supervisor and with the guidance of a faculty committee. On completion of this research, the candidate must prepare and publicly defend a dissertation.

Ph.D. students in electrical engineering must take at least eighteen credits beyond the M.S. degree. These credits include a minimum of six credits of lecture-based class work, two credits of Electrical Engineering Seminar, and a dissertation. The dissertation effort is usually assigned ten credits. At least one credit of class-based course work must be taken from outside the field of electrical and computer engineering.
Undergraduate Program

The Gordon Institute offers a minor in engineering management that is available to all engineering undergraduate students at Tufts. The program emphasizes real-life experience and engineering practice, not just theory. A Tufts engineering degree combined with an engineering management minor provides students with a competitive edge and equips them to make significant contributions as soon as they enter the workplace.

Requirements

Five courses are required for the minor. All five courses in the minor must be taken for a grade.

Four are designated:
- EM051-Engineering Management (EM051 replaces ES052)
- EM052-Technical and Managerial Communications (EM052 replaces ES051)
- EM153-Management of Innovation
- EM054-Engineering leadership (or ELS107)

One must be selected from the School of Engineering Elective Options or the General Course Elective Options listed below:

School of Engineering Elective Options
- Comp171-Human Computer Interaction
- Comp180-Software Engineering
- ME102-Inventive Design
- ENP161-Human Factor Product Design
- ME108-Model Quality Control
- ES152-Engineering Systems: Stochastic Models
- ES56-Probability and Statistics
- CEE53-Engineering Economics
- CEB8-Issues in Professional Engineering Practice
- CBE110-Introduction to Optimization

General Course Elective Options
- EC3-Principles of Accounting (Free Elective)
- PS104-Public Administration (Free Elective)
Engineering Psychology/
Human Factors Engineering

DIRECTOR:
Associate Professor Caroline G. L. Cao, Mechanical Engineering

An interdisciplinary program offered jointly by the departments of mechanical engineering and psychology.

Engineering psychology, more commonly called human factors, applies knowledge of human behavior and attributes to the design of products, equipment, machines, and large-scale systems for human use. Areas of application include medical devices and systems design, transportation safety, consumer product design, and computer interface design, etc. Students in the School of Engineering or the College of Liberal Arts will receive the bachelor of science degree from their respective colleges after meeting the general requirements set by each college.

The program prepares students for professional work and further graduate studies in this discipline. It also serves as a preparation for premedical and pre-dental students, and for those interested in careers in technology design and development, or management.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
The program features a common set of fifteen courses, divided into introductory and core course requirements. For engineering students, an additional twenty-one courses are required for the bachelor of science degree (see School of Engineering Information). For liberal arts students, an additional nineteen courses are required to meet the foundation and distribution requirements for the bachelor of science degree. (See College of Liberal Arts Information). The core courses can be used by these students to meet the social and natural science distribution requirements. (See the online bulletin for course descriptions).

Introductory Course Requirements
Engineering 2 (half credit)
Engineering Science 2 (1 credit)
Engineering Elective (half-credit)
Mathematics 11 Calculus I
Mathematics 12 Calculus II
Psychology 1 Introduction to Psychology
Computer Science 11 Introduction to Computer Science
or,
Physics 11 General Physics

Core Course Requirements
Engineering Psychology 61 Introduction to Human Factors and Ergonomics
Engineering Psychology 120 Project Study in Human Systems
Engineering Psychology 161 Human Factors in Product Design
Engineering Psychology 162 Human-Machine System Design
Psychology 17 Industrial and Organizational Psychology
Psychology 31 Statistics for the Behavioral Sciences
Psychology 32 Experimental Psychology
Psychology 53 Engineering Psychology
Psychology 130 Advanced Engineering Psychology

In addition to these courses, it is strongly recommended, although not required, that students consider taking the following courses with particular relevance to the field of Engineering Psychology: Engineering Science 5 (Applied Mechanics), Computer Science 15 (Data Structures), Computer Science 106 (Graphical User Interface), Psychology 107 (Advanced Statistics), and Engineering Psychology 166 (Applied Design of Software User-Interfaces).

Students enrolled in the School of Engineering will also satisfy the following distribution requirements for the Engineering Psychology Program: Engineering Science 5, 51, and 56; Chemistry 1 or 16; Physics 11; Physics 12 or Chemistry 2; English 1 or 3; Computer Science 11, 15, 106, and 171; Psychology 107; Engineering Psychology 166; one approved course in Natural Science; One approved course in Environmental Science; two approved courses from biology, anatomy, physiology, biomedical engineering, biomechanics, or occupational therapy.

It is recommended that students in the College of Liberal Arts take additional courses in probability and statistics (e.g., Psychology 107), chemistry (e.g., Chemistry 1, 2, or 16), physics (e.g., Physics 11 and 12), physiology and anatomy, environmental studies, computer science (e.g., Computer Science 11, 15, 106, and 171), engineering psychology (e.g., Engineering Psychology 166) and relevant courses from the engineering science series (Engineering Science 5). Sample course plans can be obtained from either of the sponsoring departments.

Engineering Science Studies

FACULTY COORDINATOR:
Professor Chris Rogers, Mechanical Engineering

The interdisciplinary minor in engineering science allows students in the College of Liberal Arts to obtain a broad overview of four engineering disciplines plus an in-depth study of one aspect of engineering.

Five courses are required and distributed as follows:

One half-credit course in each of four engineering disciplines: chemical and biological, civil and environmental, electrical and computer, and mechanical. Two one-half credit courses: Engineering 1 (Introduction to Computers in Engineering) and Engineering 2 (Engineering Graphics). Two courses to be selected with the assistance and consent of a minor advisor. These courses must demonstrate a coherent progression in subject matter. The first one must have either a laboratory or design component that will be continued as an independent project under the CIS 95, 96 designation. (See Interdisciplinary Minor Program for details.)

UNDERGRADUATE COURSES

The engineering science courses described below provide an introduction to the methods and techniques used in the application of sciences and mathematics.

Engineering Science 2 Introduction to Computers in Engineering
Engineering Science 3 Introduction to Electrical Engineering
Engineering Science 4 Introduction to Digital Logic Circuits
Engineering Science 5 Introduction to Mechanics—Statics and Dynamics
Engineering Science 7 Thermodynamics
Engineering Science 8 Fluid Mechanics
Engineering Science 9 Applied Mechanics (Strength of Materials)
Engineering Science 10 Structure and Strength of Materials for Chemical Engineers
Engineering Science 11 Introduction to Biology
Engineering Science 20 Consumer Product Evaluation
Engineering Science 25 Environment and Technology
Engineering Science 27 Environmental Health and Safety
Engineering Science 50 Introduction to Biomedical Engineering
Engineering Science 51 Technical Writing
Engineering Science 52 Engineering Management
Engineering Science 73 Musical Instrument Design and Manufacture
Engineering Science 75 Biomedical Engineering II
Engineering Science 88 CAD for Engineers
Engineering Science 95, 96 Special Topics in Engineering Science

COURSES FOR UNDERGRADUATE AND GRADUATE STUDENTS

Engineering Science 101 Numerical Methods
Engineering Science 108 Statistical Quality Control
Engineering Science 118 Advanced Data Acquisition and Image Processing
Engineering Science 121 Engineering Challenges in Physiology I
Engineering Science 122 Engineering Challenges in Physiology II
Engineering Science 125 Science and Technology of Atmospheric Change
Engineering Science 150 Introduction to Biomedical Engineering
Engineering Science 151 Engineering Systems: Deterministic Models
Engineering Science 152 Engineering Systems: Stochastic Models
Engineering Science 175 Biomedical Engineering II

English

Professor Lee Edelman, Chair; Fletcher Professor of English Literature; Literary theory, film studies, modern poetry
Professor Elizabeth Ammons, Harriet H. Fay Professor of Literature; American literature, women writers
Professor Jay Cantor, History of consciousness, modernism, creative writing
Professor Carol Flynn, Eighteenth-century British literature
Professor John M. Fyler, Chaucer, medieval literature
Professor Joseph Litvak, Nineteenth-century British literature, Literature theory, Jewish Cultural Studies
Professor Jonathan Wilson, Fletcher Professor of Rhetoric and Debate; American literature, creative writing
Professor Judith Haber, Renaissance literature
Associate Professor Linda Bamber, Women and literature, Shakespeare
Associate Professor Kevin Dunn, Renaissance literature
Associate Professor Sheila Emerson, Victorian literature
Associate Professor Sonia Hofkosh, British romantic literature
Associate Professor Modhumita Roy, World literature in English
Associate Professor Christina Sharpe, Multiethnic literature
Assistant Professor Radiclani Clytus, Nineteenth-century American literature and culture
Assistant Professor Ichiro Takayoshi, Twentieth-century American literature, Asian American literature
Assistant Professor John Lurz, Twentieth-century British literature
Professor of the Practice Kathleen Peterson, Poetry and Creative Writing
Lecturer Michael Ullman, Expository writing

The Department of English offers a wide range of courses in British, American, and world literatures in English; film; literary theory; and creative writing. Though diverse, these offerings are unified by the study of textual production and the styles and practices of writing in English. Courses in the department examine literary works in their most illuminating contexts: historical, social, philosophical, and political. The department's courses in expository and creative writing enable students to refine their skills through reading, frequent writing assignments, and discussion.

The department serves the interests of students who plan to become teachers or writers of literature, as well as those preparing for other professions that put a high premium on cultural analysis, effective writing, symbolic interpretation, or media studies. Among the fields our students commonly enter are law, diplomacy, journalism, public relations, publishing, teaching, and filmmaking. Students who have majored (or double-majored) in English are also seen as especially attractive candidates by medical, law, and business schools. Our courses are central to a liberal arts education, regardless of anticipated career, because they instill a mastery of
critical thinking, linguistic analysis, and persuasive communication in a world that increasingly demands that we not only read but also read through the representations that we encounter.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

English majors work out a sequence of courses in consultation with their advisors. A list of approved courses for each category is available online through the English department website: http://ase.tufts.edu/english. Students must take ten courses listed or cross-listed in the department above English 1, 2, 3, and 4 as follows

1) One survey course from the following:
   - English 20 Black World Literature (formerly English 36)
   - English 21 General View of English Literature I (formerly English 51)
   - English 22 General View of English Literature II (formerly English 52)
   - English 23 American Literature: First Contact to 1855 (formerly English 59)

2) Two non-survey classes in American, British, or other Anglophone literature written before 1860, including at least one course in British literature. No more than one course used to fulfill this part of the requirement may be on Shakespeare. A list of approved courses for this category is available at this link: http://ase.tufts.edu/english/undergrad/ majorlist.asp#survey.

3) Two non-survey courses in American, British, or Anglophone literature written after 1860. A list of approved courses for this category is available at this link: http://ase.tufts.edu/english/undergrad/ majorlist.asp#survey.

4) Five remaining courses of the student's choice from the department's listings. See course listings by semester at this link: http://ase.tufts.edu/english/courses/.

In constructing their majors, students are expected to work with their advisors to design a coherent but wide-ranging course of study. English majors should take survey courses early in their academic career in order to establish the necessary foundation for more advanced classes. We encourage all students majoring in English to explore the full historical range of offerings; to investigate the spectrum of textual differences to be found in the study of Anglophone literatures, film, and oral traditions; and to include exposure to recent approaches in English studies, such as women's studies, literary theory, historical materialism, and cultural studies. With the help of their advisors, English majors should seek to create programs of study that expand their knowledge and challenge their preconceptions.

No more than 4 transfer courses may count toward fulfillment of the major.

Students should be aware that they may count toward the major no more than two creative writing courses at the introductory level in each of the areas offered (i.e. Creative Writing: Fiction; Creative Writing: Poetry; Creative Writing: Journalism) and no more than two intermediate level courses in each of those areas. There is no limit on the number of advanced creative writing courses a student may count. Nonfiction Writing and Intermediate Journalism may each be counted only once.

Students must receive a grade of C- or higher in any course that they wish to count toward the fulfillment of English major requirements.

UNDERGRADUATE MINOR PROGRAM

The minor in English requires students to take six courses in the department above English 1, 2, 3, and 4. The purpose of the minor is to allow students to experiment widely, or to follow a particular interest with some concentration. Therefore, each minor will be individual not only in content but also in concept. All students should try, however, to include at least one course numbered below 100 and one above 100 and should consult with faculty members as they pursue their minors. Students may count a maximum of three creative writing courses toward fulfillment of the minor in English. No more than 2 transfer courses may count toward fulfillment of the minor.

GRADUATE PROGRAM

The graduate program in English, American, and Anglophone world literature is varied and flexible. It offers special opportunities for literary analysis with a focus on cultural studies, literary theory, and topics in gender, race, and politics. Many of the department's period, genre, and interdisciplinary courses lend themselves to a broadly conceived program in literature and culture, including interdisciplinary work. Approved courses in other departments may be taken to that end. Fall admission only.
Master of Arts

Master's candidates are required to complete six semester courses, with the expectation that they will enroll in three graduate seminars per semester. Because doctoral degree candidates are required to take a comprehensive examination in their third year, students are advised to take courses that offer them breadth as well as depth. At the end of the master of arts year, they will take a written examination to demonstrate their critical and analytical skills. One month before the examination they will be assigned two texts to prepare. The examination will test their ability to integrate critical, theoretical, and contextual analyses of the texts.

At the end of the academic year, the full faculty will consider the master's candidates individually, focusing on the results of their master's examination, their academic records at Tufts, and the recommendations of the faculty who have taught them. On the basis of this appraisal the department will recommend whether or not the candidate should be granted the master of arts; it will also determine whether or not the candidate should be admitted to candidacy in the doctoral degree program.

The required reading knowledge of a foreign language must be demonstrated to the satisfaction of the Graduate Committee (usually by an examination taken at Tufts University) in order to complete the requirements for the master of arts degree.

Doctor of Philosophy

Admission to the doctoral degree program is open to students who have completed with distinction the master’s degree in English, either at Tufts or another university. Students who enter with a master’s degree from another institution will enroll in three graduate seminars per semester during their initial year. At the end of that year, their work will be reviewed by the faculty, who will determine whether each candidate should continue in the program; upon receiving a positive recommendation, candidates who came to Tufts with a master’s degree in hand will pass into the third year program. Students who successfully complete the master’s degree at Tufts will enter their second year of the program, receiving mentoring as teaching assistants in both literature and composition courses while taking three courses each semester, one of which will be a proseminar offering training in various aspects of the profession.

During the second and third years, doctoral candidates will increase their comprehensive knowledge while beginning to concentrate on one particular area or subject. Normally, the courses they take will be chosen from among the graduate seminars in the department, but advanced-level undergraduate courses or independent studies may be counted with the approval of the director of graduate studies. During the third year of the program, all candidates will complete their coursework by taking two courses in the fall semester. At the same time, they will begin to teach one course per semester in the First-Year Writing Program; they will normally continue teaching through the fifth year.

At the end of the third year, each student will take a two hour oral comprehensive examination. The examining committee will consist of three faculty members, one of whom, the chair, has been selected by the student as someone familiar with the student's work in class. In most cases, the graduate student will already have spoken with this faculty member about serving as director of her or his dissertation.

No standardized list of texts is issued for this examination. The graduate program is small and one advantage of its size is that students’ individual interests can be accommodated. It is not the purpose of the examination to have everyone do the same thing. Instead, it seeks to test each student’s range and breadth of knowledge. Therefore the following guideline of periods and areas of concentration is to be used by each student to generate a foundation list of works in each period or area for which he or she will be responsible. This list is not intended to be exhaustive or exclusive; not everything the student has read will show up on the list. Critical works on periods and texts will be included on each list. This list of specific titles should be arrived at in consultation with individual faculty members and with the director of the graduate program. The list must be submitted to the director of the graduate program in English at least three months before the oral examination.
Entrepreneurial Leadership/Gordon Institute

DIRECTOR:
Pamela Goldberg, The Gordon Institute, Entrepreneurship & Business Planning, Special Topics and Launching the Venture

FACULTY:
Nancy Wilson, Dean ad interim, Tisch College, Innovation in the Social Sector
Robert Creeden, Lecturer, Entrepreneurial Finance
Jack Derby, Lecturer, Entrepreneurial Marketing
Robert Dew, Lecturer, Entrepreneurial Finance
Gavin Finn, Lecturer, Entrepreneurial Marketing
Jeremy Halpern, Lecturer, Entrepreneurial Leadership
John Hodgman, Professor of the Practice, Entrepreneurship & Business Planning and Special Topics
Peter Marton, Lecturer, Entrepreneurial Leadership
Will Oliver, Lecturer, Entrepreneurship & Business Planning
Felice Shapiro, Lecturer, Entrepreneurship & Business Planning

The Entrepreneurial Leadership Program at Tufts provides hands-on educational opportunities for students interested in founding their own companies or working in entrepreneurial environments. The program strives to engage students in the ever-changing world of new business ventures and teaches them to develop innovative, real-world solutions to business challenges.

The program attracts top faculty and continuously works to develop industry partnerships to provide students with internship and networking opportunities. Through our rigorous curriculum and connections to alumni in business and industry, the program strives to benefit both students and the corporate community. With access to outstanding teachers, intensive coursework, guest speakers, internships, and real-world business networks, our students develop the advanced knowledge they need to become the entrepreneurial leaders of the future.

A minor in entrepreneurial leadership is available for all arts, sciences, and engineering undergraduate and graduate students interested in leadership positions at start-up companies or entrepreneurial segments of the corporate or social sector. Students are required to take four courses plus one elective course from the lists below. All courses must be taken for a grade. Students will attend lectures, discuss relevant issues with guests...
from the real world, complete homework assignments, take tests, participate in focused discussions of relevant issues and current events, and complete a course project on a topic central to the theme of the course.

Undergraduate engineering students may not count any of these courses toward foundation and concentration requirements. A maximum of two courses may be used toward humanities and social science electives.

After meeting the necessary requirements for the minor, students complete the minor certification form and return it to The Gordon Institute.

Required Courses
ELS101 Entrepreneurship and Business Planning (or EC 74)
ELS103 Entrepreneurial Finance
ELS105 Entrepreneurial Marketing
ELS107 Entrepreneurial Leadership

Elective Courses
ELS141 Innovative Social Enterprises (cross listed as American Studies 141)
ELS193, 194 Special Topics: Internship/ Research
ELS199 Entrepreneurial Field Studies: Launching the Venture
American Studies 141 Innovative Non-profits
Economics 3 Principles of Accounting
Economics 6 Business Law
Urban and Environmental Planning 23 Negotiation
Drama 10 Introduction to Acting
Drama 27 Public Speaking

For more detailed information, please visit the website http://gordon.tufts.edu/entLeader/.

Environmental Health

DIRECTOR:
Associate Professor David M. Gute, Environmental and occupational epidemiology

CORE FACULTY:
Emeritus Professor Linfield C. Brown, Water quality modeling and environmental engineering
Lecturer Anne Marie Desmarais, Risk assessment and toxicology
Professor Elena Naumova, Biostatistics and infectious disease modeling

Professor Kurt Pennell, Groundwater remediation technologies, fate and transport of emerging contaminants, neurotoxicity of persistent organic pollutants and engineered nanomaterials

Senior Lecturer Mark Woodin, Epidemiology and biostatistics

ASSOCIATED ENVIRONMENTAL HEALTH FACULTY:
Professor Steven C. Chapra, Water quality modeling and transport of pathogens
Associate Professor Wayne Chudyk, Drinking water quality and treatment
Associate Professor John L. Durant, Contaminant fate and transport
Adjunct Associate Professor Jeffrey Griffiths, Infectious disease epidemiology, characterization of waterborne pathogens and global health
Associate Professor Christopher Swan, Site remediation

The Environmental Health program is an interdisciplinary program based in the Department of Civil and Environmental Engineering of the School of Engineering. Historically, professional programs in environmental health were established in schools of engineering to promote research on control of infectious disease, purification of water supplies, and sanitary disposal of human wastes. Today, focal points of concern have been broadened to such challenging issues as environmental pollution, epidemiological aspects of chronic illnesses, occupational health, community based participatory research, primary prevention of water borne disease, and risk assessment and management.

While the program retains its traditional strength in environmental engineering, it also provides a sound background in epidemiology, biostatistics, and environmental health. The problems and issues in environmental health can be viewed in three broad categories:

1) Biological: living things, ranging from food upon which life depends to pathogenic microorganisms responsible for disease.

2) Physical: nonliving things affecting people (physical agents such as heat, noise, radiation, consumer and industrial products, and chemical agents such as environmental pollutants and systemic poisons).

3) Social: the interrelationship within society, which includes cultural values, customs, attitudes, economic status, and social-political organization.
In response to these issues and to the current needs of society for a comprehensive approach to health and disease problems, the program gives students both a theoretical and practical knowledge of environmental health, epidemiology, biostatistics, drinking water quality and treatment, occupational hygiene, and environmental toxicology.

Supporting course work is tailored to the interests of the individual student and drawn from other departments, including the departments of biology, chemistry, economics, engineering science, mathematics, political science, physics, philosophy, psychology, sociology, and urban and environmental policy and planning, as well as the Friedman School of Nutrition Science and Policy.

UNDERGRADUATE PROGRAM

Bachelor of Science in Engineering

The Department of Civil and Environmental Engineering offers a B.S.E. program in environmental health. (See Civil and Environmental Engineering for program description and requirements.)

GRADUATE PROGRAM

Master of Science in Environmental Health

Requirements:

1. Core Courses (four credits)
   - CEE 154 Principles of Epidemiology
   - CEE 173 Health Effects and Risk Assessment
   - CEE 158 Occupational and Environmental Health
   - BIO 132 or MPH 205 Biostatistics

   Another biostatistics or environmental statistics course may be substituted with the permission of the student’s major advisor and thesis committee.

2. Thesis (two credits)—The M.S. thesis is the culmination of concentrated study in a specific area of research within environmental health. Thesis work contributes two course credits toward the M.S. degree (CEE-295 and CEE-296).

3. Tracks (three credits)—All Environmental Health M.S. students must select either the Epidemiology or the Risk Assessment track. Students must take the required advanced course in the track, and then select two other courses as track electives. At least one of the courses must be from the track elective list; the other can be a course from the other track elective list, from the supplemental list of courses, or another course that the student feels will meet his/her needs. All electives must be approved by the academic advisor.

   **EPIDEMIOLOGY TRACK**
   - Advanced Course (required):
     - CEE 164 Epidemiological Methods
   - Track Electives (choose three):
     - CEE 167 Environmental Toxicology
     - MPH 224 Infectious Disease Epidemiology
     - MPH 226 Cancer Epidemiology
     - MPH 240 Environmental Epidemiology
     - MPH 206 Intermediate Biostatistics: Regression Methods
     - MPH 220 Cardiovascular Epidemiology
     - MPH 222 Survey Research Methods & Data Management
     - CEE 241/MPH241 Biology of Water and Health

   Other courses may be selected with the approval of the student’s advisor.

   **RISK ASSESSMENT TRACK**
   - Advanced Course (required):
     - CEE 168 Exposure Assessment
   - Track Electives (choose three):
     - CEE 167 Environmental Toxicology
     - CEE 143 Site Remediation
     - CEE 175 Hazardous Material Safety
     - CEE 194 A Risk Communication and Public Participation
     - CEE 113 Groundwater Hydrology
     - CEE 172 Fate and Transport of Environmental Contaminants
     - CEE 241/MPH 241 Biology of Water and Health
     - CEE 136 Air Pollution Control
     - UEP 294B Chemicals, Health, and Environment

   Other courses may be selected with the approval of the student’s advisor.

4. Supplemental Electives List—Other courses of interest to EH MS students include the following. You may substitute one of these courses for one of your track elective with your advisor’s approval. This list is not all-inclusive, and you may take other courses relevant to your track and program interests with your advisor’s approval.

   - CEE/UEP 207 Environmental Law
   - CEE/UEP 265 Corporate Management of Environmental Issues
   - UEP 294G Geographic Information Systems
   - CEE/UEP 267 Methods in Environmental Impact Assessment
CEE/UEP 230 Negotiation, Mediation, and Conflict Resolution
CEE 136 Air Pollution Control
UEP 203 Political Economy, Ethics, and Environment
CEE 138 Hazardous Waste Treatment Technology
CEE 212 Chemical Principles for Environmental and Water Resources Engineering
CEE 213 Transport Principles for Environmental and Water Resources Engineering
CEE 214 Environmental and Water Resources Systems Engineering

5. Graduate Environmental Seminar (no credit) — All full-time students in the Environmental Health M.S. graduate program are required to attend and participate in the weekly seminar series. Each M.S. student is required to give at least one presentation related to their research in this seminar series during their graduate studies.

In addition, on a space-available basis, students may enroll in courses offered in the Master in Public Health (M.P.H.) degree program. These courses are generally held on the Health Sciences campus in Boston.

Environmental Management

FACULTY ADVISOR:
Lecturer Anne Marie C. Desmarais, Civil and Environmental Engineering

Environmental managers in industry, government, and consulting know that changes in environmental compliance requirements can lead to challenges and opportunities. Complex regulations, environmental technologies, international environmental treaties, and multinational corporate environmental programs will determine the direction that environmental managers must take in the future. The certificate in Environmental Management provides students with the tools and techniques to understand the future of environmental management.

The program combines courses in fundamental concepts, such as regulations and compliance, with leading-edge concepts in life-cycle analysis, risk assessment and management, and remediation technologies. Students select from Tufts graduate-level courses offered by the Department of Civil and Environmental Engineering and the Department of Urban and Environmental Policy and Planning. Students can focus their course work in environmental technology, health, or policy.

The program is open to students with a bachelor's degree, undergraduate course work in natural or physical science, mathematics, or engineering, and knowledge of current environmental issues.

This five-course, graduate-level certificate, offered through the Department of Civil and Environmental Engineering in collaboration with the Office of Graduate Studies, is designed to be pursued on a part-time basis by professionals seeking advanced training, or preparing to enter a master's degree program. The program can be completed full-time in one year. In most cases, courses taken as a certificate student can be transferred into a graduate degree program.

For more information and an application, contact the Office of Graduate Studies at 617-627-3395 or visit the website: http://gradstudy.tufts.edu/.
There are three program tracks, including Track I: Environmental Science which focuses on basic principles, theories, and methods of the natural sciences (biology, physics, chemistry, and geology) and their application to environmental problems; Track II: Environment and Technology which emphasizes engineering and applied science aspects of resource management, environmental impacts, and pollution prevention and abatement; and Track III: Environment and Society which examines sociopolitical, humanistic, economic, and cultural aspects of managing environmental problems. The three required courses must include offerings from at least two departments. Up to one core course numbered 100 or higher may be double-counted toward both the core and the appropriate track. (Environmental courses are occasionally offered by visiting scholars. With approval of the Program Director such courses may fulfill some track requirements.)

For more detailed information, please visit the website, [http://ase.tufts.edu/environmentalstudies](http://ase.tufts.edu/environmentalstudies).

Film Studies
(SEE COMMUNICATIONS AND MEDIA STUDIES.)

French
(FOR DEGREE REQUIREMENTS, SEE ROMANCE LANGUAGES.)

Geology

**Associate Professor Anne F. Gardulski**, Chair; Sedimentology, oceanography, structure, stratigraphy

**Professor Grant Garven**, Groundwater geology and hydrology

**Professor Jack C. Ridge**, Quaternary, glacial, and environmental geology; geomorphology

**Assistant Professor Molly McCanta**, Igneous and metamorphic petrology, mineralogy, planetary geology

**Senior Lecturer Jacob S. Benner**, Paleoecology, stratigraphy

**Adjunct Associate Professor Samuel Kounaves**, Analytical, environmental, and materials chemistry

**Adjunct Associate Professor Laurie Baise**, Geotechnical engineering, geotechnical earthquake engineering
Geology is the science of the earth. It involves an interdisciplinary exploration of the earth’s 4.5-billion-year history and a study of the processes that form and shape the rocks and minerals of the earth. Geology integrates biology, chemistry, astronomy, and physics in the study of the earth, and has broad applications in engineering, archaeological, and environmental investigations. Tufts University has well-equipped geological laboratories and an excellent collection of geologic materials for study and research. Field trips to the northeastern and southwestern United States offer abundant opportunities for the study of a great variety of geological phenomena.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
The geology department offers two programs: the geological sciences major, for students who wish to pursue graduate study in geology and related fields, or work at entry-level jobs; and the geology major, which emphasizes breadth and flexibility for students seeking a double major, teaching certification, entry to medical programs, careers in multidisciplinary fields such as environmental law, or a broad-based liberal arts major.

Geological Sciences Major
Students intending to continue with geology after graduation should complete Geology 1 and 2, eight or more geology courses above Geology 9, plus Mathematics 12, Chemistry 2, and Physics 1 and 2 (or 11 and 12) and their labs. The geology courses should normally include Geology 11, 12, 22, 32, 35, and one of the following: Geology 36, 102, 115, or 131. Approved related fields courses may replace up to two upper-level geology courses. Research experience and a six-week geology summer field camp are strongly recommended.

Geology Major
Students electing this option should complete Geology 1 and 2, eight other geology courses (except Geology 9), plus Chemistry 1 and Physics 1 with labs. Approved related fields science courses may replace as many as three of the upper-level geology courses. Upper-level engineering courses may substitute for up to two of the upper-level geology courses with prior written consent. No more than 4 upper level geology courses may be replaced by engineering and related fields courses.

UNDERGRADUATE MINOR PROGRAMS

Geology Minor
The Department of Geology offers a minor in geology available to students in the School of Engineering. The faculty advisor for this minor is Professor Anne Gardulski.

Five courses are required for the minor. They normally include:
- **Geology 1** The Dynamic Earth
- **Geology 2** Environmental Geology
- **Geology 22** Structural Geology or **Geology 32** Geomorphology
- **Geology 131** Groundwater

One elective selected from the following:
- **Geology 22** Structural Geology
- **Geology 32** Geomorphology
- **Geology 35** Sedimentology
- **Geology 36** Stratigraphy
- **Geology 115** Quaternary and Glacial Geology
- **Geology 132** Groundwater Chemistry and Quality

Note that Geology 1, 2, 131, and 132 are offered every year, but Geology 22, 32, 35, 36, and 115 are offered in alternate years. Schedule planning for these courses is important.

Geoscience Minor
The department of geology offers a minor in geoscience available to Arts and Sciences students who are majoring in archaeology, biology, chemistry, computer science, mathematics, or physics and astronomy. The faculty advisor for this minor is Professor Anne Gardulski.

Five courses are required for the minor. They normally include:
- **Geology 1** The Dynamic Earth
- **Geology 2** Environmental Geology

Three electives selected in consultation with the faculty advisor. These courses are intended to complement the student’s major and scientific or mathematical interests.

Geoengineering Minor
The civil and environmental engineering department offers a minor in geoengineering available to students of the College of Liberal Arts and the School of Engineering, except those majoring in civil and environmental engineering. Professor Lewis Edgers is the advisor for the minor.
Five courses are required:

**Engineering Science 5** Applied Mechanics (Statics)  
**Engineering Science 9** Applied Mechanics (Strength of Materials)  
**Civil and Environmental Engineering 12** Introduction to Hydraulic Engineering  
**Civil and Environmental Engineering 42** Introduction to Geotechnical Engineering

One elective selected from:  
**Civil and Environmental Engineering 112** Hydrology and Water Resource Engineering  
**Civil and Environmental Engineering 113** Groundwater Engineering  
**Civil and Environmental Engineering 146** Foundation Engineering  
**Civil and Environmental Engineering 149** Earth Support Systems

Prerequisites for the above course sequence are Mathematics 12 and Physics 12.

For more detailed information, please see the website [http://ase.tufts.edu/geology](http://ase.tufts.edu/geology).

German, Russian, and Asian Languages and Literatures

**Professor (Japanese) Hosea Hirata**, Chair; Director of Film Studies minor; Japanese literature  
**Professor (German/Judaic Studies) Sol Gittleman**, Alice and Nathan Gantcher University Professor of Judaic Studies; Earlier twentieth century, Yiddish literature, national socialism  
**Professor (Russian) Vida Johnson**, Director of Russian Program; Twentieth century, film and culture  
**Professor (Japanese) Charles Inouye**, Co-Director of International Literary and Visual Studies; Japanese literature  
**Professor (Japanese) Susan Napier**, Director of Japanese Program; Japanese literature, popular culture, Anime film  
**Professor (German) Christiane Zehl Romero**, Goldthwaite Professor of Rhetoric; Tübingen; Professor of German; Director of German program; Twentieth century, women writers, film, advanced language  
**Professor (Chinese) Xueping Zhong**, Director of Chinese program; Modern Chinese literature, culture, Film  
**Associate Professor (German/Judaic Studies) Gloria J. Ascher**, Co-director of Judaic Studies; German literature of the eighteenth and nineteenth centuries, Sephardic studies, Ladino language and literature, Scandinavian literature

**Associate Professor (German) Daniel Brown**, Director of Africa in the New World; Reformation, documentary theatre, language pedagogy  
**Associate Professor (Russian) Gregory Carleton**, Director of Center for Interdisciplinary Studies, twentieth-century Russian literature and culture  
**Associate Professor (German) Bernhard Martin**, Director of German Graduate Program, medieval German literature, cultural studies  
**Associate Professor (Judaic Studies) Joel Rosenberg**, Lee S. McCollester Associate Professor of Biblical Literature; Co-director of Judaic Studies; Central European writers, South African writers, film studies  
**Assistant Professor (Chinese) Ning Ma**, Pre-modern Chinese literature, Comparative literature  
**Assistant Professor (Arabic) Kamran Rastegar**, Director of Arabic program, Arabic language and literature  
**Lecturer (Arabic) Rana Abdul-Aziz**, Coordinator of Arabic language courses  
**Senior Lecturer (Japanese) Kiyomi Kagawa**, Coordinator of Japanese language courses  
**Lecturer (Hebrew) Hedda Harari-Spencer**, Coordinator of Hebrew language courses  
**Senior Lecturer (German) Saskia Stoessel**, Coordinator of German language courses  
**Senior Lecturer (Chinese) Mingquan Wang**, Coordinator of Chinese language courses  
**Senior Lecturer (Arabic) Mohammed Alwan**, Arabic language and literature  
**Lecturer (Arabic) Rabab El Nady**, Arabic language  
**Lecturer (Chinese) Jianping Feng**, Chinese language  
**Lecturer (Arabic) Haci Osman Gündüz**, Arabic language  
**Lecturer (Arabic) Fadi Jajji**, Arabic language  
**Lecturer (Japanese) Shiori Koizumi**, Japanese language  
**Senior Lecturer (Chinese) Jinyu Li**, Chinese language  
**Lecturer (Chinese) Min Wan**, Chinese language  
**Lecturer (German) Doris Pfaffinger**, German language  
**Lecturer (Chinese) Shaomel Wang**, Chinese language  
**Lecturer (Japanese) Kiyoko Morita**, Japanese language  
**Part-time Lecturer (Russian) Tanya Gassel**, Russian language  
**Part-time Lecturer (German) Geraldine Grimm**, German language and literature  
**Part-time Lecturer (Hebrew) Hava Kimelman**, Hebrew language  
**Part-time Lecturer (Chinese) Mushi Li**, Chinese language  
**Part-time Lecturer (Russian) Scarlet Marquette**, Russian language  
**Part-time Lecturer (Japanese) Jun Ono Cheung**, Japanese language
The Department of German, Russian, and Asian Languages and Literatures is administrative home to the following language and culture programs: Arabic, Chinese, German, Hebrew, Japanese, Russian, and Swahili. The Department is also closely connected to various interdepartmental programs: Africa in the New World (ANW), Asian Studies, Communication and Media Studies (CMS), International Relations (IR), International Literary and Visual Studies (ILVS), Judaic Studies, and Middle Eastern Studies.

The Department offers eight majors and two graduate degrees. The undergraduate majors are Chinese, German Language and Literature, German Studies, Japanese, Judaic Studies, ILVS, Russian Language & Literature, and Russian and East European Studies. The graduate degrees are M.A. in German and M.A. in German with Teaching Licensure. Students can minor in Arabic, Chinese, German, Japanese, Judaic Studies, and Russian. (For majors in Asian Studies, IR, and Middle Eastern Studies, as well as minors in ANW, Asian Studies and CMS, please consult their websites).

SPECIAL MINOR FOR ENGINEERING STUDENTS

Students earning a bachelor degree in engineering may minor in either Arabic, Chinese, German, Hebrew, Japanese, or Russian language and culture. The minor requires a total of six (6) courses:

a. four language courses above the beginning 2nd semester level – 3, 4, 21, 22
b. one course in the social science concentrating on the area in which the target language is spoken (e.g. for Arabic: History 60, 61, 64, 65; for Chinese: History 43, 44, Political Science 126; for German: History 31, Political Science 125, 147; for Hebrew: History 61; for Japanese: History 47, 48, 122, 123, 124, 125, Political Science 131; for Russian: History 27, 28, 29)

c. a fourth-year level language course (Arabic 121, Chinese 121, German 121, Hebrew 121, Japanese 121, Russian 121) or, in conjunction with the social science course, a directed study in the language focusing on materials relevant to that course.

Arabic

Arabic is the fifth most widely spoken language in the world and is one of the six official languages of the United Nations. The Arabic Program, with its language, literature and culture courses, offers training in the study of the Arabic language at all levels, as well as offering studies in topics relating to Arab cultures and traditions. It offers a strong foundation in Modern Standard Arabic, as well as a wide range of courses taught in English on modern and classical Arabic literatures, cinema, gender and other cultural topics.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

The Arabic major is designed to offer students a strong foundation in the Arabic language, as well as providing them with training to critically engage with Arabic literary and other cultural activities, such as cinema and other media. The major in Arabic requires ten courses in all: nine courses beyond Arabic 4, plus one approved course in a different department. Of the nine departmental courses, four must be Arabic language-based courses, while five must be Arabic language-based courses, while five must be selected from available departmental Arabic culture courses.

a. Language requirement. Four Arabic language-based courses above Arabic 4: Arabic 21; Arabic 22; Arabic 121; Arabic 122; or, further advanced Arabic language-based courses (subject to approval of the Director of Arabic). Students who place higher than Arabic 21 upon entry into the program are expected to complete ten courses in all, in consultation with the Director of Arabic.

b. Culture requirement. Five departmental Arabic literature or culture courses. Two of these five required courses may be filled by approved courses taken outside of the Medford campus.

c. Related course. One course in a topic related to Arabic or the Middle East offered outside of
Tufts’ Arabic Program. Courses in this category are subject to the approval of the Director of Arabic.

**UNDERGRADUATE MINOR PROGRAM**
The department offers a minor in Arabic requiring the completion of six courses beyond the intermediate level (ARB 3-4) and two courses in Arabic literature or culture. Minor checklist forms are available at http://ase.tufts.edu/grall/arabic/requirements.asp.

**Chinese**
Chinese civilization is one of the longest and continuous ones in the world. Home to one-fifth of the world population and undergoing rapid changes, China is increasingly playing a pivotal role in today’s world. The Chinese Program offers courses aimed at helping students achieve proficiency in modern Chinese language and acquire comprehensive understanding of Chinese literature and culture in conjunction with their social and historical contexts.

**UNDERGRADUATE CONCENTRATION REQUIREMENTS**
The major in Chinese requires ten courses: nine courses in the program beyond Chinese 4, plus one in a related field. Those who place out of language courses still need to complete ten approved courses. At least one course from category b must be a seminar offered by the Chinese Program. If qualified, a student may opt to do an honors thesis.

a. Language requirement: four courses beyond Chinese 4: 21, 22, 121, 122. Students placed above 21 or higher, upon completion of 122 or its equivalent, can take more advanced language courses (123, 124, 125, 126, 127, 128), or additional culture courses, or a combination of both.

b. Chinese 61 and four additional literature and culture courses from Chinese offerings in the department.

c. One course in Chinese culture or in related disciplines offered by another program or department and approved by the Chinese program director.

**UNDERGRADUATE MINOR PROGRAM**
The department offers a minor in Chinese requiring the completion of six courses beyond the intermediate level (Chinese 3-4). These must include two language courses at the 100 level and two literature/culture courses. Details are available from the departmental office. Minor checklist forms are available at http://ase.tufts.edu/grall/chinese/requirements.asp#minor.

**CHINESE LANGUAGE COURSES**
Regular classes for the first four years (1 through 122) meet three times a week; regular classes at the higher levels (123 through 128) meet twice a week. Intensive classes meet six times a week.

**THE CHINESE HOUSE**
The Chinese House is a language based housing unit sponsored by the Chinese Program. The mission of the Chinese House is to provide language learning experience outside of the classroom and to promote and facilitate cross-cultural exchange and understanding within the larger community at Tufts. The Chinese House provides space and opportunity for the residents and non-residents to share their Chinese learning experience and practice their Chinese. Through academic, educational and social events, students in the Chinese House reach out to the rest of the University community, enriching the life and learning experience of the larger community at Tufts. Applications are available from the Chinese Program early in the spring semester.

**STUDY OPPORTUNITIES IN CHINA**
**Tufts-in-China**
The Tufts-in-China program offers a fall semester in Hangzhou, China, at Zhejiang University, one of the top seven universities in China. The combination of the city of Hangzhou and the renowned Zhejiang University makes Tufts-in-China a unique program for students of Chinese language and culture. Prerequisites: Well-prepared undergraduates who have successfully completed Chinese 4 (or the equivalent) by the time of departure are eligible to apply. Tufts-in-China is open to students from all majors.
German

The German program promotes an understanding of the extraordinary contributions made by German-speaking writers, artists, and thinkers to the past eight hundred years of civilization, and their implications for the modern world. A wide range of courses in German gives students with varied interests and goals the opportunity to attain a thorough knowledge of the language, literature, and general culture. The program also provides a significant number of courses in English so that students not conversant in German may become familiar with important aspects of German culture.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

German Language and Literature

To major in this area, a student should take nine courses above the intermediate (German 3, 4) level. These should be courses taught in German and, depending on the student’s preparation, include German 21, and/or GER 22, 44, 61, 62, and 100-level courses. A minimum of two 100-level courses taught entirely in German (121 and one literature/culture course at that level) is required. Also required is one course in a related field, such as German art, film, or history. The Tufts-in-Tübingen program (see below for description) is highly recommended for language and literature majors. Courses taken in German at the University of Tübingen in the areas of German language, literature, and culture (e.g., film) count toward the major.

German Studies

As an alternative to the language/literature concentration, the department offers an interdisciplinary major with two options:

1. TUFTS-IN-TÜBINGEN PROGRAM

A unique opportunity for students from various disciplines to spend their junior or senior year abroad experiencing the culture of German-speaking countries within the larger European context, and combining study outside of literature with their knowledge of German. All courses taken in German at the University of Tübingen in the areas of Politikwissenschaft, Volkswirtschaft, Geschichte, Kunstgeschichte, Volkskunde, Sozial- und Kulturwissenschaft, Germanistik, and Vergleichende Literaturwissenschaft will count toward the concentration requirement of nine German courses beyond the intermediate (German 3, 4) level and one course in a related field. On returning to the Tufts Medford/Somerville campus, two 100-level courses taught in German on the Tufts campus, 121, and one 100-level literature/culture course in German will be required.

2. TUFTS-MEDFORD/SOMERVILLE

This major requires nine courses plus one course in a related field approved by the German program. It includes at least five courses above the intermediate (German 3, 4) level taught in German, including German 121, and one 100-level literature/culture course taught in German. The remainder is a combination of courses dealing with German subject matter taught through at least three of the following departments: German, Russian, and Asian languages and literatures, history, music, philosophy, or political science. Courses taken in other departments must be approved by the German program for concentration credit.

UNDERGRADUATE MINOR PROGRAM

The department offers a minor in German requiring six courses above the intermediate level (German 3, 4). These must include two courses at the 100 level taught in German at Tufts/Medford; one of them is to be German 121. Minor Checklist Forms are available at http://ase.tufts.edu/grall/german/requirements.asp#minor.

GERMAN HOUSE

The department sponsors a German house, which provides a pleasant residential environment and the opportunity to enjoy intensive language practice in an informal setting. Every year a native German student from Tübingen is resident director and helps the students organize a variety of social and cultural activities. Preference is given to students who are currently enrolled in a German course.

TUFTS-IN-TÜBINGEN PROGRAM

 Majors in German, as well as qualified juniors and seniors from other departments, are encouraged to spend a year abroad in the department’s overseas program, which normally consists of two semesters of study at Eberhard-Karls-Universität in Tübingen under the direction of the Tufts resident director. (One semester, in the spring only, is also possible.)
A minimum of two years of college-level German is required to qualify for Tufts in Tübingen, but third year-level proficiency is strongly advised. Students who have been accepted into the program may attain it by participating in a six-week intensive language course, which will prepare them for the transition into regular courses at a German university. This course starts at the beginning of September.

**GRADUATE PROGRAMS**
The department offers two master of arts degree programs in German. These programs typically enroll a small number of highly motivated and talented students, who—together with faculty both on the Tufts campus and in Tübingen—form a supportive, stimulating, and congenial community that helps students realize their full potential. Both master’s programs provide a wide range of courses in language, literature, and culture, and also the use of media, including hypermedia presentations in language and culture courses.

**Tufts-in-Tübingen**
All students may choose to study one year at the Eberhard-Karls-Universität in Tübingen, Germany, and one year on the Tufts campus; or they may spend both years on the Tufts campus in Medford/Somerville. The Tufts resident director in Tübingen offers an informal colloquium to acquaint students with traditional and contemporary aspects of German cultural life, and assists students in planning a program of study that draws upon university lecture courses and seminars. On the Tufts campus students do regular course work, participate in a graduate colloquium, and serve as teaching and research assistants.

**Master of Arts in German**
The program requires two academic years and is designed to prepare students for doctoral work in German or to provide career enhancement for fields such as international business or law, media and communications, and library science.

**Master of Arts in German with Teaching Licensure**
The program requires two academic years plus one summer, and is offered in conjunction with the Department of Education. It is designed to prepare highly qualified secondary school teachers.

**Master of Arts in Teaching (M.A.T.)**
The Department of Education, in conjunction with the German program, offers the M.A.T. degree in German as a foreign language. For more information and application materials, please contact the Department of Education.

**Japanese**
The Japanese program offers a strong foundation in the Japanese language and introduces students to many facets of Japanese culture. The major prepares students for careers in academics, business, law, diplomacy, or technology where the knowledge of Japanese language and culture is an invaluable asset.

**UNDERGRADUATE CONCENTRATION REQUIREMENTS**
The major in Japanese requires nine courses beyond Japanese 4, plus one in a related field. Those who place out of language courses still need to complete ten approved courses.

**a. Language requirement:** four courses beyond Japanese 4; continuation to Japanese 123, 124 strongly recommended.

**b.** Japanese 61 and four additional literature/culture courses from Japanese offerings in the department. Two of these courses must be at the 100 level, including one seminar. If qualified, a student may opt to do an honors thesis (JPN 198, 199) instead of a seminar. Only one course with a half Japanese content can count toward this category.

**c.** One course in Japanese culture offered by another department and approved by the program director.

**UNDERGRADUATE MINOR PROGRAM**
The department offers a minor in Japanese requiring the completion of six courses beyond the intermediate level (JPN 3-4). These must include two language courses (121, 122, or 123, 124) and two literature/culture courses. Details are available from the departmental office.

**JAPANESE CULTURE HOUSE**
The department administers the Japanese Culture House, a coeducational undergraduate dormitory that serves as an informal center for Japanese studies on campus. It aims to provide an experien-
tial learning environment for students who would like to improve their language skills and deepen their knowledge of Japanese culture. It also accommodates native speakers who would like to share their knowledge of Japan with other students and take a leading role in organizing social events related to Japan. The minimum requirement to be a resident is Japanese 2 or equivalent. The selection committee considers the leadership potential of the applicants as well as the balance of gender and of linguistic levels. Together the occupants organize various cultural activities that further the understanding of Japan on campus, as well as weekly Japanese chat hours to which any student interested in practicing conversation is welcome.

STUDY OPPORTUNITIES IN JAPAN
Tufts-in-Japan
The Tufts-in-Japan program is offered at Kanazawa University, a prestigious national institution in a picturesque city rich in history. Students are strongly recommended to study in Japan during their junior year. Excellent scholarships are available. Tufts financial aid can also be used.

Judaic Studies

CO-DIRECTORS:
Associate Professor Gloria J. Ascher, German/Judaic studies
Associate Professor Joel Rosenberg, McCollister Associate Professor of Biblical Literature; Judaic studies

CORE FACULTY:
University Professor Sol Gittleman, German/Judaic studies
Professor Barbara Wallace Grossman, Drama
Professor Jonathan M. Wilson, English
Lecturer Janis Bellow-Freedman, English
Lecturer Hedda Harari-Spencer, Hebrew/Judaic studies
Lecturer/Rabbi Jeffrey Summit, Judaic studies

The program in Judaic Studies encompasses study of some 4,000 years of ancient Israelite and ancient, medieval, and modern Jewish civilization, with attention to the influence of Israelite and Jewish culture on the many cultural and religious traditions that grew from it. The major in Judaic studies comprises the courses listed below under Hebrew and Judaic Studies and a number of primary or related courses in other departments.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
The major in Judaic studies consists of ten courses – eight primary courses and two related courses. Courses in Hebrew language at the level of Hebrew 21, 22, and 121, 122 may be counted as primary courses. Courses not listed below, offered at Tufts and elsewhere, are acceptable upon approval of the program directors (Professor Gloria Ascher, Olin 332, and Professor Joel Rosenberg, Olin 322), but at least four of the primary courses must be taken at Tufts. Students majoring in Judaic studies must have the equivalent of three years of Hebrew, or two years of Hebrew and two years of a second language related to the student’s special interests within the field. Qualified students majoring in Judaic studies are encouraged to consider participating in the Thesis Honors Program.

Primary Courses
Drama 162 Imagining the Holocaust on Stage and Screen
English 159 Contemporary Jewish Fiction
English 162 Philip Roth and Company
English 164 Imagining the Jew
Judaic Studies 48 Israeli Film
Judaic Studies 52 Technology and Jewish Oral Tradition
Judaic Studies 65 Introduction to Yiddish Culture
Judaic Studies 73 Aspects of the Sephardic Tradition
Judaic Studies 77 Archaeology of Palestine (cross-listed as Archaeology 77)
Judaic Studies 78 Jewish Women
Judaic Studies 84 The Sources of Jewish Tradition
Judaic Studies 91-01 Ladino Language and Culture
Judaic Studies 92-01 Introduction to Judaism
Judaic Studies 92 Special Topics
Judaic Studies 93 Directed Study
Judaic Studies 95 Topics in Jewish Literature
Judaic Studies 96 Introduction to the Talmud
Judaic Studies 99 Judaic Studies Internship
Judaic Studies 126 Roots of the Jewish Imagination
Judaic Studies 132 The Book of Genesis and Its Interpreters
Judaic Studies 136 King David and the Israelite Monarchy
Judaic Studies 142 Jewish Experience on Film
Judaic Studies 150 Music and Prayer in the Jewish Tradition
Judaic Studies 159 Contemporary Jewish Fiction (cross-listed as English 159)
Judaic Studies 162 Philip Roth and Company (cross-listed as English 162)
Judaic Studies 164 Representing the Jew (cross-listed as English 164)
Judaic Studies 191 Special Topics
Judaic Studies 193, 194 Advanced Directed Study
Judaic Studies 198, 199 Senior Honors Thesis
Religion 21 Introduction to the Hebrew Bible
Religion 52 Judaism Through the Centuries

Related Courses
Related courses establish links between Judaic studies and other disciplines by examining such topics as countries or regions that are major sites of Jewish civilization, past or present; the life of cosmopolitan and multiethnic societies more generally; the dynamics of tradition; the impact of modernity and historical crisis on traditional societies; issues of philosophy, ethics, myth, religion, and spirituality that bear upon Jewish life and thought; issues of race, class, gender, and sexuality in the life of a culture; the legacy of biblical and Jewish tradition in world cultures. A student may, with the approval of the program directors, substitute an appropriate course.

American Studies 12 Race in America
American Studies 16 American Identities
American Studies 181 The Construction of Whiteness
Anthropology 102 Children and Youth in War Zones
Anthropology 119 Peoples of the Middle East
Anthropology 124 American Diversity
Anthropology 130 Anthropological Thought
Anthropology 131 Anthropology of Religion
Anthropology 132 Myth, Ritual, and Symbol
Arabic 61 Classical Arabic Literature
Arabic 62 Modern Arabic Literature
Arabic 64 The Literary Qur'an
Art History 1 Art, Ritual, and Culture
Art History 20 Image and Icon (cross-listed as Religion 20)
Art History 22 Iconoclasm and Iconophobia: The Threat of the Image (cross-listed as Religion 24)
Art History 27 The End of the World in Art and Thought
Art History 28/128 Medieval Art in the Mediterranean: Pagans, Jews, Christians, Muslims (cross-listed as Religion 28/128)
Child Development 62 Childhood Across Cultures
Child Development 157 Theories of Spiritual Development (cross-listed as Religion 157)
Classics 26 Ancient Egypt
Classics 65/165 Journey of the Hero
Classics 75 Classical Mythology
Classics 148 Time and Festivals in the Ancient World

Classics 151 Ancient Philosophy
English 31 Underworlds
English 39 Death and Literature in the 20th Century
English 49 The English Bible
English 69 Contemporary Multi-Ethnic Literature
English 77 The Modern Mind
English 104 The Literature of the Middle Ages
English 108 Virgil and Dante
English 111 English Literature of the 17th Century
English 114 Milton
English 170 Sexuality, Literature, and Contemporary Criticism
English 171 Women and Fiction
English 173 Literary Theory
English 174 Sexuality, Literature, and Contemporary Criticism
English 175 Post-Structural Literary Theory
English 177 Feminism, Literature, Theory
English 180 Psychoanalysis and Cultural Criticism
English 181 The Politics of Reading
German 84 East-West Perspectives on Fascism: Japan and Germany
History 36 The Immigrant in American History
History 70 The Modern Middle East to World War I
History 71 The Modern Middle East from World War I
History 72 The World of Islam
History 152 The Religious and Spiritual Map of Europe, 300-1500
History 167 Medieval Islamic History
International Literary and Visual Studies 114 Politics and Literature in Russian and Eastern Europe (cross-listed as Russian 114)
Peace and Justice Studies 120 Sociology of War and Peace (cross-listed as Sociology 120)
Philosophy 16 Philosophy of Religion
Philosophy 24 Introduction to Ethics
Philosophy 48 Feminist Philosophy
Philosophy 55 The Making of the Modern Mind
Philosophy 126 Theories of Human Nature
Philosophy 128 Human Rights, History and Theory
Philosophy 130 Moral Psychology
Philosophy 140 Liberalism and Its Philosophical Critics
Philosophy 141 Global Justice (cross-listed as Peace and Justice Studies 141)
Philosophy 185 From Hegel to Nietzsche
Philosophy 186 Phenomenology and Existentialism
Political Science 41, 42 Western Political Thought
Political Science 134 Comparative Politics of the Middle East
Political Science 155 Theories of Nationalism
Political Science 172 U.S. Foreign Policy in the Middle East
Religion 6 Philosophy of Religion
Religion 35 Introduction to Christianity (cross-listed as History 52)
Religion 48 Introduction to Islam
Religion 51 Fundamentalism in Comparative Perspective
Religion 58 Ethics through Literature
Religion 72 Contemporary Arts and Religion
Religion 104 Feminist Theologies
Religion 113 The Religious and Spiritual Map of Europe, 300-1500
Religion 195 Mystics
Russian 73 The Bible in Russian Literature
Sociology 143 Sociology of Religion
Spanish 130 Civilization of Muslim Spain
Women's Studies 72 Introduction to Women's Studies
World Civilizations 1 A Sense of Place: Cultural Constructions of Place
World Civilizations 2 A Sense of Place: From Regional to Global
World Civilizations 5 Time and Festivals
World Civilizations 6 Time and Modernity
World Civilizations 9 Memory and Identity in World Cultures I
World Civilizations 10 Memory and Identity in World Cultures II
World Literature 120 Central European Writers
World Literature 122 South African Writers

UNDERGRADUATE MINOR PROGRAM
The minor in Judaic studies consists of six courses selected from those approved for the major, including at least four primary courses. Four of the six courses must be taken at Tufts and must include a course in which a substantial integrative project is produced. Two years of Hebrew or the equivalent are strongly recommended. For further information consult the program directors. Minor checklist forms are available at http://ase.tufts.edu/grall/judaic/minor.asp.

MINOR IN HEBREW
The minor in Hebrew consists of Hebrew 21, 22, 121, and 122 (third- and fourth-year Hebrew language, with an introduction to modern Hebrew literature), or equivalent, and two additional courses in Hebrew-based Judaic Studies, from the following list:

English 49 The English Bible
History 61 The Modern Middle East from World War I
Judaic Studies 48 Israeli Film
Judaic Studies 73 Aspects of the Sephardic Tradition

Judaic Studies 84 The Sources of Jewish Tradition
Judaic Studies 126 Roots of the Jewish Imagination
Judaic Studies 132 The Book of Genesis and Its Interpreters
Judaic Studies 136 King David and the Israelite Monarchy
Judaic Studies 150 Music and Prayer in the Jewish Tradition
Religion 21 Introduction to the Hebrew Bible

Students who place out of third or fourth-year Hebrew by language placement exam must still take a total of six courses, chosen from the above list.

Russian
The department offers a major in Russian language and literature and an interdisciplinary major in Russian and East European studies. Various courses in English provide a survey of Russian literature and culture, not only for the majors, but for all students. Because literature has played a central role in Russia's intellectual and political life, its study provides the student with insight into Russian society and culture. At the same time, the moral, philosophical, and artistic issues raised by Russian writers from Pushkin to Pelevin are universal in scope, and an acquaintance with their work broadens the student's awareness of intellectual history. For both majors a semester of study in Russia is strongly recommended (see below).

UNDERGRADUATE CONCENTRATION REQUIREMENTS
Russian Language and Literature
The Russian language and literature major is oriented exclusively toward the undergraduate student, with emphasis placed on a sound knowledge of the Russian language and literature. The department provides its majors with a firm grounding in Russian to prepare them for graduate study. Special attention is paid to reading, speaking, and composition in modern Russian, as well as to modern and historical approaches to literature. The major requires ten courses as follows:

a. Russian 21 and 22.
b. Three advanced (100-level) courses conducted in Russian. At least one of these must be in Russian literature (Russian 131, 132, or a substitute approved by the Russian program.) At least one must be a language course (e.g., 121 or 122). An advanced course in some special topic
(e.g., Russian 123, 125, 191, 192) may be substituted for Russian 121 or 122 with program approval. Students coming back from a semester in Russia are required to take one 100-level course conducted in Russian. (Students going abroad in the spring of senior year must take one 100-level course in Russian before leaving.)

c. Four courses in Russian literature (must include Russian 60 and either 61 or 62).

d. One additional course in Russian culture (literature, art, music, film, history, political science, or religion).

e. Students who place out of Russian 21, 22, 121 and/or 122 on the basis of the Russian language placement examination administered by the department still need to take ten courses to complete the major.

Russian and East European Studies
The Russian and East European Studies major offers the student training in the history, politics, literature, and arts of Russia and the nations of Eastern Europe, as well as a grounding in contemporary oral and written Russian. The major is designed for students who intend to pursue careers in which familiarity with Russia and the East European area is an attractive or necessary asset, or for students planning to enter graduate school in law, business, or diplomacy with a specialization in Russian and East European affairs. The area concentration also prepares students for graduate work in Russian and East European studies.

Normally, faculty in the Department of German, Russian, and Asian Languages and Literatures and relevant faculty in History and Political Science can be advisors for students majoring in Russian and East European studies. It should be emphasized, however, that a course of study tailored to the individual student’s educational and career plans should be arranged in close cooperation with the appropriate members of all departments participating in the major. Ten courses as follows:

a. Four core language courses: Russian 21, 22, 121, 122. For Russian 121 and 122 the student may substitute Russian 123, 125, 131, and 132 or any advanced course related to the area in which all readings are in Russian. Students coming back from a semester in Russia will be required to take one 100-level course conducted in Russian. (Students going abroad in spring of senior year must take a 100-level course in Russian before leaving.)

b. Six courses with a primary focus in the Russian and East European area chosen from the following three categories: 1) history 2) political science, and 3) literature and the arts. At least one course in each of the three categories and at least three courses from a single category must be taken. One of the courses must be a special topics course, seminar or an advanced directed study.

c. Students who place out of Russian 21, 22, 121 and/or 122 on the basis of the Russian language placement examination administered by the department still need to take ten courses to complete the major.

UNDERGRADUATE MINOR PROGRAM
The department offers a minor in Russian requiring the completion of six courses above the intermediate level (Russian 3, 4). These must include two courses at the 100 level taught in Russian and may include up to two culture courses in English. Minor checklist forms are available at http://ase.tufts.edu/grall/Russian/requirements.asp#minor.

RUSSIAN/SLAVIC CULTURE HOUSE
The department administers the Russian/Slavic Culture House, a coeducational undergraduate dormitory that serves as an informal center for Russian and East European studies on the campus. The house sponsors dinners, films, receptions, and lectures. Residence in the house is open to all students who satisfy any of the following requirements: 1) enrollment in courses related to the Russian and East European culture area (languages, history, literature, art, political science, or economics), 2) Slavic or East European background, or 3) a strong interest in the area. Applications for residence in the house are available from the department early in the spring semester.

STUDY OPPORTUNITIES IN RUSSIA
Majors are encouraged to study in Russia for a summer, semester, or full year. Recommended programs include CIEE, ACTR, and Middlebury College. All students studying abroad are required to take a placement exam upon their return. For more information, see the Russian program faculty. For more detailed information, please visit the website http://www.tufts.edu/as/ger_rus_asian.
Adjunct Assistant Professor Heather D. Curtis, History of Christianity, American religious history

Adjunct Senior Lecturer John C. Schneider, U.S. urban and social history

Adjunct Lecturer Steven Cohen, History, political science and philosophy, curricula instruction, practice of teaching history and political science

The study of history reveals the past, enlightens the present, and influences the future. Historians seek to understand how nations, societies, and individuals have lived and thought, and why they have behaved the way they did. Supplying the context that informs art, ideas, institutions, and events, history illuminates all of human experience.

Trained to examine evidence carefully and evaluate received interpretations of the past, students construct their own understanding of historical processes and occurrences, building arguments from primary sources, historians’ writings and appropriate theoretical literatures. In history you also write gripping narratives, empathize with the experiences of people who have gone before and re-imagine past worlds.

The Tufts History faculty promotes a diversity of approaches and ways of understanding the past. From the history of medicine, to labor and migrant histories, to transnational and material culture, courses challenge students to analyze historical material. The Department offers a wide range of courses designed to meet the needs and interests of students with differing concerns and levels of preparation. General surveys (numbered below 100) cover entire periods, fields, or geographic areas, while thematic courses (numbered 100 to 189) provide more specific, comparative, or regional perspectives. Foundation Seminars (announced each semester and numbered History 90-97) introduce undergraduate majors to the historian’s craft; Research Seminars (numbered 190 to 197) provide them with the opportunity to practice it through a significant research project. Students interested in specialized work are encouraged to explore independent study or to consider the option of writing a Senior Honors Thesis.

Undergraduates may adopt history as either a major or a minor concentration. The History Graduate Program offers the M.A. degree, with the option of earning a certificate in Museum Studies, and (in a limited number of fields) the Ph.D.
UNDERGRADUATE CONCENTRATION REQUIREMENTS
The History Major requires completion of a minimum of 10 courses, ordinarily to be taken within the department. History courses taken at Tufts’ programs abroad or transferred from other accredited institutions may be counted toward the minimum of ten courses. Courses taken outside of Tufts, however, do not count as graded courses. No more than four of the history major concentration requirements may be transferred from other institutions.

In consultation with their advisor (normally prior to taking such courses), majors may count up to two courses from outside the department in cases where it may be difficult or impossible to complete their concentration core (see below) within the department. Such courses may not count toward either of the seminar requirements. A minimum grade of C- is required in all courses counted towards the completion of the major. Of the ten courses, the following are required: 1) One Foundation Seminar (a high-demand course) to be completed during the sophomore year or as soon as possible after declaration of the major 2) One course covering the pre- and early-modern period 3) One course in U.S. history, one in European history, and one in any two of the following areas: global/transregional, Africa, Latin America, the Middle East or Central Asia, East Asia, and South Asia 4) Four or more courses to serve as a concentration core (this may be defined geographically or topically) 5) One Research Seminar (a high-demand course) to be taken within the History Department at Tufts.

In consultation with their advisor, majors should prepare for their research seminar by taking courses, either at Tufts or abroad, that build toward this capstone experience. Ordinarily a Research Seminar will form part of the concentration core. Those intending to write a Senior Honors Thesis (see below) should plan to take their research seminar in the second semester of their junior year or, at the latest, the first semester of their senior year.

UNDERGRADUATE MINOR PROGRAM
The department offers a minor in history requiring a minimum of five courses in history to which the following conditions apply: 1) One history course covering the pre- or early-modern period 2) One history course in at least two of three areas: North America, Europe, other world areas (e.g., Africa, Latin America, Middle East/ Central Asia, East Asia, or South Asia) 3) Three courses developed as a coherent core in consultation with the student’s History advisor.

Both majors and minors: Please note that a single course may fulfill several of the concentration requirements.

DEPARTMENTAL HONORS
When nominating seniors for honors, especially magna and summa, the department looks carefully at qualitative issues—performance in Foundation and Research Seminars, evidence of sophistication in work beyond the introductory level (e.g. work in advanced courses, Senior Thesis and independent study)—and not simply the quantitative criteria of GPA and As earned.

The Senior Honors Thesis in History
The Senior Honors Thesis program in History is intended for those students who have a record of high performance in upper-level history courses and who have developed an interest and some background in a well-focused research topic. Students interested in writing a Senior Honors Thesis should consult their advisors, the guidelines described under Thesis Honors Program in this bulletin and the History Department web pages. For an Honors Thesis in History the thesis committee must have three members: two from History and one from an outside department.

GRADUATE PROGRAM
The Tufts History Department encourages students to study subjects and problems that transcend traditional academic constraints and consider national and regional histories in the broadest possible contexts. Our collaborative approach places an emphasis on global or interregional connections and comparisons, as well as on the use of interdisciplinary methods.

The Tufts History Graduate Program cultivates academic excellence and prepares students for leading roles in education and research, as well as in the fields of business, administration and world affairs.

The Tufts Graduate Program offers the M.A. degree in History or in History and Museum Studies. It also offers individual courses to students
earning a certificate in Museum Studies. The Ph.D. is offered in Modern South Asia and Global History.

Members of the History Department offer preparation at the M.A. level in regional fields that include South Asia, East Asia, Africa, Latin America, Europe and the United States. In addition to the regional fields, the department supports thematic fields, which combine interdisciplinary and comparative approaches. Students who choose not to specialize in a regional field may select a thematic field of study such as the following:

Civil society, the Public Sphere, and the State
Film, Media, and History
Gender and Sexuality
International and Intercultural Relations
Colonialism and Postcolonialism
Labor and Social Movements
Nationalism and Collective Identity

Master of Arts in History
The Master’s Program is a small, selective program of graduate study that emphasizes comparative understanding of historical processes. It is organized around colloquia in comparative and regional topics, the preparation of specified fields, and individual research in consultation with a faculty member.

The program is designed both to prepare students for doctoral programs in history and to enhance the historical knowledge and interpretative skills of professionals working in secondary schools, libraries, foundations, and museums. GRE scores (verbal, quantitative, analytical) and, if appropriate, TOEFL, are required for admission to the graduate history program. Since the curriculum depends greatly upon individualized interaction between faculty and students, admission is contingent, in part, on an appropriate match between faculty and student interest.

Completion of the program requires proven reading proficiency in at least one foreign language or mastery of a research methodology in another discipline. Anyone who plans to meet the requirement in a foreign language or disciplinary research methodology must indicate a plan to acquire this knowledge within two years.

Normally, students are expected to complete the program within two academic years. The successful completion of ten courses is required. These courses must include the following: the Historiography Proseminar (History 200), one Graduate Colloquium, at least one Research Seminar, either an additional Research Seminar or one semester of directed graduate research.

Up to two of the ten courses required for the master’s degree may, by prior agreement with the principal advisor, be taken in a department other than History. Students may take selected undergraduate courses, numbered 1 through 99, for graduate credit by enrollment in the related 200-level readings course by arrangement with the principal advisor and the relevant instructor. Graduate students may not take undergraduate colloquia. Appropriate courses offered by the Fletcher School will be accepted by petition for graduate credit in History.

A student may devote two out of ten courses to the writing of a thesis. In that case, only one additional course needs to be allocated for a Research Seminar or directed graduate research. In the second year of graduate study the student will present a research project drawn from graduate course work at Tufts to an ongoing Graduate History Roundtable for critical discussion. Students will choose two fields of study to be prepared for examination. These fields may be regional or comparative in focus. Each student will consult with his or her principal advisor and a field committee to design a sequence of courses that will provide preparation for examinations in each field. Examinations must be taken at least six weeks prior to graduation. If the student chooses to write a thesis, only one field, different from the field of the thesis, need be prepared for examination.

Program in Museum Studies and History
The Tufts Museum Studies Program provides qualified Post-baccalaureate students with professional training in the administration, preservation, and interpretation skills required for a career in the museum field. The Certificate in Museum Studies requires four graduate-level courses and an on-site internship. History M.A. candidates may take individual Museum Studies courses that fit into their program. Students interested in the museum studies courses or the certificate program should contact the Office of Graduate Studies or visit the website at http://ase.tufts.edu/museumstudies.
Criteria for admission to the Master’s Program in History and Museum Studies are the same as those for the Master’s Degree in History alone. The requirements for completion of a Master’s Degree in History and Museum Studies are: 1) The successful completion of eleven courses, including the Historiography Proseminar (History 200), one research course, the Museum Studies Foundation course, three Museum Studies elective courses, and the Museum Studies internship 2) Preparation of one regional or comparative field of study and examination in that field (see requirements in preceding description of Master’s degree in History); a thesis is optional 3) The presentation of one research project drawn from course work to the Graduate History Roundtable.

Doctor of Philosophy
The Tufts History Department offers the Ph.D. in History in a limited number of fields: Modern South Asia, and Global History. The Ph.D. program in history accepts only well-prepared students who intend to work closely with a particular Tufts faculty member in a limited number of fields. Students in the Tufts M.A. program may apply to be transferred into the Ph.D. program after one year of study, and the department will consider applications from students who have completed a master’s degree in history or the equivalent elsewhere.

Requirements for admission are as follows: exceptional performance in M.A. course work; proficiency on entrance in at least one foreign language (proficiency in two foreign languages is required before completion of the degree); GRE (Aptitude section only) and, if appropriate, TOEFL; detailed statement of intent, including discussion of planned dissertation field; the written support of a primary Tufts faculty sponsor, who will have arranged for at least one other faculty advisor. Students admitted with a master’s degree from another university will be allowed to transfer up to eight course credits.

Requirements for completion: proficiency in two foreign languages; completion of sixteen courses at the graduate level, including the historiography proseminar and two graduate colloquia; at least three semesters of independent readings or research; oral and written examinations in three fields, based on course work and readings, administered by the appropriate members of the department; dissertation directed by the supervising faculty, to be read and defended before a committee including the advisor, at least one other member of the department, and a third faculty member in the field, drawn, if possible, from another institution. This defense will also include presenting a chapter to the Graduate-Faculty Roundtable. See additional requirements for the South Asia Ph.D. below.

Modern South Asia
The Tufts History Department has a distinguished tradition of offering doctoral training in Modern South Asian history. Successful Ph.D. candidates have gone on to obtain positions in some of the most prestigious institutions of American academia. The program provides doctoral students with an ambience geared to intense and focused research into the most pressing questions of South Asian scholarship today, while also connecting students to the larger international expertise of the Tufts History Faculty, as well as the resources of the Tufts Fletcher School of Law and Diplomacy. Students in this major field also partake of the active intellectual life surrounding South Asian studies in the Boston area, including the Center of South Asian and Indian Ocean Studies at Tufts University http://ase.tufts.edu/southasian/.

The Modern South Asia Ph.D. immerses students in both the breadth and the detail of a complex arena of historical inquiry. Students study local and regional specificities, and also the large-scale political, economic, social, cultural and intellectual interactions that have made South Asia a nexus for globalizing forces in the modern period.

Focus is placed on building expert skills in historical reasoning and analysis, in good writing and exposition, and in historiographic theory and debates.

Students who enter the Ph.D. program in Modern South Asian history at Tufts secure themselves a place in a scholarly tradition that has significantly influenced academic discussions in the United States and abroad by the formulation of new themes and heuristic categories, and by the impressive caliber of its work.

Additional requirements for the Ph.D. in Modern South Asian History:
Language requirements: English, at least one major South Asian language, and one other appropriate language;
Primary field of concentration: Nineteenth-and twentieth-century South Asia;
Secondary geographic field: An appropriate field in the history of the Middle East, East Africa, Central Asia, Southeast Asia, or East Asia;
Thematic field: An appropriate interdisciplinary and comparative field in topics such as nationalism, agrarian or labor history, world history.

For more detailed information, please visit the website http://ase.tufts.edu/history/.

Interdisciplinary Studies
The Center for Interdisciplinary Studies (CIS) brings together a group of programs that share a common interest in the application and integration of diverse perspectives and methodologies in order to better understand our world. The center is committed to building links between programs, developing new courses, training faculty to employ interdisciplinary approaches in the classroom, sponsoring speakers and conferences, and promoting interdisciplinary research. The center also serves as a clearinghouse for information on interdisciplinary activities on campus. Programs directly administered through CIS are:

Interdisciplinary Studies Major
Latin American Studies
Middle Eastern Studies

For more information and other affiliated interdisciplinary programs, visit the CIS website at: http://cis.tufts.edu.

CIS Senior Thesis
Arts, Sciences, and Engineering students who wish to write a senior thesis outside their major area of concentration may be eligible to write a CIS senior thesis. The student must satisfy the CIS board that the topic falls outside the purview of any department or interdisciplinary program and that significant course work and/or faculty directed research relevant to the thesis topic has been accomplished. The student must assemble a committee of three faculty readers with expertise in the disciplines involved, one of whom is designated as the chair of the committee and who is responsible for submitting a grade and designating the amount of credit for the thesis course work. One member of the committee must be from a department or program in which the student is majoring. The topic must be approved by the CIS board.
Application and relevant dates can be found on the CIS website. Students who would like to be recommended for degrees with honors by departments that require a thesis should be aware that these departments require a thesis within their own department and a CIS thesis will not usually count as a substitute. However, students may apply for a CIS thesis to count as an honors thesis in the Thesis Honors Program like a thesis in any other discipline by assembling a thesis committee and filing the appropriate paperwork. If the CIS thesis is to qualify as an honors thesis, the chair of the thesis committee must be from a department or program in which the student is majoring.

For more information, visit the CIS website http://cis.tufts.edu.

International Literary and Visual Studies

CO-DIRECTORS:
Professor Charles Inouye, German, Russian, and Asian Languages and Literatures
Professor Isabelle Naginski, Romance Languages

The program in International Literary and Visual Studies makes possible the study of literature, film, and visual arts in an international context. ILVS students share an interest in literature, cinema, and visual arts, which they approach in a comparative, theoretical way.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
Language Preparation for the Major
Students are to have or to attain competency in one foreign language (to 122 or equivalent), and are strongly urged to begin the study of a second. (In some cases, depending on the student’s background, one of these might be English.)

Disciplinary focus
ILVS offers three tracks. A student focuses on one, but also does work in the other two.
1. Literature
2. Film
3. Visual Arts (painting, sculpture, photography, performance)

Cultural areas
ILVS majors select a primary and a secondary area of study. This is usually a geographical area (Russia, Germany, Latin America, the Middle East) or a more conceptual area (the modern novel, the end of realism). Normally, these culture areas reflect one’s language preparation—Japanese and Japan, Chinese and China—but this is not always the case. For example, a native speaker of French might choose French and Spanish as his languages, and Spain and Japan to be his areas of cultural study. Or someone just starting Spanish and interested in film might choose Latin America and an Anglophone culture area. In all cases, ILVS requires the study of more than one culture.

Theory courses
ILVS students are required to take courses from an approved selection of literary, film, visual, gender, and culture theory courses. Choices will vary according to disciplinary focus.

A senior project or thesis
A senior project is required. ILVS is both interdisciplinary and multicultural, therefore, the number of courses available to a student doing the major is large. For this flexibility to work to one’s advantage, each student should have a conceptual focus, developed in consultation with one’s major advisor. This might be a question about a certain cultural phenomenon, or an aesthetic school, style, or problem. For example, “What is the relationship between art and politics?” Or, “How is art education handled in different cultures, and to what effect?” Or, “Is sorrow beautiful?” Alternatively, you might also focus on an interaction or common development in two or more cultures, or on a particular genre or form. Working toward an approved senior thesis or project—such as a scholarly study, a film, a photo exhibit, etc.—will give focus to your study.

Courses
The major consists of twelve courses, not counting those taken for language preparation. At least one of the twelve courses should be a seminar, directed study, or other intensive course requiring a substantial integrative project.

The particular distribution of courses is determined by the disciplinary track selected by the student. Courses that might serve two categories of the requirements cannot be double-counted within
the major. Any departures from the proportions or content of these categories must be approved by petition to a committee of core faculty. Here is the distribution of required courses for each of the three possible tracks.

LITERATURE EMPHASIS
I. National and ethnic literatures (six courses)
The student must take six literature courses—four in the primary cultural area and two in secondary area. Where possible, at least two of the six courses should be 100-level courses that require reading the foreign language.

II. Visual arts and/or film (two courses) The student must take two courses in film or other visual arts (normally, one in primary cultural area, the other in secondary area) [chosen from course lists on http://ase.tufts.edu/grall/ILVS/requirements.asp.]

III. Cross-cultural and/or gender-oriented literary or visual studies (two courses) The student must take two courses of a cross-cultural or gender-oriented nature in a literary or visual art or from film and visual arts courses [chosen from course lists on http://ase.tufts.edu/grall/ILVS/requirements.asp.]

IV. Literary and cultural theory (two courses) The student must also complete one semester of literary theory and one semester of cultural theory [chosen from course lists on http://ase.tufts.edu/grall/ILVS/requirements.asp.]

FILM EMPHASIS
I. National and ethnic literatures (three courses)
The student must take three literature courses, two in the primary culture area and one in the secondary area.

II. Film (five courses) The student must take five courses in film, normally including one in the primary cultural area and another in the secondary area. The student may substitute, for one of the five courses, a course in visual arts or a studio course in some domain of filmmaking (screenwriting, directing, acting, etc.) [chosen from the course lists on http://ase.tufts.edu/grall/ILVS/requirements.asp.]

III. Cross-cultural and/or gender-oriented literary or visual studies (two courses) The student must take two courses of a cross-cultural or gender-oriented nature in a literary or visual art, or from film and visual arts courses [chosen from course lists on http://ase.tufts.edu/grall/ILVS/requirements.asp.]

IV. Visual and cultural theory (two courses) The student must take one course in visual theory plus one course in cultural theory [chosen from course lists on http://ase.tufts.edu/grall/ILVS/requirements.asp.]

VISUAL STUDIES EMPHASIS
I. National and ethnic literatures (three courses) The student must take three literature courses, two in the cultural area of the primary language and one in that of the secondary language. At least one of the courses should be a literature course in a language not native to the student, with readings in the original language, whatever the language of instruction or written assignments.

II. Visual arts (five courses) The student must take five courses in visual arts, normally including one in the cultural area of the primary language and another in that of the secondary language. The student may substitute, for one of the five courses, a course in film or a studio course in a visual art (drawing, painting, sculpture, filmmaking, etc.) [chosen from course lists on http://ase.tufts.edu/grall/ILVS/requirements.asp.]

III. Cross-cultural and/or gender-oriented literary or visual studies (two courses) The student must take two courses of a cross-cultural or gender-oriented nature in a literary or visual art, or from film and visual arts courses [chosen from course lists on http://ase.tufts.edu/grall/ILVS/requirements.asp.]

IV. Visual and cultural theory (two courses) The student must take one course in visual theory and one course in cultural theory [chosen from course lists on http://ase.tufts.edu/grall/ILVS/requirements.asp.]

For more detailed information, please visit the website http://ase.tufts.edu/grall/ILVS/index.asp.
International Relations

DIRECTOR:
Associate Professor Drusilla Brown, Economics

CORE FACULTY:
Professor Ina Baghdiantz-McCabe, History
Professor Gregory Crane, Classics
Professor Robert Devigna, Political Science
Professor Leila T. Fawaz, History
Professor Gerard Gasarian, French
Professor David M. Guss, Anthropology
Professor Hosea Hirata, Japanese
Professor Bruce Hitchner, Classics
Professor Charles Shiro Inouye, Japanese
Professor Yannis Ioannides, Economics
Professor Ayeshia Jalal, History
Professor Vida Johnson, Russian
Professor Paul Joseph, Peace and Justice Studies/Sociology
Professor Howard Malchow, History
Professor Beatrice Manz, History
Professor Jose Antonio Mazzotti, Spanish
Professor Malik Mufli, Political Science
Professor Daniel M. Mulholland, History
Professor Isabelle Naginski, French
Professor Susan Napier, Japanese
Professor George Norman, Economics
Professor Colin Orians, Biology
Professor Peter Probst, Art and Art History
Professor Daniel J. Richards, Economics
Professor Tony Smith, Political Science
Professor Enrico Spolaore, Economics
Professor Vickie Sullivan, Political Science
Professor Peter Winn, History
Professor Christiane Zehl Romero, German
Professor Xueping Zhong, Chinese
Associate Professor David Art, Political Science
Associate Professor Gloria Ascher, German/Judaic Studies
Associate Professor Paula Aymer, Sociology
Associate Professor Cristelle Baskins, Art and Art History
Associate Professor Nancy Bauer, Philosophy
Associate Professor Marcelo Bianconi, Economics
Associate Professor Drusilla Brown, Economics
Associate Professor Gregory Carleton, Russian
Associate Professor Consuelo Cruz, Political Science
Associate Professor David Dapice, Economics
Associate Professor Richard C. Eichenberg, Political Science
Associate Professor Ioannis Evrigenis, Political Science
Associate Professor Nina Gerassi-Navarro, Spanish
Associate Professor Kelly Greenhill, Political Science
Associate Professor David Gute, Civil and Environmental Engineering
Associate Professor Ikumi Kaminishi, Art and Art History
Associate Professor Erin Kelly, Philosophy
Associate Professor Brigitte Lane, French
Associate Professor David Locke, Music
Associate Professor Christina Maranci, Art and Art History
Associate Professor Bernhard Martin, German
Associate Professor Margaret McMillan, Economics
Associate Professor Lionel McPherson, Philosophy
Associate Professor Jayanthi J. Mistry, Child Development
Associate Professor Jeanne M. Penvenne, History
Associate Professor Sarah Pinto, Anthropology
Associate Professor Elizabeth Remick, Political Science
Associate Professor Pearl T. Robinson, Political Science
Associate Professor Modhumita Roy, English
Associate Professor Rosalind H. Shaw, Anthropology
Associate Professor Jeffrey Taliaferro, Political Science
Associate Professor Rosemary Taylor, Community Health / Sociology
Assistant Professor Andreea Balan-Cohen, Economics
Assistant Professor Amahl Bishara, Anthropology
Assistant Professor Ryan Centner, Sociology
Assistant Professor Heather Curtis, Religion
Assistant Professor David Ekbldad, History
Assistant Professor Elizabeth Foster, History
Assistant Professor Kenneth Garden, Religion
Assistant Professor Eva Hoffman, Art and Art History
Assistant Professor Richard Jankowsky, Music
Assistant Professor Ning Ma, Chinese
Assistant Professor Kris Manjapra, History
Assistant Professor Alisha Rankin, History
Assistant Professor Dennis Rasmussen, Political Science
Assistant Professor Kamran Rastegar, Arabic
Assistant Professor Oxana Shevel, Political Science
Assistant Professor Emilia Simeonova, Economics
Assistant Professor Ichiro Takayoshi, English
Assistant Professor Heiwa Tang, Economics
Senior Lecturer Anna Hardman, Economics
Senior Lecturer David O’Leary, Religion
Professor of the Practice Astier Almedom, Community Health
Lecturer Rana Abdul-Aziz, Arabic
Lecturer Nancy W. Gleason, Political Science
Lecturer Ekaterina Gnedenko, Economics
Lecturer Katrina Swett, Political Science

The program offers a rigorous plan of study for undergraduate students with a primary interest in international relations. The field of international relations includes the study of international and
have submitted appropriate documentation to the IR program office in Cabot 605. Students who study on Tufts programs should consult with their advisor and the IR program to make sure course work fulfills requirements. Students who study abroad in either Tufts programs or non-Tufts programs should carefully review all program policies regarding requirements and the number of courses that can be taken beyond the Medford campus.

International relations majors may wish to note the combined-degrees program offered by the College of Liberal Arts and the Fletcher School of Law and Diplomacy. Qualified juniors may apply to the Fletcher School after they have completed and received grades in twenty courses. Details of this highly competitive dual-degree program are described in this bulletin under Combined-Degrees Programs; an interview with the Fletcher admissions office is required.

UNDERGRADUATE MAJOR REQUIREMENTS

The international relations major requires twelve courses comprised of five core courses and seven courses from one of six thematic concentrations chosen by students. A grade of C- or better is required for a course to count for the IR major. No more than three courses taken abroad may be applied toward the twelve course major (only one of which may be applied toward the IR Core requirements). No course may be counted toward more than one of the twelve required courses. Additionally, the IR program requires proficiency in a language other than English. Details regarding the requirements are as follows.

Language Requirement

The IR major requires oral and written proficiency in a language other than English. Proficiency is defined as successful completion of eight semesters (or the equivalent) of university-level language instruction. All students wishing to major in international relations are required to comply with this requirement. Courses used to fulfill this requirement may not overlap with the core or thematic concentration requirements.

Core Requirements (five courses)

The Core Requirements constitute the foundation of knowledge that is needed by all majors in International Relations, regardless of thematic
concentration. They are comprised of broad introductory courses that cover the major themes and debates within each discipline on the study of international affairs. Core courses constitute a major element in establishing a coherent sense of IR identity and community. The IR program strongly encourages students to take all Core courses at Tufts.

Political Science 61 International Relations
Economics 5 Principles of Economics
One course in international economics*
One course in theories of society and culture*
One course in the historical dimension*
*See IR website for more details.

6. IDEAS AND IDENTITY
Choose one of the following:
   Ideologies
   Empires/Colonialism/Globalization

*Descriptions of the thematic concentrations, detailed program requirements and policies, and a complete list of courses that satisfy the IR major are contained in The International Relations Program Handbook, available in Cabot 605, and on the IR website.

For more detailed information, please visit the website http://ase.tufts.edu/ir/.

Italian Studies
(FOR DEGREE REQUIREMENTS, SEE ROMANCE LANGUAGES.)

Japanese
(FOR DEGREE REQUIREMENTS, SEE GERMAN, RUSSIAN, AND ASIAN LANGUAGES AND LITERATURES.)

Judaic Studies
(FOR DEGREE REQUIREMENTS, SEE GERMAN, RUSSIAN, AND ASIAN LANGUAGES AND LITERATURES.)

Latin
(FOR DEGREE REQUIREMENTS, SEE CLASSICS.)

Latin American Studies
DIRECTOR:
Associate Professor Nina Gerassi-Navarro, Romance Languages

Latin America is increasingly important in the world and for the United States in particular. The study of our hemispheric neighbors, the area of origin of our country’s second largest minority group, is important in itself, and also relevant for
the understanding of larger international issues. Latin American studies is an interdisciplinary program that encourages students to integrate the varying disciplinary perspectives of the arts, literature, social sciences, and history, along with the study of the languages of the area, into a coherent view of Latin America.

Major in Latin American Studies
The major in Latin American Studies offers students the opportunity to combine the approaches of several academic disciplines in a focused study of the region. In recent decades, Latin America has become a field of rapid development in the arts, humanities and social sciences. The major’s interdisciplinary approach integrates historical, social, political, economic and cultural perspectives at both national and regional levels. The program of study culminates in an original interdisciplinary project on a Latin American subject or in a senior seminar.

Requirements for the Latin American Studies major are 11 courses + 5-semester language prerequisite. A grade of C- or better is required for a course to count for the major.

Important note: at least one of the requirements should be focused on pre-20th century Latin America and at least one of the requirements should be focused on indigenous cultures/societies.

Minor in Latin American Studies
There are three requirements for completing an interdisciplinary minor in Latin American studies.

1) Students should study one of the region’s languages for three years (e.g., Spanish 22) or the equivalent. Normally, this language will be Spanish or Portuguese, but others (e.g., Quechua) may be substituted with the approval of the director.

2) Students must complete at least five credits in Latin American studies, which should include at least one course from each of the three disciplinary areas: arts and literature, social sciences, and history. Students may count as many as two courses transferred from other institutions or used to satisfy another concentration requirement toward the minor. A grade of C- or better is required for a course to count for the minor.

3) Students must complete a capstone project that integrates at least two of the three disciplinary areas of the minor (arts and literature, social sciences, and history). This project may be a written work, a performance, or some other creative work for which the student will receive one course credit. Normally, the project will emerge out of one of the courses that the student takes for the minor and will be advised by the instructor of that course. The student must also form a committee of at least two faculty members to evaluate the project, normally the project’s faculty advisor and a faculty member from the other disciplinary area involved in the project. The format is flexible, but the content must conform to these guidelines. Normally, a student will complete the project in the final semester at Tufts. (See Interdisciplinary Minor Program for details.)

APPROVED COURSES
Each semester an updated list of current Latin American studies courses is available from the director. Seminars and other courses on the region may be offered from time to time and credited toward the minor or major. Students may also petition the director to credit courses not included in the list.

For more detailed information, please visit the website http://ase.tufts.edu/latinamericanstudies/index.html.

Latino Studies

DIRECTOR:
Associate Professor Adriana Zavala, Art and Art History

The interdisciplinary minor in Latino Studies requires six credits, which includes required course work in Latin America as well as key areas of inquiry concerning race within the U.S. social context. This minor allows students to emphasize either Latinos’ connections with Latin America or their location within the U.S. racial and sociopolitical context. All students must take an introductory Latino Studies survey course and participate in a capstone experience involving work in one of Boston’s Latino communities.

The following are required; one introductory survey course, one Latin American survey course, and one survey course in comparative race relations in the U.S. context from the list online or an approved equivalent.
Leadership Studies

**DIRECTOR:**
Mindy Nierenberg, Tisch College of Citizenship and Public Service

Leadership Studies is an interdisciplinary field that offers students the opportunity to study leadership theory from a multi-disciplinary perspective. Scholarship in Leadership Studies analyzes the influence of historical, political, economic, psychological, and technological forces on effective leadership and leadership models. Leadership Studies at Tufts places particular emphasis on leadership that bridges cultural divides. Leadership Studies is part of the broader study of society. It is imperative that leadership be understood, not only on an individual level, but also regarding the role of organizations—nonprofit, for-profit, governmental, and educational—in complex societies.

Leadership Studies at Tufts is a rigorous intellectual program that develops creative, analytical and practical skills and attitudes: creative to generate a vision; analytical to assess whether creative ideas are good ideas; practical to execute ideas and persuade others of their value. Skill development is further encouraged through courses emphasizing public speaking, cross-disciplinary and cross-cultural communication and team building, persuasion, negotiation, mediation, framing, and creative problem solving. The Leadership Studies minor also requires students to analyze issues relating to ethics, risk assessment and decision making under uncertainty, organizational behavior, power and power relations, and policymaking. In these realms, the minor also allows for a focus on civic leadership, and the importance of the development of the knowledge, skills and values crucial to effective positive change on local, domestic, and global communities. The Tufts Leadership Studies minor encompasses not only the social sciences, but also the humanities, technology, and other sciences, examining the contribution of these fields to leadership growth and development.

One core course with at least 50 percent Latino content. With approval of Latino Studies faculty, this requirement can be met by taking a Latino Studies course from one of Tufts’ consortium partners.

One elective course relevant to Latino Studies with substantial and/or relevant Latino content, in which student must do a substantial project or paper on a Latino topic. An independent study course with a Latino Studies faculty on a Latino Studies topic may also count.

NOTE: Students should check the Latino Studies website for a list of courses that meet these requirements and/or meet with the director of the minor. All courses taken for the Latino Studies minor program must be taken for a letter grade. A maximum of two credits from the minor may be counted toward a major or majors; up to two credits may be used for distribution requirements. Also, one language course above the intermediate level, or Spanish for Heritage Speakers (Spanish 23) can count as a Core or Elective course.

One capstone experience: The experience must follow the guidelines of the Interdisciplinary Minor Program by including a project, thesis, performance, or an oral presentation, which integrates the knowledge and methodologies of the disciplines involved. The integrative project will be given one course credit under a CIS (Center for Interdisciplinary Studies) 135 designation and will receive a letter grade. The capstone can also be fulfilled by taking Anthropology 183 (Urban Borderlands), a community-based research course; by doing a supervised internship (CIS-99 LST) in a Latino-oriented organization and a final paper analyzing the experience (supervised by Latino Studies faculty); or an approved equivalent community-based course in which the research undertaken focuses on Latinos (for example CH180: Community Health Internship). Spanish majors and others interested in improving their Spanish will be encouraged to seek a project/internship where they can strengthen their Spanish proficiency.

For more information about academic requirements, please review the Bulletin of Tufts University. Students interested in pursuing a Latino Studies Minor should register with:

Associate Professor Adriana Zavala, Art and Art History

Phone: (617) 627-2423
Email Address: Adriana.Zavala@tufts.edu.

For more detailed information, please visit the website [http://ase.tufts.edu/latinostudies/](http://ase.tufts.edu/latinostudies/).
LEADERSHIP STUDIES >
MANAGEMENT OF COMMUNITY ORGANIZATIONS >

INTERDISCIPLINARY MINOR
Students pursuing the interdisciplinary minor in Leadership Studies takes a total of six courses at 5.5 credits. Two of these must be Tier 1 core courses and two must be drawn from the list of Tier 2 courses. The fifth course may be selected from Tier 1 or Tier 2. The director of the Minor in Leadership Studies advises on course selection to fit each student’s interests and to establish the basis for the Tier 3 capstone senior project. No more than two of the Tier 1 and Tier 2 courses may be taken in a single department. All courses must be taken for a letter grade. As a capstone, students must complete a Tier 3 senior project. Here, students put theory into practice and take a seminar course in which they reflect on their experience in the context of their leadership courses. Students apply to the leadership program by considering how the courses they propose to take and their leadership experience constitute a coherent whole.

LEADERSHIP STUDIES CURRICULUM
The Leadership Studies curriculum at Tufts consists of many courses drawn from across the range of departments and disciplines at Tufts that either directly or indirectly address the issues of leadership. The Director and the faculty committee overseeing the program are charged with maintaining an appropriate selection of courses in Tier 1 and 2 (including evaluating student petitions to include additional courses for credit toward the minor).

Tier 1 Courses
The courses in Tier 1 develop the intellectual underpinnings of Minor in Leadership Studies. These courses introduce the basic principles of leadership and introduce theories of leadership that have been developed in a number of different disciplines.

Tier 2 Courses
Courses in Tier 2 allow students to round out their study of leadership. These courses widen the disciplinary foundations of the study of leadership.

Tier 3 Courses
To complete the minor, students must engage in a practical leadership capstone experience. Students must apply to the director of the program with a prospectus describing the goals, challenges, and objectives of their leadership experience. Students participating in programs such as the Tisch Scholars Program for Citizenship and Public Service, the IGL Synaptic Scholars Program, and Reserve Officers Training Corps, may apply to have that experience count as the capstone, but other leadership experiences may constitute the basis of their applications as well. As an alternative, and with permission of the director of the program, students can complete Tier 3 by undertaking a senior thesis on leadership. Structured reflection is a key element of the capstone experience. Students will be required to meet with other students pursuing the capstone in a half-credit pass-fail seminar. For the seminar, they will write a paper linking their experience to the theories and issues covered in their coursework.

Management of Community Organizations

FACULTY ADVISOR:
Rusty Russell, J.D., Lecturer, Urban and Environmental Policy and Planning

Many people who got their start organizing or providing a direct service because of their deep commitment to an issue have become “accidental managers” of their community organizations. Without the benefit of formal training or theoretical grounding, they may find themselves running a growing, complex organization.

The certificate in Management of Community Organizations (MCO) is a graduate-level certificate program that provides management training within the framework of social, economic and political values that shape the nonprofit sector. The program’s goal is to train people in effective management who are committed to social policy and wish to work at the community level. The certificate is offered in collaboration with the Department of Urban and Environmental Policy and Planning and the Office of Graduate Studies.

The certificate requires the completion of four courses that address such issues as financial analysis, program evaluation, urban and social policy, fundraising, and conflict resolution.

The program is open to individuals with a bachelor’s degree and is especially appropriate for
MANAGEMENT OF COMMUNITY ORGANIZATIONS > MANUFACTURING ENGINEERING > MASS COMMUNICATIONS AND MEDIA STUDIES > MATHEMATICS >

new managers of community organizations, those with experience in the field seeking additional management training, midcareer professionals interested in pursuing community work, and individuals who wish to start a new agency or program.

For more information and an application, contact the Office of Graduate Studies at 617-627-3395 or visit the website http://gradstudy.tufts.edu/.

Mathematics

Professor Boris Hasselblatt, Chair; Dynamical systems
Professor Bruce Boghosian, Fluid dynamics
Professor Christoph Börgers, Mathematical biology
Professor Fulton Gonzalez, Harmonic analysis
Professor Mauricio Gutierrez, Group Theory
Professor Marjorie Hahn, Probability
Professor Zbigniew H. Nitecki, Dynamical systems
Professor Eric Todd Quinto, Robinson Professor of Mathematics; Tomography and functional analysis
Professor Montserrat Teixidor i Bigas, Algebraic geometry
Professor Richard Weiss, William Walker Professor of Mathematics; Group theory
Associate Professor/Coordinator Lenore Feigenbaum, History of mathematics
Associate Professor George McNinch, Algebraic groups
Associate Professor Kim Ruane, Geometric group theory
Assistant Professor James Adler, Scientific computing
Assistant Professor Moon Duchin, Geometry, topology, groups, dynamics
Assistant Professor Alberto Lopez Martin, Algebraic geometry
Assistant Professor Scott MacLachlan, Computational partial differential equations
Assistant Professor Sabir Umarov, Probability
Assistant Professor Genevieve Walsh, Geometry and topology
Norbert Wiener Assistant Professor Jens Christensen, Integral geometry and harmonic analysis
Norbert Wiener Assistant Professor Thomas Höft, Computational Inverse Problems
Senior Lecturer Mary Glaser, Combinatorics
Lecturer Gail Kaufmann
Lecturer Joseph McGrath

SECONDARY APPOINTMENTS:
Professor Lenore J. Cowen, Computational biology, theory of computation, algorithm design and analysis
Professor Diane Souvaine, Design and analysis of algorithms, computational geometry

Our experience up to date justifies us in feeling sure that in Nature is actualized the ideal of mathematical simplicity.

— Albert Einstein
Spencer Lecture, Oxford, 1933

Manufacturing Engineering

FACULTY ADVISOR:
Professor Anil Saigal, Mechanical Engineering

As the United States continues to compete in global markets, the need for manufacturing engineers who can design, build, operate, and manage competitive production systems has never been greater. Excellence in design and production—especially knowledge of CAD, CAM, CNC machining, and robotics—is essential as industries strive to reduce labor costs, increase productivity and profitability, tighten performance standards, and improve quality.

In collaboration with the Office of Graduate Studies, the Department of Mechanical Engineering offers a four-course graduate-level certificate in manufacturing engineering. The program is offered on a part-time, nondegree basis for students seeking professional training in manufacturing engineering. In most cases, courses taken as a certificate student can be transferred to a degree program. Graduate students may also pursue the certificate as a concentration within their degree. The program is open to students with a bachelor’s degree and a background in engineering, science, or mathematics.

For more information and an application, contact the Office of Graduate Studies at 617-627-3395 or visit the website http://gradstudy.tufts.edu/.

Mass Communications and Media Studies

(SEE COMMUNICATIONS AND MEDIA STUDIES.)
UNDERGRADUATE CONCENTRATION REQUIREMENTS
To major in mathematics, a student must take ten courses in the department. Up to two of these courses may be replaced by certain courses in related fields approved by the department. The courses in mathematics may not include Mathematics 4 through 12, or 17, and must include Mathematics 13 or 18, 54 (or 46), 135, and 145. For depth, students must complete at least one of the four major yearlong sequences (Mathematics 135/136, 145/146, 151/152, and 161/162), and for breadth, students must either complete a second of these sequences or else take an additional course chosen from among Mathematics 126, 128, 151, 158, 161, 167, and 168. Mechanical Engineering 150 may be substituted for Mathematics 151 and in no case may both courses be taken for credit.

Majors are advised to complete Mathematics 13 or 18 and Mathematics 54 (or 46) by the end of their sophomore year. Majors must demonstrate knowledge of a computer language by including an approved course in computer science in their program.

Students in the School of Engineering may, with certain exceptions, choose mathematics as a second area of concentration. To do so a student must notify the dean of engineering through the Department of Mathematics at least one semester before graduation. The student must complete a program that simultaneously satisfies the conditions for a degree from the School of Engineering and the concentration requirements of the Department of Mathematics.

UNDERGRADUATE MINOR PROGRAM
To minor in mathematics, a student must take six courses in the department beyond the level of Mathematics 12 (or 17). These must include Mathematics 13 (or 18) and 54 (or 46), as well as Mathematics 135 or 145 (or both).

GRADUATE PROGRAM
The Department of Mathematics offers programs leading to the degrees of master of science or arts, and doctor of philosophy. Applicants are expected to have mathematical preparation at least equivalent to that of an undergraduate major in mathematics, including courses in analysis and algebra. Many students fulfill the master’s degree requirements and obtain a master’s degree in the course of their doctoral studies.

**Master's Degree**
To qualify for the master’s degree a student completes an approved program of at least nine courses numbered above 100. At least seven of these courses must be numbered 136, 146, 158, or above 164; this may include 295 and 296. A student must either write a master's thesis, which counts as two of the nine required courses, or pass oral examinations as described below for the Ph.D. program.

For breadth, the nine courses taken to fulfill the master’s degree course requirement must include at least one course from each of the following four categories:
- Real analysis: 136, 211, 212
- Complex analysis: 158, 213
- Algebra: 146, 215, 216
- Geometry or Topology: 167, 168, 217, 218

No more than two of these four courses can be at the 100 level. Any part of this requirement may be fulfilled by equivalent courses with prior approval by the mathematics department graduate committee.

**Doctor of Philosophy**
A student who has been admitted to the doctoral program must first pass oral qualifying examinations in three out of the five fields of analysis, algebra, geometry/topology, partial differential equations and numerical analysis by the end of their second year.

The choice of three must be approved in writing by the Graduate Director based upon a discussion with the student by the end of their first semester at Tufts. This choice can be modified in consultation with the Graduate Committee.

Then they must pass a candidacy examination on material studied in preparation for work on a dissertation.

The major task of a doctoral student is to write a dissertation under the direction of a department member. This must be a substantial original contribution to the field of the student’s specialty and must meet standards of quality as exemplified by current mathematical research journals.

At least one semester’s teaching experience at Tufts is required.
MECHANICAL ENGINEERING

UNDERGRADUATE COURSES
Please note: Students who wish to begin calculus should register for either Mathematics 5, 11, or 17. Those interested in computer science, engineering, mathematics, or the physical sciences should begin the three-course sequence Mathematics 11, 12, 13 or the two-course accelerated honors sequence Mathematics 17, 18. Other combinations of these courses may not be granted full credit (see the separate course descriptions). Mathematics 4, 5, 6, 7, 8, 9, and 10 do not count toward a degree in the School of Engineering.

Students entering Tufts starting in the fall of 2007 will receive an additional half-credit (with grade) for passing Math 11 after receiving credit for Math 5. Math 11 must be taken at Tufts and for a grade in order to obtain this extra half-credit. The extra half-credit will not count toward the mathematical sciences distribution requirement. Math 5 may not be taken for credit after receiving credit for Math 11.

For more detailed information, please visit the website http://math.tufts.edu/.

Mechanical Engineering

Professor of the Practice Robert Hannemann, Acting Department Chair; Thermal sciences, heat transfer
Professor Mark Kachanov, Fracture mechanics micromechanics of materials
Professor Chris Rogers, Robotics, musical instrument design, fluid mechanics, and engineering education
Professor Anil Saigal, Materials engineering, manufacturing processes, quality control
Associate Professor Behrouz Abedian, Fluid mechanics, electrokinetics and thermal-fluid systems
Associate Professor Caroline G. L. Cao, Human factors, medical technology, surgical simulation and training
Associate Professor Marc Hodes, Sustainable energy, thermoelectricity and heat transfer
Associate Professor Thomas James, Dynamics, mechanics and materials engineering
Associate Professor Douglas M. Matson, Solidification processes, thermal manufacturing, machine design
Associate Professor Robert White, Microsystems, dynamics, acoustics and sensors
Assistant Professor Luisa Chiesa, Sustainable energy, superconducting materials
Assistant Professor Jason Rife, Robotics, dynamics and controls
Professor of the Practice Dan Hannon, Human factors in product design
Research Assistant Professor and Senior Lecturer Gary G. Leisk, Machine design, non-destructive testing
Emeritus Professor William J. Crochetiere, Machine design, mechatronics and biomedical applications
Emeritus Professor Robert Greif, Vibrations, composite materials, vehicle dynamics
Emeritus Professor John G. Kreifeldt, Engineering psychology, human factors, product design
Emeritus Professor Armand Benjamin Perlman, Finite element methods and rail vehicle dynamics and materials

PART-TIME FACULTY:
Research Associate Professor Pratap Misra, GPS, emerging satellite navigation systems
Research Associate Professor Shu Quek, Wind turbine energy
Research Associate Professor Peter Y. Wong, Thermal materials processing and radiative heat transfer
Lecturer Kenneth James, Biomaterials
Lecturer Ryan Kilgore, Interface design
Lecturer Paul Lehrman, Electronic musical instrument design
Lecturer Michael A. Wiklund, Human factors in software interfaces
Professor of the Practice Michael A. Zimmerman, Material science, thermal manufacturing

Mechanical engineering is a rich and versatile profession that encompasses invention, analysis, and manufacture of mechanical components and systems. Broadly speaking, mechanical engineering is the branch of engineering that encompasses the generation and application of heat and mechanical power. In other words, mechanical engineering is all about the analysis, design and manufacturing of systems in motion. It spans both mature well established industries such as automotive, aerospace, shipping, power, heating and cooling and machinery and new and emerging technologies such as robotics, medical devices, micro and nano devices. Some of the most exciting areas in mechanical engineering occur where it interfaces with other disciplines.

In addition to the traditional disciplines of heat transfer, fluid dynamics, dynamics and controls, materials processing, manufacturing, mechanics, and mechanical design, the Department of
Mechanical Engineering is focused in three integrated areas of specialization.

- Mechatronics, which is the interface between mechanical engineering and electronics. This specialty encompasses robotics, dynamics and controls, micro electro-mechanical systems (MEMS), manufacturing, and advanced materials.
- Biomechanical systems, which is the interface between mechanical engineering and biology. This specialty includes human factors engineering, tissue scaffolds, soft-bodied robots, micro fluidic systems, biofluidics, biomechanics, and biological materials.
- Sustainable energy, which is focused on systems for the generation or consumption of power in a sustainable system. This specialty includes power generation and propulsion system efficiency and innovation, electronics thermal management, sustainable data center technology, superconducting energy transmission and storage, wind energy, advanced thermodynamic cycles, heat transfer and fluid mechanics.

The department also has a special focus on engineering education and education outreach. The Center for Engineering Educational Outreach has three main areas of interest: research in engineering education, outreach to the local and global community of teachers, and educational tool development. It is best known for its work with the LEGO Group in developing ROBOLAB, the educational version of LEGO Robotics. Over 40 engineering undergraduates work with the Center every semester to go into local classrooms to help teachers bring engineering to their class.

The mission of the Department of Mechanical Engineering is to provide educational experiences that give students a sound basis for professional practice and a career of lifelong learning. Each program has specific objectives, but the common goal is to learn fundamental principles of mechanical engineering and to master engineering methods to solve challenging technical problems and to communicate these solutions to the technical and nontechnical community. The department strives to offer programs that are recognized as distinctive in their combination of technical quality, diverse areas of technology, and attention to the individual.

UNDERGRADUATE PROGRAM
The undergraduate curricula is based on a strong foundation in the physical, mathematical, and engineering sciences and enriched with courses in the humanities and social sciences. This skill set is augmented with hands-on laboratory and practical design experiences. Students select upper-level elective courses to offer exposure to a wide range of advanced and applied courses in thermal-fluid sciences, design methodology, materials and materials processing, manufacturing, applied mechanics, and system automation and control. This provides students with a broad intellectual foundation upon which to build future careers in advanced engineering education and research; engineering practice; or non-engineering professional training in business, education, law, and medicine.

The Department of Mechanical Engineering offers three undergraduate degree programs leading to the undergraduate degrees of bachelor of science in mechanical engineering (BSME), bachelor of science in engineering (BSE), and bachelor of science (BS). The BSME program is accredited by the Accreditation Board for Engineering and Technology (ABET) and qualifies graduates for the Fundamentals of Engineering (FE) examination, which is the first step toward registration as a licensed professional engineer.

Bachelor of Science in Mechanical Engineering
Consistent with the requirements for ABET accreditation, the objectives of the BSME program are presented here. We expect that graduates of the BSME Program will:
1) Integrate fundamental engineering, mathematics, and science principles to solve engineering or other professional challenges in an interdisciplinary environment.
2) Develop successful engineering or professional careers, either directly after an undergraduate degree or after pursuing graduate studies.
3) Communicate both technical and non-technical principles to a wide range of audiences.
4) Demonstrate leadership both through their individual efforts and through the roles attained within their respective organizations.
Given that contemporary interests in mechanical engineering involve many potential outcomes, the department has designed a series of four tracks that can be tailored to the specific needs and interests of a student. With the assistance of a faculty advisor, students should individually plan a program and, if desirable, modify that program each term as their experience and plans develop. In consultation with their advisors, students select a course of study that not only satisfies program requirements but also reflects their unique educational objectives.

1) Research and Academic Track: designed for a student who wishes to continue into graduate school and pursue a career in research. This track focuses on independent study on a cutting-edge research topic that culminates in a senior thesis. Students are expected to take Independent Study (ME93 or ME94) during either fall of junior year or spring of senior year to begin development of their research topic. Their senior design project may focus on the design and fabrication of experimental hardware, followed by a semester of research towards their thesis using this hardware.

2) Business and Management Track: designed for a student who wishes to move into an entrepreneurial business or management role following completion of their undergraduate degree. In the junior year the student will either complete an internship with a business (ME99) or a course in engineering management (ME54). The track will culminate in a capstone design experience (ME43) that will mimic a large-scale industrial design project.

3) Project Engineering Track: designed for a student who wishes to gain individualized project experience through independent study in their final semester. This track is designed for students who intend to work in industry after graduation, and who wish to complete and present an engineering project that they perform under the supervision of a faculty advisor. This project can be a follow-on to the capstone design project they undertake in the Fall semester of Senior year.

4) Human Factors Track: designed for a student who wishes to gain some expertise in human factors and apply it to a large-scale design project. The student will take a human factors design course (ENP120) in their junior year and are expected to use this expertise in a large-scale capstone design course in the second semester of their senior year (ME43).
### Senior Year

**FALL TERM**

**Mechanical Engineering 43** Senior Design Projects  
Mechanical Engineering Concentration Elective  
Mathematics/Natural science elective  
Free Elective  
Humanities/Arts or Social Sciences elective  

**SPRING TERM**

Mechanical Engineering Concentration Elective  
Mechanical Engineering Concentration Elective  
Mechanical Engineering Concentration Elective  
Free Elective  
Humanities/Arts or Social Sciences elective

### MECHANICAL ENGINEERING ELECTIVE TRACKS

#### Research and Academic Track
- **Course 1** Mechanical Engineering 42 Machine Design  
- **Course 2** Mechanical Engineering 43 Senior Design Project  
- **Course 3** Mechanical Engineering 96 Undergraduate Thesis  
  (Elective)

#### Business and Management Track
- **Course 1** Mechanical Engineering 99 Internship or  
  Mechanical Engineering 54 Engineering Management  
  (Elective)  
- **Course 2** Mechanical Engineering 42 Machine Design  
- **Course 3** Mechanical Engineering 43 Senior Design Project

#### Project Engineering Track
- **Course 1** Mechanical Engineering 42 Mechanical Design  
- **Course 2** Mechanical Engineering 43 Senior Design Project  
- **Course 3** Mechanical Engineering 94 Undergraduate Research  
  (Elective)

#### Human Factors Track
- **Course 1** Engineering Psychology 120 Project Study in Human Systems (Elective)  
- **Course 2** Mechanical Engineering 42 Mechanical Design  
- **Course 3** Mechanical Engineering 43 Senior Design Project

The above courses, in conjunction with the courses taken in the first year, satisfy the following distribution requirement:

- **a.** A total of ten credits in introductory engineering sciences: four courses in biology, chemistry, geology, or physics, including Physics 11, Chemistry 1, 3, or 16, and either Physics 12 or a second course in chemistry, four courses in mathematics comprised of Mathematics 11, 12, 13, and 38, and two credits in introductory engineering to include Engineering Sciences 2 and Engineering 2 (including a half-credit project-based course). Many students opt to include biology in their electives, reflecting the increasing importance of biomedical engineering applications in Mechanical Engineering.

- **b.** A total of six courses in humanities, arts and social studies, including English 1. At least one humanities and one social sciences course must be included.

- **c.** Eight department foundation courses: five required courses related to engineering science, two elective courses in mathematics and/or science, and one foundation elective to be satisfied by taking either: 1) Engineering Science 4 (Introduction to Digital Logic Circuits) or any course with Engineering Science 3 (Introduction to Electrical Engineering) or 4 as its prerequisite; 2) Computer Science 11 (Introduction to Computer Science) or any course with Computer Science 11 as its prerequisite; 3) a non-introductory science course, which has a prerequisite from the department in which the course is offered; and 4) specific engineering courses that are consistent with a student’s pursuit of a minor or ancillary focus. Examples include Electrical Engineering 50 (Introduction to Biomedical Engineering), Engineering Psychology 61 (Introduction to Human Factors and Ergonomics), Engineering Science 20 (Consumer Product Evaluation), Engineering Science 25 (Environment and Technology), and Engineering Science 88 (Introduction to Computer-Aided Design). The School of Engineering policies for undergraduate programs’ Mathematics/Natural Science Electives are available on the following websites: Mathematics go to the Tufts Bulletin Website [http://ase.tufts.edu/bulletin/](http://ase.tufts.edu/bulletin/). Click on School of Engineering – Accepted Natural Sciences Courses. Note that Engineering Science 101 and Mechanical Engineering 150 can be counted as either a Mathematics/Science
Elective or as BSME Concentration Electives, while Engineering Science 55 (Numerical Methods for Engineers) and Engineering Science 56 (Probability and Statistics) can only count as Mathematics/ Natural science Foundation Electives.

d. Twelve department concentration courses: four required mechanical engineering science courses (Mechanical Engineering 16, 25, 37, and 80), introduction to research instrumentation (Mechanical Engineering 18), two mechanical engineering design courses (Mechanical Engineering 1 and 42), a senior design project elective (Mechanical Engineering 43), a mechanical engineering career elective, and three mechanical engineering concentration electives. The concentration electives vary from year to year and a list for the current year is issued by the Department at the time of preregistration.

e. Two free elective courses without restriction.

In addition to mechanical engineering courses, the Department may approve certain courses given by other departments to substitute for one of the mechanical engineering concentration courses.

Also, the Department may permit the substitution of certain courses for some of the required courses listed in the above core curriculum. In all such cases, however, the advisor should be consulted and prior Department approval obtained.

Bachelor of Science—Engineering Psychology
This program is available for students planning a career or further graduate study in the field of human factors and ergonomics. Students generally should plan to elect the program at the end of the first year and will graduate with a BS degree in engineering psychology. Program requirements are detailed in this bulletin under Engineering Psychology.

Students may also pursue a MS degree in human factors.

CERTIFICATE PROGRAM IN MANUFACTURING ENGINEERING
This certificate is offered on a part-time, non-degree basis for post baccalaureate students seeking professional training in manufacturing engineering with emphasis on manufacturing processes, robotics, designs, quality control, or cost-effective production systems. Courses taken in the certificate program may be transferred to the degree program. Professor Anil Saigal is the faculty advisor of this program. (See Manufacturing Engineering for program description.)

The certificate requires four courses (format code: ME = Mechanical Engineering; CEE = Civil and Environmental Engineering).

Two core courses are required:

- ME 125 Manufacturing Processes and Materials Technology
- ME 180 Digital Control of Dynamic Systems.

Two elective courses are required from the following:

- ME 108 Modern Quality Control
- ME 126 Computer-Integrated Engineering
- ME 129 Finite Element Methods in Engineering Systems
- ME 182 Automation
- ME 184 Robotics
- CEE 188 Engineering Design with CAD

GRADUATE PROGRAM
Master of Science in Mechanical Engineering
The goal of the MSME degree program is to provide students with an opportunity to strengthen their technical background so that they may pursue successful professional careers in engineering research, development, entrepreneurship, and production. Candidates are admitted to this program on the basis of a strong academic background in mechanical engineering or a related technical discipline. The Department also requires applicants to submit GRE scores.

Candidates are required to complete the equivalent of ten graduate-level (100-level or above) course credits (normally, this consists of seven 100-level courses and a thesis worth at least 3 credits). All students are required to choose two core areas from the three offered in the Department (Thermal Fluids, Materials and Solids, and Dynamic Systems and Controls). They are then required to take a two-course sequence in each of these two areas in the first two semesters of their MS program.

The two-course sequence is referred to as core A and core B. All core A courses will have a math component that is relevant to the subject area, a project/design component, and a software component.
The three core area course sequences are Thermal Fluids (ME 111 and ME 112), Materials and Solids (ME 122 and 125), and Dynamic Systems and Controls (ME 180 and 181).

Students are also required to take an advanced mathematics course (ME 150, Math 151, or ES 101) in semester 2 or 3.

The advanced math course has the prerequisites of the two core A courses. The student and thesis advisor determine the remaining elective credits in the MS program.

A thesis is required in partial fulfillment of the degree. Ordinarily, the thesis is three of the ten required course credits. The exact number of course credits to be considered for the thesis research (2 or 3) is determined by the thesis committee at the time of the thesis prospectus submission. After selecting a thesis topic and advisor, a student must register for thesis credit and submit a thesis prospectus signed by the student and advisor describing the proposed research. The thesis prospectus must be submitted by the end of the first semester of thesis credit registration. The thesis defense is the final step in obtaining approval for the thesis.

**Master of Science in Human Factors**

Human Factors Engineering is also referred to as Engineering Psychology or Ergonomics. The field is rapidly growing with wide engineering and non-engineering applications. The program offers specialized courses, and research opportunities and training in the human-centered aspects of engineering activities such as: medical devices and systems design, transportation systems research, product design, computer-interface design, ergonomics and workplace safety.

Students interested in pursuing an MSHF should apply for admission to the Mechanical Engineering graduate program indicating on their application that they are interested in Human Factors.

Although this program has its own entrance and course requirements separate from Mechanical Engineering Master of Science, it is expected that applicants to the Human Factors program will have an acceptable BS in engineering or science.

Relevant course work and research experience may be considered for non-engineering students. It is strongly recommended that the prospective student identify and contact the potential thesis advisor before applying to the program.

Candidates are required to complete the equivalent of ten graduate-level (100-level or above) course credits (normally, this consists of seven 100-level courses and a thesis worth at least 3 credits). All students are required to complete a two-course sequence in each of the following two core areas: Human-Machine Systems and Advanced Probability and Statistics. The courses must be taken in the first two semesters of the MS program.

The two-course sequence is referred to as core A and core B, with core A being a prerequisite for core B. The two core area course sequences are Human-Machine Systems (ENP 162 and ENP 163) and Advanced Probability and Statistics (PSY 107 and 108). Students are also required to take an advanced design course (ME 102 or ENP 161) in semester 2. The student and thesis advisor determine the remaining elective credits in the MS program.

A thesis is required in partial fulfillment of the degree. Ordinarily, the thesis is three of the ten required course credits. The exact number of course credits to be considered for the thesis research (2 or 3) is determined by the thesis committee at the time of the thesis proposal defense. After selecting a thesis topic and advisor, a student must register for thesis credit and submit a thesis proposal signed by the student and advisor describing the proposed research. The thesis proposal defense must be completed by the end of the first semester of thesis credit registration. The thesis defense is the final step in obtaining approval for the thesis.

**Master of Engineering**

The goal of the master of engineering program is to afford qualified post baccalaureate students the opportunity to obtain the advanced engineering education needed to grow as engineering professionals.

Applicants are admitted to the master of engineering (MEng) program based on a strong academic background in mechanical engineering or a related technical discipline. The department requires GRE scores for admission. As such the MEng program emphasizes technical course work and a project, and can be contrasted with the departmental MS program, which is focused on
research and development and includes a research thesis.

Candidates are required to complete the equivalent of ten graduate-level (100-level or above) courses.

All students must take at least three courses from the six available core topic classes. Students should honor prerequisites when selecting courses.

Students are required to take at least one math course selected from ME150, ES101, and ME108. Students are also required to take ME102 (Inventive Design).

The remaining 5 courses in the MEng program are four elective courses and a one-credit project (Mechanical Engineering 299). The project is conducted under the guidance of a faculty advisor and must address a substantive engineering analysis or design problem. Students are required to submit a written report and make an oral presentation of their project work.

Doctor of Philosophy
Applicants to the PhD program are expected to have an outstanding academic record and an MS degree in mechanical engineering or a related discipline.

All applicants to the PhD program should outline in writing their reasons for applying to the doctoral program and their tentative plan of study. For general information and admission requirements for the PhD degree, see the graduate school section of this bulletin.

For admission to doctoral candidacy the individual must pass a qualifying examination by the end of their second academic semester in the program.

The student must select four out of the eight exam areas (Physical Ergonomics, Cognitive Human Factors, Dynamics, Controls, Fluid Dynamics, Heat Transfer, Solid Mechanics, and Materials Processing) for the qualifying examination.

A PhD candidate is required to complete at least 5 course credits beyond their MS degree in classroom courses at the 100-level or higher. Doctoral candidates are expected to pursue either course work in direct support of their research or course work that addresses the recommendations made during the qualification period. In the interest of broadening the educational experience, students are also expected to take at least one advanced course 200-level or higher, either within or outside of the department.

After the successful qualifying exam, PhD candidates are required to present a thesis prospectus to a committee composed of the thesis advisor, other mechanical engineering faculty, and possibly outside experts. This presentation includes questioning by the committee and other faculty to assess whether the candidate has sufficient background to study the research area. The purpose of the prospectus is to inform the department in a concise statement of the candidate’s research program.

PhD candidates must defend their dissertation in an oral examination, open to the community. The candidate is examined by a committee of at least three members, one of whom is an expert from outside the mechanical engineering department, and another from outside Tufts University. Recent doctoral dissertation topics include haptic feedback in minimally invasive surgery, novel materials processing approaches with application to ceramics, metal casting, and biomaterials development, modeling and experimental characterization of semiconductor manufacturing processes, development of optical techniques for microscale measurements, modeling, design, and fabrication of microscale sensor arrays for aeroacoustic applications, computational and experimental cochlear mechanics, development of method for polymer synthesis using microfluidic enzymatic cascade, and electrowetting phenomenon for microsized fluidic devices.

For more detailed information, please visit the website: http://engineering.tufts.edu/me/

Medieval Studies
FACULTY COORDINATOR:
Professor Steven Marrone, History

The interdisciplinary minor in medieval studies presents a multidisciplinary focus on the world of the Middle Ages. The medieval world introduces us to the cultural roots of Europe and Islam in a preindustrial society and to the beginnings of Western and Middle Eastern languages and literatures.
Medieval Studies > Microwave and Wireless Engineering > Middle Eastern Studies >

Five credits with at least one course from each of the three categories (as stated online) are required for the minor. In addition to the five credits, a student is required to complete an appropriate project, such as a thesis, an oral presentation, or a performance, which integrates the knowledge and methodologies of the disciplines involved. (See Interdisciplinary Minor Program for details.)

For more information and an application, contact the Office of Graduate Studies at 617-627-3395.

Middle Eastern Studies

Director: Assistant Professor Eva Hoffman, Art and Art History

Faculty:
- Professor Ina Baghdiantz-McCabe, History
- Professor Leila Fawaz, History
- Professor Bruce Hitchner, Classics
- Professor Ayeesha Jalal, History
- Professor Beatrice Manz, History
- Professor Malik Mufti, Political Science
- Professor Enrico Spolaore, Economics
- Associate Professor Gloria Ascher, Judaic Studies
- Associate Professor Steven Hirsch, Classics
- Associate Professor Christina Maranci, Art and Art History
- Associate Professor Joel Rosenberg, Judaic Studies
- Assistant Professor Amahl Bishara, Anthropology
- Assistant Professor Elizabeth Foster, History
- Assistant Professor Kenneth Garden, Religion
- Assistant Professor Eva Hoffman, Art and Art History
- Assistant Professor Richard Jankowsky, Music
- Assistant Professor Kamran Rastegar, Arabic Language and Literature
- Senior Lecturer Mohammed Alwan, Arabic Language and Literature
- Lecturer Rana E. Abdul-aziz, Arabic language and literature
- Emerita Lecturer Rahel Meshoulam, Hebrew Language and Literature

Middle Eastern Studies is an interdisciplinary program that encourages breadth and significant immersion in one or more Middle Eastern cultures. The program gives students an opportunity to study the history and culture of the Middle East and of areas of the world whose territories were part of Middle Eastern empires or were under the influence of Middle Eastern civilizations in premodern and modern times. Study abroad is highly recommended.
UNDERGRADUATE CONCENTRATION REQUIREMENTS

Major in Middle Eastern Studies
The Middle Eastern studies major comprises ten courses:

a. Two courses in a Middle Eastern language (level 121-122, or equivalent). Students who have demonstrated language competence through level 121-122 by a placement test must take two advanced language courses, two semesters of a second Middle Eastern language, or two other courses listed in section b. for a total of ten courses. This requirement will take effect beginning with the Class of 2012.

b. Six courses in Middle Eastern studies—chosen in consultation with an advisor—from an approved list updated by the Middle Eastern Studies program annually. These courses must include at least one course in premodern and one course in modern Middle Eastern studies. They must also include one course in each of two Middle Eastern cultures. Three courses must be chosen from each of the following two groups: 1) art history, religion, literature, Judaic studies, music, and 2) anthropology, history, political science.

c. One course that relates the Middle East to other regions of the world

d. One advanced research course, such as thesis honors, a seminar, or advanced directed study.

For more detailed information, please visit the website http://farescenter.tufts.edu/students/MESmajor.asp.

Multimedia Arts

CODIRECTORS:
Professor Karen Panetta, Electrical and Computer Engineering
Howard Woolf, Experimental College

CORE FACULTY:
Professor Karen Panetta, Electrical and Computer Engineering
Associate Professor Alva Couch, Computer Science
Assistant Professor Eva Hoffman, Art and Art History
Associate Director Howard Woolf, Experimental College
Senior Lecturer Neal Hirsig, Drama and Dance
Lecturer Paul Lehrman, Music

The multimedia arts (MMA) program provides a framework for the analysis of and practical training in emerging digital media. Linking the School of Engineering with the College of Liberal Arts, the MMA program is supported by the Electrical and Computer Engineering Department and the Computer Science Department in concert with the Art and Art History Department, the Drama and Dance Department, the Music Department, and the Experimental College.

INTERDISCIPLINARY MINOR IN MULTIMEDIA ARTS
The multimedia arts minor now forms a third track within Communications and Media Studies, along with minors in Mass Communications and Media Studies, and Film Studies. The minor includes— and often mixes—work in animation, filmmaking, photography, music, text, drawing, collage, graphic design, software development, website construction, user interface strategies, and human factors theory.

Through course work and collaboration on the part of students in liberal arts and students in technical disciplines, the minor aims to foster the development of a body of shared knowledge and ideas and, in so doing, to break down barriers that have traditionally hindered such cross-fertilization. The minor also develops skills relevant to many careers: project design and implementation, creativity and critical thinking, media and computer literacy, oral and written communication, as well as teamwork and leadership. All undergraduates are therefore encouraged to participate.

The interdisciplinary minor in multimedia arts requires a minimum of five courses and a senior project.

Multimedia Practice Courses
Students must take two courses from an approved list of courses (as stated online) that introduce students to the tools, methods, and theories current in the field.

Electives
Students must take two full-credit, letter-graded courses selected from courses offered by the supporting departments—Art and Art History, Drama and Dance, Music, Electrical and Computer Engineering—or those listed and approved by the program (e.g., Experimental College courses).
Courses taken to fulfill a requirement for a student’s major cannot be counted as multimedia arts electives. No more than one elective can be taken from a student’s major study area. For example, music majors may fulfill one of their electives by taking a course in art and art history. A second elective must then be in electrical engineering, computer science, or another approved technology course. All elective decisions must be made in consultation with a student’s advisor for the minor.

MANDATORY COURSES
Experimental College 190C Senior Colloquium (half-credit, pass/fail)

This is a mandatory course for students enrolled in any of the three CMS minors. It is taken in the fall of a student’s senior year and is designed to aid in the planning and successful completion of the senior project.

The senior project is an original work that reflects an understanding of and facility with one or more of the expressive and/or conceptual disciplines associated with multimedia. Collaborative projects are strongly encouraged. A thesis or project completed for the major may not be used as the MMA senior project. On a case-by-case basis, however, a student may be allowed to create a thematic relationship between the two projects.

All courses taken as part of the multimedia arts minor must be taken for a letter grade and may not be used toward fulfillment of the foundation requirement. (See Interdisciplinary Minor Program for details.)

APPROVED COURSES FROM THE EXPERIMENTAL COLLEGE
New courses in multimedia practice as they are developed and approved by the program

For specific information about the policies governing requirements and electives, visit the website http://www.excollege.tufts.edu/mma.

Music

Professor Joseph Auner, Chair; music history, musicology
Professor Jane A. Bernstein, Fletcher Professor of Music; Director of Music History Studies, music history, musicology
Professor John McDonald, composition, music theory, performance, orchestration
Professor Janet Schmalfeldt, Director of Theory Studies; music theory, analytic and cultural studies in music
Associate Professor David Locke, Director of Graduate Studies; ethnomusicology, music culture, performance

Museum Studies

Lecturer Cynthia Robinson, Director and Faculty advisor; Education
Assistant Professor Monica McTighe, Faculty advisor; Art and Art History

Associate Professor Benjamin Carp, Faculty advisor; History

As the stature and number of museums grow, so has the need for appropriate professional training. More than ever before, today’s museum professionals need to be problem-solvers, educators, administrators, and logistical experts who understand not only the information that their collections hold, but how to tell their stories.

Offered in collaboration with the Tufts Departments of Art and Art History, Classics, Education, and History, and the Office of Graduate Studies, this certificate program trains students in the preservation, administration, and education skills required for work in museums and historic settings. The course work clarifies career goals for those who may be considering museum work, as well as enhances the skills of professionals in the field.

Four courses and an internship are required for the certificate. The courses cover museum history, administration, education, collections management, conservation and preservation, material culture, fund-raising, and exhibition planning. The internship is the culminating course in the certificate program, and is intended to provide the student with firsthand professional experience in the museum field.

The program is open to individuals with a bachelor’s degree interested in pursuing a museum-based career, entry level museum professionals who wish to improve their credentials for career advancement, and professionals in other fields who wish to shift career direction.

For a brochure and application, contact the Office of Graduate Studies at 617-627-3395 or visit http://ase.tufts.edu/museumstudies.
Music plays an essential role in a liberal arts college education. Musical studies integrate mind, body, and spirit. Students who study music in college prepare themselves for a lifelong appreciation of the musical arts. The faculty of the Department of Music guides students along a rigorous yet joyful pursuit of knowledge in the following fields: instrumental/ensemble performance, theory of music, history of music, social/cultural musical context, and music composition. Music studies are interdisciplinary, drawing on other disciplines in the arts, humanities, social sciences, mathematics, sciences, and engineering. Studies in music teach transferable skills of value for careers in the professions and business.

The Department of Music offers courses in the disciplines of composition, ethnomusicology, musicology, performance, and music theory. Our curriculum is inclusive and diverse, with emphasis on the traditions of Western classical music, American music (especially African American music and jazz), and world music (especially African and Middle Eastern music). Individual study of instrumental and vocal performance and participation in performing ensembles is enthusiastically endorsed; students may earn academic credit for these musical activities.

The Music Department’s flexible program serves (a) those students who would choose music as a major or minor, and (b) all students seeking to develop their musical knowledge and/or performance skills. Students may major in music, double major in music and another field, or minor in music. Music courses fulfill many requirements (arts distribution, world civilizations, international relations, American studies, and several interdisciplinary minors). The courses, programs, and facilities of the Music Department are open to all members of the Tufts community.

PERFORMANCE OPPORTUNITIES

The Music Department provides students the opportunity for private study of instrumental and vocal performance with the outstanding faculty in our performance music program. Lessons may be taken for half credit (0.5) or not for credit (NC). A fee of $700 (2011-12) is required; beginning in the junior year, students majoring or minoring in music are eligible for a ninety-percent tuition waiver for two semesters. For detailed information, contact Edith Auner, Coordinator of Performance, at (617)-627-5616.

Faculty in the Department of Music teach a diverse variety of courses in ensemble performance, including African Music Ensemble (Kiniwe), Arabic Music Ensemble, chamber ensembles, Chamber Singers, Tufts Concert Choir, Early Music Ensemble, Flute Ensemble, Gospel Choir, Javanese Gamelan Ensemble, Tufts Jazz Orchestra, Jazz Improvisation Ensembles, New Music Ensemble, Opera Ensemble, Pep Band, Tufts Symphony Orchestra, and University Wind Ensemble. Enrollment in performing groups requires audition; contact the Department office for audition information, (617)-627-3564. Musical excellence is highly valued, but membership is less competitive than in music conservatories.
UNDERGRADUATE

CONCENTRATION REQUIREMENTS

The curriculum required of music majors provides a rigorous, balanced exposure to the essential fields in liberal arts music studies, including composition, ethnomusicology, musicology, performance, and theory. Normally, students declare the major in music and choose a member of the full-time faculty as major advisor during the spring semester of the sophomore year. Students obtain the necessary signatures for declaration of major forms and change of advisor forms at the Department office. Undergraduate students who major in music are required to take ten courses in the Department. Students considering graduate studies in music or careers in music are advised to take additional courses beyond the ten required for the major; please see your advisor for a list of specific recommendations. No course may be used to fulfill more than one requirement in the major.

The ten courses required for the undergraduate major in music are:

a. History of Western Music (two one-credit courses): Music 142, 143.
b. Principles of Tonal Theory I and II (two one-credit courses): Music 101, 102
c. Advanced Theory (one-credit course): Music 103-110
d. Ethnomusicology; World, Ethnic, Folk, and Traditional: Music 186, and one course chosen from 106-110, 171-186, OR one course chosen from e.
e. Western Popular Music, Jazz, Global Musics, Cultural Theory (one credit course): 187-196.
f. Performance—instrumental/vocal study (two half-credit courses): Music 68

In addition to courses listed above for the music major, students must enroll in a performing ensemble course (Music 69-96) for four semesters. Ensembles may be taken for credit or non-credit; however, credit for ensembles does not count toward the ten courses required for the major.

Students who entered Tufts prior to Fall 2011 may elect to complete the requirements for the major described above or fulfill the earlier requirements of the major. Please consult with your advisor about the details.

UNDERGRADUATE MINOR PROGRAMS

Minor in Music

Students who intend to make music studies a significant part of their course work at Tufts may choose the disciplinary minor in music. Students may take a broad range of courses or may choose a cluster of courses in such areas as musicology, ethnomusicology, music theory, composition, jazz studies, music technology, etc. The undergraduate minor in music requires five courses; at least two courses must be at the 100 level; the other courses may be chosen from 100-level courses or from Music 21-67. Note: the prerequisite for all 100-level courses for the minor is Music 10, Introduction to Music Theory and Musicianship, or exemption from that course through the Music Theory Placement Test, given at the start of each semester. Two semesters in instrumental and/or vocal study (Music 68 or 195) are required; no more than one credit of private lessons may count towards the minor. Students minoring in music must enroll in a performing ensemble course (Music 69-96) for two semesters, but these credits cannot count toward the minor. After consultation with a member of the full-time music faculty for advice on a suggested program of study, students should complete a minor declaration form (available from the Department office).

Minor in Multimedia Arts

An interdisciplinary minor in multimedia arts is offered by the Departments of Art and Art History, Drama and Dance, Electrical Engineering and Computer Science, and Music, and is administered jointly by the Department of Music and the Department of Electrical Engineering and Computer Science. A detailed description of the minor and its requirements may be found in the alphabetical listings in this bulletin under Multimedia Arts.

COURSES AT NEW ENGLAND CONSERVATORY OF MUSIC

A reciprocal arrangement between Tufts University and New England Conservatory of Music allows students at both institutions to select a limited number of courses at either school that may be applied toward their respective degrees. Students
may not take a course at the conservatory if it is offered at Tufts. This agreement does not apply to summer school. Students must first receive permission from their own dean, then from the dean of the second institution.

COMBINED-DEGREES PROGRAM WITH NEW ENGLAND CONSERVATORY OF MUSIC

Music studies at Tufts are enhanced by the five-year Double Degree program leading to a Bachelor of Arts or Bachelor of Science degree from Tufts and a Bachelor of Music degree from New England Conservatory of Music. (Please consult the academic catalogue of New England Conservatory of Music for information about its programs.) Students interested in this program must be admitted to both institutions; acceptance into the Double Degree program is highly selective, based on both academic and musical competence. Transfer students are not normally accepted into this program; students currently enrolled at either school may apply for admission to the other institution and place themselves in contention for a place in the program. Students may discontinue the program and continue toward completion of the preferred degree at the chosen institution. The cost of the program is based on Tufts undergraduate tuition rates. For information about the program, please contact Associate Dean Jeanne Dillon, NEC liaison at Tufts University; or the Dean of Enrollment Services, Office of Admission, New England Conservatory of Music, 290 Huntington Avenue, Boston, Massachusetts 02115.

GRADUATE PROGRAM

Master of Arts

The Department of Music offers the degree of Master of Arts in the areas of music theory, composition, musicology, or ethnomusicology. Applicants for the master's degree must demonstrate a satisfactory background in music studies, must submit a writing sample or composition as part of their application, and are urged but not required to take the Graduate Record Examination (GRE). The two-year program of study consists of eight semester courses numbered 146 and above (excluding Music101 and 102, and Music 142 and 143), a thesis or composition (one of the eight courses required), and an oral defense of the thesis or composition. A reading knowledge in one foreign language is required, and students are expected to take music courses outside their subfield. The Department encourages students to gain practical experience in performance courses, but these do not count for credit toward the Master of Arts degree.

For more detailed information, please visit the website http://as.tufts.edu/music.

Music Engineering

ADMINISTRATOR:
Professor Chris Rogers, Mechanical engineering

ADVISOR:
Lecturer Paul Lehrman, Music

UNDERGRADUATE MINOR

The minor in Music Engineering provides students with experiences at the intersection of music and technology. Students learn the technologies behind music-making, both traditional and modern, and how new technologies can be applied to musical goals. The minor is available to students both in the School of Engineering and the School of Arts & Sciences. The minor replaces the minor in Musical Instrument Engineering.

The minor consists of 5 courses and a final project (6 units in total). The minor has three possible emphases: (1) sound recording and production, (2) electronic instrument design, and (3) acoustic instrument design. Students can follow any one of these emphases, which will influence the choice of final project. Course requirements for the minor include:

1. One music course from Music 10 (Introduction to Music Theory and Musicianship), 101/102/103 (Principles of Tonal Theory I/II/III), 104 (Jazz Theory), or 118 (Composition Seminar)

2. A two-course concentration in one of:
   a. Sound recording and production:
      • Physics 10 (Physics of Music and Color)
      • Electrical Engineering 65 (Music Recording and Production)
   b. Electronic instrument design:
      • EE12 (Analog Electronics) or EE125
      • (Digital Signal Processing) Engineering Science 95/Music 66 (Electronic Musical Instrument Design)
c. Acoustic instrument design:
- Mechanical Engineering 139 (Acoustics) or 181 (Advanced Dynamics & Vibrations)
- Engineering Science 73 (Musical Instrument Design and Manufacture) or an approved course in Musical Instrument Making from the School of the Museum of Fine Arts.

3. Music 64 (Computer Tools for Musicians), Electrical Engineering 65 (Music Recording and Production), or Music 65 (Music Recording and Production).

4. One credit from the following options: Music 64, Music 65, Electrical Engineering 65, Engineering Science 73 (Musical Instrument Design and Manufacture), Engineering Science 95/Music 66 (Electronic Musical Instrument Design), or an Engineering Internship (EE99 or ME99) or Independent Study course (EE93 or 94, ME93, or Music 97) on an approved topic supervised by a participating minor advisor, or a course on acoustic instrument design, sound, sculpture, or performance from the School of the Museum of Fine Arts.

5. A one-credit final project (EE95 or 96, or both EE97 and 98; ME43 or 94; or Music 98) on an approved topic, supervised by a participating minor advisor.

Each student taking the minor must have a minor faculty advisor who approves course selections and mentors the final project. Each minor must include at least two courses with Engineering course designations. A list of approved courses available at the School of the Museum of Fine Arts is available from the program directors. For more information, visit [http://www.tufts.tufts.edu/musicengineering](http://www.tufts.tufts.edu/musicengineering).

### Nutrition

The Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy at Tufts University was established in 1981, bringing together biomedical, social, political, and behavioral scientists to conduct research, educational, and community service programs in nutrition.

The school offers master of science and doctor of philosophy degrees in nutrition and, in cooperation with the Frances Stern Nutrition Center of the New England Medical Center Hospital, a combined master of science/dietetic internship program. Dual-degree programs are offered with the School of Medicine (M.S./Master of Public Health) and with the Fletcher School of Law and Diplomacy (M.S./M.A.L.D.). A one-year combined master of arts degree in humanitarian studies is offered in conjunction with the Fletcher School. A hybrid sixteen-month Master’s Degree of Nutrition Science and Policy is offered in Ras Al Khaimah, United Arab Emirates. The faculty includes anthropologists, biomedical scientists, economists, nutritionists, physicians, political scientists, and psychologists, all dedicated to teaching and research in the field of nutrition.

The Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy is located at 150 Harrison Avenue, Boston, Massachusetts 02111; phone 617-636-3777, fax 617-636-3600. For more information about the school and its degree programs and research, visit the website [http://www.nutrition.tufts.edu](http://www.nutrition.tufts.edu).

### Courses

For current course listings, visit “course information” at [http://www.nutrition.tufts.edu](http://www.nutrition.tufts.edu). Although no undergraduate degree programs are offered, the courses listed below are available to undergraduates. Consent must be obtained from the instructor for courses numbered 200 and above.

### Occupational Therapy

**Professor Linda Tickle-Degnen**, Chair; Clinical Reasoning, evidence-based practice, research methods, and therapeutic behavior and motivation

**Professor Sharan L. Schwartzberg**, Group theory and practice, psychosocial rehabilitation

**Associate Professor Gary Bedell**, Outcomes measurement, research methods, clinical reasoning, social participation of children and youth

**Professor of Practice, Jane Koomar**, Sensory processing disorders focusing on correlations with trauma symptoms

**Sr. Lecturer Janet Curran Brooks**, Occupational therapy practice in physical medicine, hand and upper extremity rehabilitation

**Sr. Lecturer Scott Trudeau**, Occupational therapy practice in psychiatry, gerontology

**Lecturer Jennifer Buxton**, Assistive technology
Clinical reasoning is the central organizing framework of the curriculum. It provides a foundation for clinical decision making and interaction that considers theoretical and procedural components of therapeutic interventions. Human behavior results from dynamic interaction between the individual’s innate potentials and characteristics, and experiences with people, objects, and events in the environment. In ongoing clinical reasoning seminars, the faculty and students examine these interactions in the contexts of clinical and community-based practice.

MASTER’S DEGREE PROGRAM
The master's degree program prepares students for entry-level positions in occupational therapy or provides post-professional graduate studies for therapists with a bachelor’s degree in occupational therapy.

Program options are described below.

Entry-Level Program (for Non-OTRs)
(Options I and II)
Eligibility: A Bachelor’s degree in a field other than occupational therapy. Candidates enter the program at the professional level and proceed to eventual certification as registered occupational therapists. Fall entry and fulltime first year.

Prerequisites: (Total of five courses.) All pre-requisites must be passed with a grade of B- or better and taken at an accredited college. Two courses in social sciences, i.e., anthropology, psychology, human development, sociology. Two courses in biology, including content in cell biology. (Anatomy and physiology may be substituted for the biology prerequisite.) One Bio course must have a lab component. One course in introductory statistics. Certificate of Hepatitis B vaccination upon enrollment is required.

Option I (No thesis)
Master of Science in Occupational Therapy
REQUiRED COURSES
OTS 101 Human Physiology (one course credit)
OTS 102 Gross Anatomy (one course credit)
OTS 103 Neuroanatomy (one course credit)
OTS 104 Kinesiology (one course credit)
OTS 106 Occupation and Adaptation in the Child and Adolescent (one course credit)
Option II (Thesis)
Master of Arts or Master of Science

Required Courses: All of the Option I requirements, and substitute OTS 210 (Thesis Research) for OTS 209 (Clinical Research). Similar course sequences to Option I.

Thesis: Two course credits of thesis supervision (OTS 295, 296) and completion of thesis. Total number of credits required for the degree is eighteen (sixteen course credits and two thesis credits).

Post-professional-Level Programs for OTRs (Options III and IV)

For post-professional students interested in developing their knowledge base in areas such as administration and management, aging, education, mental health, childhood and adolescence, and upper extremity function and rehabilitation. Students may also choose the self-directed concentration focused on their individual interests.

Eligibility: Registered occupational therapists or candidates eligible for registration.

Prerequisite: One course in introductory statistics. The prerequisite course must be passed with a grade of B- or better and taken at an accredited college.

Option III (No thesis—practice option)
Master of Science in Occupational Therapy

Required Courses: OTS 209 (Clinical Research, one course credit); OTS 208 (Clinical Reasoning Seminar IV, one course credit). These required courses may be taken in any sequence or combination depending on student interest and courses offered.

Concentration: Three courses in an area of concentration; one practicum (OTS 234 or OTS 235);

Electives: Two course credits

Practica: OTS 234 (Fall) or OTS 235 (Spring): One credit

Total number of course credits for the degree is eight.

Option IV (Thesis—research option)
Master of Arts or Master of Science

Required Courses: OTS 210 (Thesis Research, one course credit); OTS 208 (Clinical Reasoning Seminar IV, one course credit).

Total number of minimum course credits for the degree is sixteen. If they desire, nonthesis students may take two elective classroom credits in the department in addition to the sixteen required credits.

To maintain full-time status, a student must be registered for a minimum of three course credits. Several course sequences are suggested by the department. Some of these include fieldwork during the summer, part-time fieldwork, and fieldwork during the academic year with course work in the summer. Please consult the department for further information.
The hand and upper extremity rehabilitation specialization is intended for practicing occupational therapists who would like to gain knowledge in the specialty of hand and upper extremity therapy. Occupational therapists who complete this course series are eligible to apply for a hand therapy clinical fellowship at the Massachusetts General Hospital. Students who do not elect to pursue the fellowship will still receive a certificate of advanced professional study upon completion of the four courses.

The certificate requires four course credits as follows:
- OTS 274 Topics in Hand and Upper Extremity Rehabilitation I: Fall
- OTS 275 Topics in Hand and Upper Extremity Rehabilitation II: Spring
- OTS 276 Topics in Hand and Upper Extremity Rehabilitation III: Summer
- OTS 209 Clinical Research or OTS 210 Thesis Research

**ADMISSION**
All applications for admission with requests for university-based financial aid, including scholarships and assistantships, must be submitted in a complete form by January 15 for fall entry. For complete information on the application process, visit [http://ase.tufts.edu/bsot](http://ase.tufts.edu/bsot).

**ACCREDITATION AND CERTIFICATION**
The Entry Level Occupational Therapy Program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, P.O. Box 31220, Bethesda, MD 20824-1220 p: 301-652-AOTA. web: [http://www.AOTA.org](http://www.AOTA.org).

Graduates of the entry-level master’s program will be able to sit for the national certification examination for occupational therapists administered by the National Board for Certification in Occupational Therapy (NBCOT). For information about the national certification examination, please contact NBCOT, 800 S. Frederick Avenue, Suite 200, Gaithersburg, MD 20877-4150 phone (301) 990-7979, Fax (301) 869-8492 or visit [http://www.nbcot.org](http://www.nbcot.org).
After successful completion of this examination, the individual will be certified as an Occupational Therapist, Registered (OTR). In addition, most states require licensure in order to practice. For specific information on individual state licensure procedures, contact Fay Martin.

POLICIES AND PROCEDURES

Exemption from Courses
A student may be exempt from a required occupational therapy course on satisfactory completion of an equivalent course in terms of content knowledge and experiential learning. The student must demonstrate proficiency in the area to the course instructor. Satisfactory completion of proficiency will be determined by the individual instructor. A petition for variance from department requirements must be completed.

Leaves of Absence
To be granted a leave of absence, a student must petition, in writing, the departmental chair and the dean of the graduate school. The petition is submitted to the Graduate School of Arts and Sciences executive committee. Each request is treated on its individual merit. The departmental policy states that no more than a one-year leave of absence may be granted from the academic portion of the program; it also states each entry-level masters student must complete the six months Level II fieldwork required for the degree no later than twenty-four months following completion of academic preparation.

Acceptable Grades
Graduate students are expected to achieve a grade of B- or better in all courses. Courses completed with less than a B- may be retaken only once. The original grade earned remains on the student’s academic record. If a student obtains two grades of less than B-, the student’s record will be reviewed by the department. This will usually result in a recommendation to the dean that the student be administratively withdrawn from the program. Only the dean of the Graduate School of Arts and Sciences may administratively withdraw an enrolled student.

Grades of Incomplete
Students may not enter an occupational therapy course with an incomplete or an unsatisfactory grade in a prerequisite to that course. Grades of incomplete are not automatically given. The student who desires an extended time period in which to complete the semester’s work in a particular course must negotiate an incomplete with the instructor. This negotiation must be completed by the final class meeting of the course. Normally course work must be completed six weeks into the following semester. It is the responsibility of the student to ensure that course work is completed and that the process to update the transcript is followed through to completion.

Students who, due to extenuating circumstances, are not able to comply with any of the above grade policies may petition the Department of Occupational Therapy Academic Standards Committee for a variance.

Withdrawals
A student is allowed no more than one withdrawal from any required or elective class after the add-drop period. Graduate students are not allowed to repeat the same course more than once. Withdrawal in any semester from two or more required courses after the add-drop period will normally result in a recommendation to the Dean of the Graduate School by the Academic Review Committee that the student be administratively withdrawn.

Required Occupational Therapy Courses
Students will take professional courses in accordance with the Accreditation Council for Occupational Therapy Education (ACOTE) Standards of an Accredited Educational Program.

Fieldwork
The Accreditation Council for Occupational Therapy Education (ACOTE) and the National Board for Certification in Occupational Therapy (NBOCT) require the equivalent of six months of supervised Level II fieldwork in a hospital, school, or health care agency as a prerequisite to taking the certification examination. Level II fieldwork placements must be successfully completed within 24 months following completion of academic
preparation as they are part of the entry level occupational therapy program degree requirements. Placements are arranged with students by the department’s academic fieldwork coordinator. In addition to these placements, students participate in approximately 80 hours of course-related Level I fieldwork concurrent with specific courses arranged by the fieldwork coordinators. Placements for Level I and II fieldwork are subject to availability at locations that have contracts with Tufts-BSOT. The availability of a placement and the locations that have contracts with Tufts-BSOT vary from semester to semester.

For more detailed information, please visit the website http://ase.tufts.edu/bsot.

Occupational Therapy Certificate Program

FACULTY ADVISOR:
Professor Sharan Schwartzberg, Occupational Therapy

Occupational therapists are confronted with administrative and supervisory responsibilities and the need for increased specialization. Areas of practice such as hand and upper extremity rehabilitation, home care for the elderly, mental health, and community services expect extraordinary growth. To help occupational therapists meet these demands, Tufts Department of Occupational Therapy, in conjunction with the Office of Graduate Studies, offers a part-time certificate program in hand and upper extremity rehabilitation and a general certificate tailored to individual student learning needs.

The certificate program is open to those with a bachelor’s, master’s, or doctoral degree in occupational therapy. The program is especially designed for occupational therapists who are interested in expanding their careers, fieldwork educators, administrators, clinical specialists, and supervisors as well as seasoned professionals eager to strengthen their expertise.

For more information and an application, contact the Office of Graduate Studies at 617-627-3395, or visit http://gradstudy.tufts.edu/.

Peace and Justice Studies

DIRECTOR:
Professor R. Bruce Hitchner, Classics

ASSISTANT DIRECTOR:
Dale Bryan, Peace and Justice Studies

EXECUTIVE BOARD AND TEACHING FACULTY:
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Adjunct Associate Professor Robert Burdick, Urban and Environmental Policy and Planning
Senior Lecturer Sinaia Nathanson, Psychology
Lecturer Kevin Irwin, Community Health
Lecturer Steve Cohen, Education

The planet faces a set of interrelated challenges related to violence and war, peacemaking and peacebuilding, justice and human rights and, increasingly, environmental degradation and climate change. The Peace and Justice Studies Program (PJS) was founded to provide students an academic means to understand these crises and to explore the means for achieving a just peace and sustainability. To this end, PJS has created an interdisciplinary course structure which examines the obstacles, conditions, and paths to addressing these challenges. It also explores the ways that governmental and nongovernmental organizations, social movements, and individuals have confronted such problems and worked to resolve them. This structure is also designed to develop students’ critical and analytical
Skills as well as competencies in fields that contribute towards peace and social transformation.

Five overlapping areas of study are emphasized:
- the causes of war, the techniques of war prevention, and the conditions and structures of a just peace;
- the meaning of justice, the means to achieve justice, and the relationship between justice and peace;
- the theory and practice of conflict resolution operating along a continuum from individual disputes to international diplomacy;
- the relationship between violence and peace in culture, with particular emphasis on investigating the traditions of nonviolence and in understanding ethical social behavior;
- the origins, strategies, and visions of social movements and their relationship to other means of social change agency such as community organizing, Internet activism, civic engagement, corporate social responsibility, social entrepreneurship, and institutionalized processes such as elections and lobbying.

PJS nurtures an active sense of social responsibility for the human condition, and encourages students to participate actively in developing their education by combining their talents and imagination through formal study and experiential education. The program presents a broad range of educational events and co-curricular activities which promote an engaged intellectual and civic climate on campus. In this sense, PJS complements the university’s mission and the liberal arts tradition by encouraging the student’s awareness, responsibility, and active engagement in the affairs of the world.

PJS offers both a major and a Certificate. To fulfill requirements for the major, a student must complete eleven courses: the introductory course (PJS 1), one intermediate course in each of five core areas, an internship (PJS 99), the integrative seminar (PJS 190), and three elective courses on a particular theme to be chosen in consultation with the student’s PJS advisor. Students with a qualifying academic record are also encouraged to enroll in a senior honors thesis in Peace and Justice Studies (PJS 198).

To complete the Certificate, a student must complete eight courses: the introductory course (PJS 1), an internship (PJS 99), the integrative seminar (PJS 190), one of two possible intermediate courses (PJS 120 or PJS 135), and four elective courses on a particular theme to be chosen in consultation with the student’s PJS advisor. Completion of the Peace and Justice Studies Certificate will be noted on the student’s transcript. Courses fulfilling the Certificate requirements may also be used, where applicable, to meet major concentration or distribution requirements.

Philosophy

Associate Professor Erin Kelly, Chair; Ethics, political philosophy, philosophy of law
Professor Jody Azzouni, Philosophy of language, philosophy of logic, philosophy of mathematics, philosophy of science, metaphysics
Professor Daniel C. Dennett, University Professor; Austin B. Fletcher Professor of Philosophy; Co-Director, Center for Cognitive Studies; Philosophy of mind, philosophy of psychology
Professor Ray Jackendoff, Seth Merrin Professor of Philosophy; Co-Director, Center for Cognitive Studies; Linguistics, cognitive science
Professor George E. Smith, Philosophy of science, logic
Professor Stephen L. White, Philosophy of mind, ethics
Emeritus Professor Hugo A. Bedau, Austin B. Fletcher Professor of Philosophy Emeritus; Political and legal philosophy, ethics
Associate Professor Nancy Bauer, Feminism, modern European philosophy, philosophy and film
Associate Professor Avner Baz, Ethics, aesthetics, epistemology, Kant, Wittgenstein, ordinary language
Associate Professor Lionel McPherson, Ethics, political and social philosophy
Assistant Professor Brian Epstein, Metaphysics, philosophy of language, philosophy of social science
Assistant Professor Patrick Forber, Philosophy of biology, philosophy of science, philosophy of probability
Assistant Professor Christiana Olvert, Ancient philosophy, early modern philosophy, ethics
Assistant Professor Dilip Ninan, Philosophy of Language, metaphysics, philosophy of mind
Senior Lecturer David Denby, Metaphysics, philosophy of language, ethics
Senior Lecturer Susan Russinoff, Philosophy of language, logic, philosophy of logic, history of logic
Philosophy courses are for students majoring in any field who wish to enrich their education with a deeper understanding of themselves, the world they experience, and the reality underlying this experience, by a study of speculative and critical traditions in Western thought. The philosophy major provides a means of integrating broad education in the liberal arts via systematic and historical study of problems that arise in metaphysics, ethics, and epistemology, as well as in the foundations of other fields of inquiry. It is an appropriate major for those who enjoy thinking carefully and logically about basic issues and for those who seek breadth of educational experience prior to entering professional programs, such as law or medicine, or undertaking graduate study in some other areas. Non-majors may engage in a philosophical study of problems and concepts from their own fields by taking related courses in philosophy, such as feminist philosophy, philosophy of science, philosophy of language, and philosophy of mind; or they can acquire an elementary knowledge of the field by taking a philosophy course numbered below the 100 level.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
For students starting at Tufts in Fall 2010 and beyond

Major: ten courses, including:

• **Phil 1**

• At least one course in logic: **Phil 33** or **Phil 103** or another 100-level Logic course

• At least one course numbered 100 or above in each of the following areas:
  1. History (ancient through early 20th-century, including phenomenology and early analytic philosophy)
  2. Value Theory (including moral philosophy, social and political philosophy, and aesthetics)
  3. Metaphysics and Epistemology (including philosophy of language, philosophy of mind, and philosophy of science)

*See the Philosophy Department website for approved courses for each area.*

• One 100-level seminar (which can also count for any of the above requirements and which must be drawn from among Phil 187, 188, 191, 192, 197, or, under appropriate circumstances, 195, 291, or 292). Students planning to undertake graduate work in philosophy are urged also to (1) write a senior honors thesis in Philosophy and/or (2) petition to take Phil 297 Graduate Writing Seminar.

Students may count no more than five courses numbered below 100 for the major. At least seven courses constituting a Philosophy major must be offered or cross-listed by the Tufts Philosophy Department.

For students who started at Tufts before Fall 2010:

Major: ten courses, of which eight must be in the department, including:

• **Phil 001** Introduction to Philosophy

• **Phil 33** Logic

• At least one of Metaphysics 120, Ethical Theory 121, or Epistemology 131

• One 100-level seminar (which can also count for any of the above requirements and which must be drawn from among Phil 187, 188, 191, 192, 197, or, under appropriate circumstances, 195, 291, or 292).

Four of these courses must be taken on the Medford campus and must be offered by or cross-listed in the Philosophy Department. The remaining two courses must be approved, related courses in a single field, normally in a single department; additional philosophy courses may be substituted for one or both. Majors are also encouraged to take at least one course in the history of philosophy (in particular Phil 151, 152, 161, 163, 164, 185, 186, 187, or 188).

A minimum of four Philosophy courses above the 100 level is required for a student to be considered for magna or summa cum laude departmental honors.

CERTIFICATE PROGRAM IN ETHICS, LAW, AND SOCIETY

The goal of the Certificate Program in Ethics, Law, and Society is to use philosophy to prepare students to be active citizens in leadership positions in government, non-governmental organizations, and the private sector. Students will learn about how moral and political philosophy relate to questions of public importance. The program focuses on how to use philosophy to think, argue, and write clearly and insightfully about these ethical questions.
Requirements for the certificate include six courses and an individual research project. The certificate program is in addition to a student’s concentration (or major) and no more than half of the courses used to fulfill the certificate requirements may be used to fulfill concentration requirements.

The six courses required for the certificate are as follows:
1. An introductory course (below 100-level) in philosophy
2. One or two upper-division courses (100-level or above) in ethical theory
3. One or two upper-division courses (100-level or above) in political philosophy or the philosophy of law
4. One or two courses in applied ethics (includes Phil 10, 24, 43, 124, 125, 128, 143) 5. Seminar: Ethics, Law, and Society, Phil 197. The individual research project is initiated during the Ethics, Law and Society seminar and extends six weeks into the spring semester.

UNDERGRADUATE MINOR PROGRAMS
For more detailed information on minor programs administered by the Philosophy Department, please visit the Department website: http://ase.tufts.edu/philosophy/undergraduate/minor.asp.

Minor in Philosophy
The minor in Philosophy requires the completion of six courses, including:
1. One of Phil 1, 3, 6, 24, 33, 39, 43, or 48
2. Two Philosophy courses at the 100 level
3. Three other Philosophy courses

Minor in Cognitive and Brain Science
The minor in Cognitive and Brain Sciences requires 7 courses. At least 5 of these must be in departments different from the student’s major. The selection of courses must be approved by the student’s advisor.
1) PSY 9 Introduction to Cognitive and Brain Sciences
2) PHIL 15 Introduction to Linguistics and/or COMP 14 Computational Concepts in Biological and Cognitive Sciences
3) PSY 195 Senior Seminar in Cognitive and Brain Sciences (full year, one course credit). Students minoring in Cognitive and Brain Sciences will be expected either to present a research paper or to participate as a Research Assistant in the presentation of research by a faculty member, a graduate student, or a senior.
4) The remainder of the 7 courses are to be selected from at least 2 of the following groups:

a. Psychology courses:
   - PSY 11 Developmental Psychology
   - PSY 25 Physiological Psychology or
   - PSY 103 Brain and Behavior
   - PSY 26 Animal Learning and Cognition
   - PSY 27 Perception
   - PSY 28 Cognitive Psychology
   - CD 51 Intellectual Development of Young Children
   - PSY 129 Cognitive Neuroscience
   - PSY 124 Cognitive Neuroscience of Perception
   - PSY 148 Cognitive Neuroscience of Learning and Memory
   - PSY 126 Origins of Cognition
   - PSY 140 Mathematical Psychology
   - PSY 144 Memory and Retention
   - PSY 146 Comparative Cognition and Behavior
   - PSY 139 Social Cognition
   - PSY 142 Seminar in Affective Neuroscience
   - PSY 154 Psychosis

b. PHIL, linguistics and psycholinguistics courses
   - PHIL 3 Language and Mind
   - PHIL 33 Logic
   - PHIL 38 Rational Choice
   - PHIL 103 Logic
   - PHIL 111 Semantics
   - PHIL 112 Syntactic Theory
   - PHIL 113/PSYC 132 Cognition of Society and Culture
   - PHIL 114 Topics in Logic
   - PHIL 117 Philosophy of Mind
   - PHIL 126 Theories of Human Nature
   - PHIL 133 Philosophy of Language
   - PHIL 134 Philosophy of Social Science
   - PHIL 186 Phenomenology and Existentialism
   - PSYC 149 Psychology of Language
   - CD 155 The Young Child’s Development of Language
   - CD 195 Developmental Disorders in Language and Reading
   - ED/ML/GER 114 Linguistic Approaches to Second Language Acquisition

c. Computer Science courses
   - COMP 80 Programming Languages
   - COMP 131 Artificial Intelligence
The minor in Linguistics requires six courses, including:
1. **LING 15/PHIL 15/PSY 64** Introduction to Linguistics
2. TWO of the following:
   - LING 65/PSY 65 Phonological Theory
   - LING 112/PHIL 112/PSY 151 Syntactic Theory
   - LING 113/PHIL 111/PSY 150 Semantics
3. THREE of the following:
   - LING 137/ANTH 137 Language and Culture
   - LING 155/CD 155 The Young Child’s Development of Language
   - LING 177/CD 177 Bilingual Children in US Schools
   - LING 195/CD 195 Developmental Disorders of Language and Reading
   - LING 250/CD 250 Reading, Dyslexia, and the Brain
   - LING 184/CLS 184 Indo-European Linguistics/Advanced Special Topics in Classical Literature
   - LING 114/ED/ML/GER 114 Linguistic Approaches to Second Language Acquisition
   - LING 101/ENG 101 Old English
   - LING 92/ML 92 Romance Linguistics
   - LING 3/PHIL 3 Language and Mind
   - LING 33 or 103/PHIL 33 or 103 Logic
   - LING 133/PHIL 133 Philosophy of Language
   - LING 153/PHIL 110/PSY 153 Biological Foundations of Language
   - LING 149/PSY 149 Psychology of Language
   - LING 196/PSY 196 Psychology of Bilingualism/Seminar in Psychology
   - LING 91/191 Special Topics in Linguistics/Advanced Topics in Linguistics
   - LING 93 Independent Research in Linguistics

**GRADUATE PROGRAM**

The program leading to the master of arts degree in Philosophy is intended primarily for the student who is considering advanced work in philosophy but who did not concentrate in the subject as an undergraduate. Typically, students admitted to the program plan to pursue a doctorate in philosophy (Tufts itself does not offer a doctorate in the field), though some students have other career plans.

The department’s offerings range across the major areas of interest in contemporary philosophy. Each year at least four seminars are offered, typically on instructors’ current research interests. The department has particular strengths in the following areas: contemporary ethical theory, social and political philosophy, metaphysics and episte-
mology, philosophy of language and philosophical logic, philosophy of mind, and philosophy of science.

Master’s candidates receive individual attention from members of the department in their specialized fields and have an opportunity to participate in the philosophical life of the department. The department has a lecture series, which brings six to eight eminent speakers to Tufts each year, and it sponsors other departmental events. Students also have access to the very active philosophical community in the Boston area.

The program leading to the degree of master of arts in philosophy is designed to be completed over four terms. Requirements are as follows:

1) Students starting the program before the Fall 2009 term must complete any eight courses in Philosophy numbered 100 or above. Students starting the program in the Fall 2009 term and thereafter must complete nine courses in Philosophy numbered 100 or above, including the Graduate Writing Seminar, which is graded on a SAT/UNSAT basis and may be taken at any time after the successful completion of one term in the program.

2) Students must fulfill a logic requirement, ordinarily via successful completion of Philosophy 103, which would be a ninth course for students starting the program before the Fall 2009 term and a tenth course for students starting in the Fall 2009 term or thereafter. Some students may be eligible for a waiver of the logic requirement. Those who are not are urged to satisfy the requirement in their first term.

3) Students must pass a qualifying examination, which consists of three topical examinations, each four hours long. All exams include questions of a historical nature. Students must take an exam in at least two of the three following areas: Epistemology, Ethics, Metaphysics. Students may take exams in all three of these areas or may substitute another topic from the following list for the third exam:

- Philosophy of mind
- Philosophy of language
- Philosophy of science
- Aesthetics
- Social and political philosophy
- Logic
- Phenomenology and existentialism
- Feminist philosophy
- Philosophy of law*
- A great philosopher**

*The faculty reserves the right to offer this examination only when, in its judgment, it is prepared to give it.

**The subject of this examination must be proposed by the student and approved by the department.

Students are advised to take at least one exam by spring of their first year. A student can attempt to pass the same examination no more than three times.

A limited number of tuition scholarships are available. The department also offers opportunities for master’s candidates to work as teaching assistants.

Applications to the program are due on January 15. A student wishing to start the program in January must submit an application by September 15. (Please note that students are admitted to the program midyear only in exceptional circumstances and only when space is available.) Applications must include, in addition to the Graduate School of Arts and Sciences application form, GRE scores, a brief personal statement, a writing sample, and three recommendations.

COURSE OFFERINGS

Standard courses in the Philosophy curriculum are listed here: https://webcenter.studentsservices.tufts.edu/coursedesc/coursedesc_by_dept.aspx. Not all courses are offered each year. With the exception of Phil 1 and Phil 33, most are not offered more than one semester per year. For detailed information about current course offerings, students should consult the Philosophy Departmental Course Book, updated each term and available in the second floor lobby of Miner Hall. See also the Philosophy Department website: http://ase.tufts.edu/philosophy/courses/.

Physical Education/ Athletics

William Gehling, Director of athletics
Branwen Smith-King, Assistant athletic director; physical education coordinator
John Casey, Assistant athletic director, baseball
One-half academic credit is granted for courses that are skill-oriented, and a total of two such credits may be applied toward the total for the degree. Introductory level courses are offered on a pass-fail basis. Theory classes of one course credit are applicable toward the degree. No advanced placement or retroactive credit will be given for any physical education courses.

Athletics has been an important part of life at Tufts throughout its history. The athletic program provides students the opportunity to compete in both intercollegiate and intramural sports, and also to engage in general recreation. Tufts fields seventeen varsity teams for men and women, supports eight club sports organizations, and offers several intramural sports programs.

For more detailed information, please visit the website http://ase.tufts.edu/phyled/.

Within the liberal arts framework at Tufts University, the physical education program offers students instruction in individual, dual, and group activities that promote lifelong fitness and enjoyment. Courses in aquatics, racquet sports, fencing, aerobics, physical fitness, and outdoor education are some examples of the diverse offerings of the department. Approximately fifty courses are scheduled each academic year, and most courses are offered fall and spring semesters. Every effort is made to maintain limited enrollment in all courses, to provide each student with maximum personal attention from the instructors.
Assistant Professor Anna Sajina, Astronomy/Astrophysics
Assistant Professor Cristian Staii, Experimental condensed matter physics
Research Professor Tomas Kafka, Experimental high-energy physics
Research Associate Professor Kenneth Olum, General relativity and cosmology, quantum field theory
Senior Lecturer Robert F. Willson, Astronomy

SECONDARY APPOINTMENTS:
Professor Bruce Boghosian, Mathematics, Quantum computing, fluid dynamics
Professor David Hammer, Education, Science education
Professor Fiorenzo Omenetto, Biomedical Engineering, Optical physics
Professor of the Practice Judah Schwartz, Education, Science and mathematics education
Research Professor Ronald K. Thornton, Director, Center for Science and Mathematics Teaching, Science and mathematics education

The laws of physics are few in number yet appear to govern all known material phenomena: physical, chemical, and biological. The science of physics involves the observation of natural processes and the formulation from these observations of general principles that may be tested further or exploited for useful ends. Majoring in physics can be a valuable part of a broad education. Students who combine mastery of the basic laws of physics with the outlook and flexibility of a liberal education will be well prepared to take on a variety of specialized roles. Men and women who majored in physics in the recent past have successfully entered careers in physics, as well as in business administration, the computer industry, law, medicine, dentistry, meteorology, public health, and teaching.

UNDERGRADUATE CONCENTRATION REQUIREMENTS—COLLEGE OF LIBERAL ARTS

Major in Physics
Eight courses in physics more advanced than Physics 2 or 12 and including Physics 13 and 64; two courses in mathematics more advanced than Mathematics 13 and 18. With the exception of Physics 13 and 64, two of the physics courses and one mathematics course may be replaced by approved advanced courses in related fields (such as astronomy, biology, chemistry, computer science, engineering, or mathematics). The ten courses required for the major must include two courses in advanced laboratory training. One of these courses must be Physics 64; the other may be Physics 31 or 41.

Major in Applied Physics
Five courses in physics more advanced than Physics 2 or 12, including Physics 13 and 64; two courses in mathematics more advanced than Mathematics 13 and 18; three courses from the concentration requirements of one of the engineering departments. With the exception of Physics 13 and 64, one of the five physics courses may be replaced by an approved course in a related field.

Major in Chemical Physics
Effective for students who enrolled at Tufts prior to 09/01/11:
Four courses in physics more advanced than Physics 2 or 12, including Physics 13; two courses in mathematics more advanced than Mathematics 13 and 18; four courses in chemistry more advanced than Chemistry 2 and 12 and 16. The ten courses required for the major must include one course in advanced laboratory training, either Physics 64 or Chemistry 33 and 34. One mathematics course may be replaced by approved advanced course in a related field. Faculty advisors in the chemistry and physics departments are available for consultation on the chemical physics program.

Effective for students enrolling at Tufts after 09/01/11:
Foundation: Chemistry 1, 11, or 16; Chemistry 2 or 12; Physics 1 or 11; Physics 2 or 12. Concentration: Ten credits of more advanced, one credit courses - four credits in Chemistry (with a prerequisite of Chem 2 or 12), four credits in Physics (with a prerequisite of Phys 2 or 12), and two credits in mathematics (Math 46 or courses with a prerequisite of Math 13, 18, or 46). The courses must include the following: Physics 13; one credit in advanced laboratory training, either Physics 64 (counts as one advanced physics course) or both Chemistry 33 and 34 (counts as one advanced chemistry course); either Chemistry 31 or Physics 52; either Chemistry 32 or Physics 61; and either Chemistry 51 or Chemistry 61.
Major in Astrophysics
Four courses in physics more advanced than Physics 2 or 12, including Physics 13 and either Physics 31 or 64; two courses in mathematics more advanced than Mathematics 13 and 18; four courses in astronomy more advanced than Astronomy 9 and 10. One mathematics course, and either one physics course or one astronomy course, may be replaced by an approved advanced course in a related field. Research experience is strongly recommended.

Note to Premedical, Predental, Preveterinary Students
Students interested in entering medical, dental, or veterinary school after graduation may take advantage of the following replacement option to complete the corresponding entrance requirements as part of the physics major. With the exception of Physics 13 and 64, two of the physics courses and one mathematics course may be replaced by Chemistry 51 and 53 and 52 and 54, and one other advanced elective. Chemistry 53 and 54 will also fulfill one term of the advanced laboratory training requirement for the physics major.

UNDERGRADUATE CONCENTRATION REQUIREMENTS—SCHOOL OF ENGINEERING
Bachelor of Science in Engineering Physics
A minimum of 38 credits is required: Introductory (10 credits), humanities/arts/social science (6 credits), free elective (2 credits) foundation (8 credits), and a physics/engineering concentration requirement (12 credits). The introductory requirement includes Physics 11 and 12.

The foundation requirement comprises Physics 13, Physics 32, Physics 52, Physics 41 (or ES 3 and ES 4); two courses from Engineering Science 3, 4, 5, 8, or 9; plus two other courses satisfying the foundation requirements of the School of Engineering.

Concentration requirement: four courses in physics and astronomy at the intermediate or advanced levels, which must include Physics 64; four courses from the concentration requirements of one of the engineering departments; four approved elective courses in computer science, engineering, mathematics, or science.

UNDERGRADUATE MINOR PROGRAM
The program requires the completion of five courses.

Physics Minor
The student takes Physics 11 and 12 (or 1 and 2), and Physics 13, and any two courses from the following: Physics 31, 32, 41, 42, 43, 52, 61, 62, and 64. For example, one possible minor, which emphasizes classical physics, would be Physics 11, 12, 13, 32, and 52. Another, which emphasizes quantum physics, would be Physics 11, 12, 13, 31, and 61.

Astrophysics Minor
The student takes Physics 11 and 12 (or 1 and 2) and any three courses from the following: Astronomy 21, 22, 101, 111, 112, 121, and 122.

GRADUATE PROGRAM
The Department of Physics and Astronomy grants two degrees: the doctor of philosophy and the master of science. The department has established qualifications to ensure that degree candidates have a broad background in experimental and theoretical physics. A faculty advisory committee is appointed for each student to supervise the program of study leading to the degree.

Master of Science
The master of science degree requires eight graduate-level courses in physics or related fields, the latter to be subject to approval by the advisory committee. These courses must include Physics 131, 145, 146, 163, and 164, and must be completed with a grade of B- or better. The student has the option of writing and defending a master’s thesis, which may count as the equivalent of up to three courses.

Doctor of Philosophy
The doctoral candidate must demonstrate proficiency in the basic fields of classical physics (classical mechanics and classical electromagnetic theory) and quantum physics (quantum mechanics and statistical mechanics). Proficiency is demonstrated by earning an average of A- or better in the basic graduate courses (131, 145, 146, 153, 163, and 164), or by passing special examinations in the areas covered by these courses. Graduate courses taken at other institutions may in some cases be used to fulfill part of this requirement. The doctoral candidate is also required to complete with a grade of B- or better two courses, one in any two of five specialized fields: astronomy/astrophysics (121
or 122) condensed matter physics (173 or 174), particle physics (183 or 184), general relativity and cosmology (167 or 268), and advanced quantum mechanics (263).

Generally, in the second year the candidate chooses a field of specialization from the areas of research within the department and selects a research advisor. After completing the required course work, the candidate takes an oral examination in this specialized field. Satisfactory performance on the oral examination qualifies the candidate to undertake a program of independent research under the guidance of the research advisor, culminating in the preparation and defense of a doctoral dissertation.

The current areas of research in the department are astronomy and astrophysics, biophysics, chemical physics, condensed-matter physics, cosmology and general relativity, and high-energy physics.

Doctor of Philosophy, Chemical Physics Track
The curriculum requirements for the Chemical Physics track meld those of Chemistry with those of Physics. The curriculum has more emphasis on chemical synthesis than the core program in Physics and more electricity and magnetism than the core program in Chemistry. These greater core requirements are balanced with a greater flexibility in the elective courses.

The core program consists of seven graduate-level classroom courses at least three of which must be Chemistry courses (Chem 133, 136, or 131) and at least one of (150, 151, 152, 161 and 162) and three must be Physics courses (163, 164, or 153). These are to be completed by the fourth semester in residence. Additionally, two elective courses must be chosen from Chemistry 132, 151, 162 or Physics 131, 146, 173 or 174.

Two oral presentations are required: a public seminar by the end of the fourth semester and a presentation to the student’s research committee in the fifth semester. The seminar is based on current literature, can be presented in either department and is evaluated by the research committee. The topic for the presentation to the committee is chosen by the student in consultation with the research committee. This presentation may be waived for students having at least a 3.3 average in the core courses. In addition, the student must prepare a written, original research proposal by the end of the eighth semester. This proposal shall be somewhat distinct from the thesis work and defended orally before the advisory committee.

For more detailed information, please visit the website http://ase.tufts.edu/physics/.

Political Science
Professor Robert Devigne, Chair; Political theory
Professor Jeffrey M. Berry, John Richard Skuse, Class of 1941, Professor of Political Science; American politics, political behavior
Professor James M. Glaser, Dean of Academic Affairs for the Arts and Sciences; Professor of Political Science; American politics, political behavior
Professor Kent E. Portney, Quantitative methods, public policy, political behavior
Professor Malik Mufti, International relations, Middle East
Professor Tony Smith, Cornelia M. Jackson Professor of Political Science; American politics, political behavior
Professor Vickie Sullivan, Political theory
Associate Professor David Art, Comparative politics, political economy, Europe
Associate Professor Consuelo Cruz, Comparative politics, Latin America
Associate Professor Richard C. Eichenberg, International relations, foreign policy, West Europe
Associate Professor Ioannis Evrigenis, Political theory
Associate Professor Kelly M. Greenhill, International relations, security studies
Associate Professor Elizabeth Remick, Comparative politics, East Asia
Associate Professor Pearl T. Robinson, Comparative politics, Africa, African-American politics
Associate Professor Deborah J. Schildkraut, American politics, political psychology, political behavior
Associate Professor Jeffrey W. Taliadoro, International relations, security studies
Assistant Professor Natalie Masuoka, American politics, political behavior
Assistant Professor Nimah Mazaheri, Comparative politics and political economy
Assistant Professor Dennis C. Rasmussen, Political theory
Assistant Professor Oxana Shevel, Comparative politics, East Europe
The Department of Political Science is concerned with the functions and theory of the structure and operation of government, and the nature and development of local, national, and international politics. The goals of the department are both intellectual and practical. Courses are designed to develop an understanding of the political process, and an ability to critically analyze political systems, relationships, and problems. Courses are also intended to provide a basis for intelligent citizenship, increase capacity for community service, and orient the student toward possible employment in governmental agencies on the local, state, national, or international level. The undergraduate curriculum is structured to recognize that majors in political science will have a diversity of post-college goals. The department’s offerings may be regarded as a foundation for graduate study preparatory to college teaching, professional government service, the law, and city and environmental planning, as well as for careers in such fields as public and business administration, journalism, secondary school teaching, nonprofit work, and social action.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
Major: Ten courses overall. Two political science foundation courses; eight additional political science courses. Students are required to take at least one course in each of four subfields: American government and politics (or American public policy), comparative government and politics, international relations, and political thought. Internships and directed research courses will not fulfill a subfield requirement.

All majors must also take at least one course designated as methodologically focused. These courses incorporate material that helps students to understand the logic of social science inquiry. Because these courses will improve students’ comprehension of how social science research is conducted, they are advised to fulfill this requirement early in their course of study, preferably in the sophomore year.

Courses that meet this requirement are:
- **PS 12** Sophomore Seminar: Acquiring Political Knowledge
- **PS 13** Sophomore Seminar: Race and Class in American Politics
- **PS 14** Sophomore Seminar: Political Behavior of Young People

Each year, other courses will be designated as methodologically focused and these additional options will also fulfill the requirement. Please consult the course listings published by the department prior to preregistration for a complete listing of all methodologically focused courses.

Majors are also required to take one upper-level seminar in political science at Tufts’ Medford/Somerville campus. Sophomore seminars do not fulfill this requirement. As of September 1, 2010, majors are required to take eight of the ten political science courses in the Tufts University Department of Political Science. All of the other requirements of the major—the two foundation courses, the course in each of the four subfields, the methodologically-focused course, and the advanced seminar—must also be fulfilled in the Tufts University Department of Political Science.

Majors are expected to complete their basic courses and declare their major by the end of the sophomore year. A grade of C- or better is required for a course to count toward the major. The department publishes an Undergraduate Handbook detailing requirements, programs, and additional information about the major. The handbook can also be found on the department’s website. New majors should familiarize themselves with this material.
UNDERGRADUATE MINOR PROGRAM
Students interested in completing a minor concentration in political science may choose from seven different options: Law and Society, Political Economy, Political Science (general), Comparative Politics, American Politics, Foreign Policy Analysis, and Political Thought. Interested students may contact: Dennis Rasmussen 617-627-4804.

All of these minors require five courses in political science. Each of them, however, has separate requirements and a different list of courses. No student may take two minors. A detailed listing of these requirements is contained in the Undergraduate Handbook or in a separate document, Departmental Minors, both available from the Department of Political Science in Packard Hall.

TUFTS-IN-WASHINGTON PROGRAM
The Tufts-in-Washington program offers students an opportunity for intensive firsthand study of government and politics during a semester’s residence in Washington, D.C. Undergraduates who are accepted to the program may elect either American national government, foreign policy, or economic policy as their field of concentration. Students are registered at Tufts and are billed all the costs of the program through their Tufts eBill. This includes Tufts tuition, room, board, fees and medical insurance, if not waived by the student. Students are housed at American University in Washington, D.C., but all costs are billed by and payable to Tufts by the billing due date.

The Tufts-in-Washington program is administered by the Department of Political Science, but it is open to all Tufts undergraduates. A prerequisite for admission is a background in political science and other social science courses relevant to the student’s plan of study in Washington.

Central to the curriculum during the Washington semester is a series of seminars with various Washington political elites and policy activists. Students also do individual research projects and participate as interns in the government or in the private sector. The Tufts-in-Washington seminars do not fulfill the upper-level seminar requirement for the political science major, which must be taken at the Tufts’ Medford/Somerville campus. Interested students may contact: Richard Eichenberg at 617-627-3469.

For more detailed information, please visit the website: http://ase.tufts.edu/polsci.

Program Evaluation
FACULTY ADVISOR:
Associate Professor Francine Jacobs, Child Development/Urban and Environmental Policy and Planning

In the government and nonprofit sectors, significant resources are devoted to programs that address compelling social needs. Evaluation of these programs can help them to grow and improve their operations. Yet agencies often resist evaluation because it is seen as politically risky or technically intimidating.

Private funders and public agencies are increasingly demanding evaluation as a provision for funding. Individuals with evaluation training are needed to assist programs, sponsoring agencies, and funders in planning and carrying out evaluations to address their needs for information and analysis. The certificate in program evaluation is designed for midcareer professionals who wish to learn about the design and implementation of effective evaluation strategies. Students learn practical skills that can be put to use in the evaluation of a wide range of social service, public health, community development, and environmental programs.

Four courses are required for the certificate. The certificate is offered in collaboration with the Departments of Child Development, and Urban and Environmental Policy and Planning in the School of Arts, Sciences, and Engineering, the Friedman School of Nutrition Science and Policy, the School of Medicine, and the Office of Graduate Studies.

The program is open to individuals with a bachelor’s degree and three to five years of professional experience in a particular field. The program is particularly appropriate for agency directors and administrators, program managers and staff, foundation project officers, policy analysts, community organizers and advocates, human resources professionals, and educators.

For more information and/or an application, contact the Office of Graduate Studies at 617-627-3395 or visit the website http://gradstudy.tufts.edu/.
CERTIFICATE PROGRAMS
In addition to the master’s programs, the Department of Urban and Environmental Policy and Planning offers two certificate programs in community sustainability. The certificates in management of community organizations and community environmental studies emphasize participatory strategies for community self-determination and sustainability. These flexible programs enable working adults to gain the vital management and environmental skills necessary to enhance existing careers or to move into new professional work.
A third certificate in program evaluation is offered in collaboration with the Department of Child Development, the Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy, and the School of Medicine.

To earn a certificate, students successfully complete four courses for credit. Courses for the certificate programs are drawn from the curriculum of the master’s program. It is possible to complete a certificate program in as little as one year or to extend it over several years. The certificate programs are open to students with a bachelor’s degree. For more information, contact the Office of Graduate Studies at 617-627-3395 or visit http://gradstudy.tufts.edu/.

Certificate Program in Program Evaluation
Private funders and public agencies are increasingly demanding evaluation as a requirement for funding. Individuals with evaluation training are needed to assist programs, sponsoring agencies, and funders in planning and carrying out evaluations to address their needs for information and analysis. The certificate in program evaluation is designed for midcareer professionals who wish to learn about the design and implementation of effective evaluation strategies. Students learn practical skills that can be put to use in the evaluation of a wide range of social service, public health, community development, and environmental programs. In addition to a bachelor’s degree, applicants are expected to have three to five years of professional experience in a particular field. (See Program Evaluation in this bulletin for description.)

This certificate requires four courses (format code: UEP = Urban and Environmental Policy and Planning; CD = Child Development, PSY = Psychology; NUTR = Nutrition; SOC = Sociology; OTS: Occupational Therapy; ED = Education; MPH = Public Health). Courses in statistics, data analysis, and research methods are offered by several departments. Course substitutions can be made with the approval of the certificate faculty advisor.

1. Foundation course:
   Program Evaluation (UEP 256) (also CD 247)

2. One course in applied statistics and data analysis, for example:
   • Problems of Research: Statistics (CD 140)
   • Advanced Statistics (PSY 107/108)
   • Principles of Biostatistics (MPH 205)
   • Statistical Methods for Nutrition Research (NUTR 209)
   • Nutrition Data Analysis (NUTR 211)
   • Quantitative Research Methods (SOC 101)
   • Quantitative Reasoning for Policy and Planning (UEP 254)

3. One course in research methods, for example:
   • Problems of Research: Methods and Design (CD 142)
   • Principles of Epidemiology (MPH 201)
   • Methods of Educational Research (ED 271)
   • Survey Research in Nutrition (NUTR 210)
   • Field Research (SOC 105)
   • Research Methods (OTS 210)

4. One elective in your area of interest or expertise: education, child development, nonprofit management, social or environmental policy, nutrition, or public health.

For more detailed information, please visit the website http://ase.tufts.edu/uep/.

Psychology
Professor Robert Cook, Chair; Animal cognition
Professor Nalini Ambady, Social cognition
Professor Emily W. Bushnell, Developmental psychology
Professor Richard A. Chechile, Cognition, statistics
Professor Joseph F. DeBold, Endocrinology and behavior
Professor David Harder, Clinical psychology
Professor Phillip J. Holcomb, Cognitive Neuroscience
Professor Ray Jackendoff, Linguistics, Psychology of language
Professor Robin Kanarek, John Wade Professor; Physiological psychology
Professor Klaus A. Miczek, Moses Hunt Professor of Psychology; Psychopharmacology
Professor Holly A. Taylor, Cognition
Associate Professor Gina Kuperberg, Clinical psychology
Associate Professor Keith B. Maddox, Social cognition
Associate Professor Lisa M. Shin, Clinical psychology
Associate Professor Samuel R. Sommers, Social psychology
Associate Professor Heather L. Urry, Affective neuroscience
Assistant Professor Ariel Goldberg, Cognition and language
Assistant Professor Ayanna K. Thomas, Cognition and aging
Assistant Professor (part-time) Harold Miller-Jacobs, Industrial and organizational psychology
Senior Lecturer Sinaia Nathanson, Social psychology
Research Associate Ray Nickerson, Applied cognition
PART-TIME LECTURERS:
Lecturer Carolyn Cohen, Psychopharmacology
Lecturer Jack Fultz, Sports psychology
Lecturer Robert Jampel, Clinical psychology
Lecturer Grayson Kimball, Statistics
Lecturer Mitchel Rose, Clinical psychology

Psychology concerns the processes and principles of behavior. Increased understanding of oneself and others through the study of psychology is useful in almost any endeavor. The undergraduate psychology curriculum is diverse in order to reflect the breadth of the field, from the biological bases to the social determinants of behavior. Students gain general familiarity with psychology, and have the option to emphasize specific areas in the field. Courses are geared toward the development of evaluative and analytic skills, which are indispensable to advanced study in experimental, clinical, and applied psychology. These skills, together with knowledge of the factors influencing individual and group behavior, are highly valuable for careers in such fields as public health, engineering, medicine, business, administration, law, and education.

PSYCHOLOGY COURSES AS DISTRIBUTION REQUIREMENTS
Students may take Psychology 9, 25, 26, 27, 29, 32, 40, 41, 45, 46, 48, 49, 103, 104, 112, 123, 124, 127, 128, 129, 142, 146, 148, or 159 toward fulfilling the natural science distribution requirements. Psychology 31, 107, 108, 110, or 140 may be taken by majors or nonmajors toward the mathematical sciences distribution requirement. All other psychology courses may be taken toward fulfilling the social science distribution requirement. Psychology majors will normally meet the social science distribution requirement by virtue of courses they take in psychology.

UNDERGRADUATE CONCENTRATION REQUIREMENTS
Major in Psychology
Eleven courses distributed as follows: Psychology 1; one course from among Psychology 11, 12, 13, 14, 15, 17, and 18; one course from among Psychology 25, 26, 27, 28, and 29; Psychology 31 and 32; one course from among Psychology 36, 37, 38, 40, 41, 42, 46, 48, and 49 (these advanced lab courses have specific prerequisites); two other psychology courses numbered above 100; one other course offered by the psychology department; two approved advanced courses in related fields.

Courses taken to fulfill the psychology major (including related-field requirements) normally may not be taken pass–fail. No more than two independent study courses (Psychology 91 and 92, 97 and 99, 191, and 192, 197, 198 and 199) may be counted toward the concentration requirement. Successful completion of a Senior Honors Thesis chaired by a member of the department (PSY 199) may substitute for the advanced lab requirement. No more than one course taken to fulfill the 100-level requirement may be an independent study course. Biopsychology, Clinical Psychology, Cognitive & Brain Science, and Engineering Psychology majors may not double major in General Psychology or any of the other psychology majors.

Students with a score of 4 or 5 on the AP in psychology should not take Psychology 1. An AP score of 5 completely substitutes for this requirement within the major, meaning that a student needs only 10 courses to complete the major. An AP score of 4 places a student into two-digit psychology courses but the student will need to take an additional psychology course for the major in lieu of Psychology 1. Successful completion of Child Development 1 is treated in the same manner as an AP score of 4: students may substitute CD 1 for PSY 1 for prerequisite purposes, but they must take an additional psychology course in order to reach the 11 courses required for the major.
Psychology 32 and the advanced lab requirements need to be completed at Tufts. Double majors in Psychology and Mathematics can take Math 162 instead of Psychology 31. Students who are double majoring in Psychology and Economics can use Econ 13 as a substitute for Psychology 31. Biopsychology majors may use either BIO 132 or PSY 31 to fulfill their statistics requirement.

In recommending students for honors, in addition to the general college requirements, the psychology department does not normally recommend students for highest honors unless they have done empirical research.

Major in Psychology/Clinical
This major is intended for students interested in entering graduate or professional schools in mental health or human services and/or working with psychiatric patients. Required courses are Psychology 1, 12, 31, 38, 71, 106, 181, and 182; two electives in psychology, one of which must be at the 100 level; and two approved advanced courses in related fields. Students planning to continue in clinical work will profit from electing a course in physiological psychology.

Major in Biopsychology
The interdepartmental major for students particularly interested in neurobiology and behavior requires five courses in biology and five in psychology. These include the following: Cells and Organisms (Biology 13), General Genetics (Biology 41), Animal Behavior (Biology 130), one course in animal physiology (chosen from among Biology 75, 110, 115, 116, 134) and an elective in biology; Statistics (Psychology 31 or Biology 132), Experimental Psychology (Psychology 32), Brain and Behavior (Psychology 103), plus two electives from among Psychology 26, 27, 29, 40, 41, 42, 45, 46, 48, 49, 104, 112, 123, 124, 127, 128, 129, 142, 146, 154, and 159. Additional courses may be added to this list at the discretion of the chair.

Biopsychology majors may not also double major in psychology or biology. Majors are encouraged to elect an advanced laboratory course in either department. Independent research is strongly encouraged, but is not counted toward this major. Consult the departments of either biology or psychology for details about this major.

Major in Cognitive and Brain Sciences
The central issue in cognitive science is how the mind works. The central conception in the field is of the brain as a biological information-processing device. Cognitive and Brain Science is an inherently interdisciplinary area, drawing on psychology, neuroscience, linguistics, philosophy of the mind, computer science, and biology. A Cognitive and Brain Science major provides an excellent preparation for careers in the sciences, computer fields, health professions, law, and education. Students are required to take a core of courses in psychology, a basic range of courses in the other constituent disciplines, and a series of upper-level courses in which they can specialize in one or more constituent fields. Advanced students may choose to continue to be broadly interdisciplinary, or they may choose primarily to "track" within a single discipline such as psychology, philosophy, linguistics or computer science. The program is completed with a required research experience accompanied by a senior seminar, in which students discuss current literature, the research of graduate students at Tufts, and their own research. Majors are also strongly encouraged to audit at least one semester of the senior seminar in their sophomore or junior years.

Students select their program in consultation with their advisors. Students who wish to modify the requirements below must have the approval of their advisors and the Cognitive and Brain Sciences Steering Committee.

This major requires 14 courses, research, Senior Seminar in Cognitive and Brain Sciences.

A. 6 required courses:
1. **PSY 9** Intro to Cognitive and Brain Science
2. **PSY 31** Statistics (or **CD 140**)
3. **PSY 32** Experimental Psychology
4. **PHIL 15/PSY 64** Introduction to Linguistics
5. **COMP 11** Introduction to Computer Science (or AP credit)
6. **COMP 15** Data Structures

B. Intermediate courses, one from each of the following groups:
1. **PSY 11** Developmental Psychology
   **PSY 25** (or **103**) Physiological Psychology
   **PSY 26** Animal Learning and Cognition
   **PSY 27** Perception
   **PSY 28** Cognitive Psychology
2. Advanced research experience: 2 options, both of which involve enrolling in Senior Seminar in Cognitive and Brain Science (PSY 195), a one hour weekly, year-long meeting of all seniors in this major worth 1 course for the entire year:

1. Senior honors thesis in psychology, child development, computer science or philosophy.
2. A year-long research experience working with a faculty member from either psychology, philosophy, child development, computer science, or the neuroscience department at the medical school. Students pursuing this route will be required to complete a final write-up of their research which they must present during senior seminar. Students considering the Cognitive and Brain Science major will be encouraged to audit the senior seminar during one semester of their sophomore year.

3. Electives: Students are encouraged, after consultation with their advisor, to augment the Cognitive and Brain Science major by taking electives drawn from the following list:
   - COMP 22/Math22 - Discrete Math
   - Anthropology (ANTH 150 Human Evolution)
   - Biology (Bio 13, 14, Bio 116 General Physiology, Bio 134 Neurobiology)
   - Math (Math 11, 12 & 13, Math 150 Mathematical Neuroscience)
   - Psychology (all courses, especially: PSY 37, 40, 41, 46, 48, 49, Psy107/108)

MAJOR IN ENGINEERING PSYCHOLOGY
An interdisciplinary program, more commonly called human factors, is offered jointly by the departments of mechanical engineering and psychology. (See Engineering Psychology for program description and course listings.)

GRADUATE PROGRAM
The Department of Psychology offers both a master's degree and a doctor of philosophy degree in general experimental psychology. Students having a baccalaureate degree may apply for either the master's degree program or the doctoral program, although priority is given to those planning to pursue the doctorate. Students having a master's degree in psychology may apply for the doctoral
To be considered for graduate work in psychology, a student must have a bachelor of arts or bachelor of science degree from an accredited college or university. Most students will have majored in psychology, but this is not a requirement. The student must, however, have had at least a one-semester course in statistics and at least six semester hours of experimental psychology or comparable research experience.

Graduate students are expected to develop overall breadth in psychology, as well as an emphasis in a specialty area. Emphasis areas within the department include social psychology; cognitive psychology; developmental psychology; physiological psychology and psychopharmacology; experimental psychopathology; and cognitive, social, and affective neuroscience.

Considerable emphasis is placed on the student’s ability to undertake research. These skills are demonstrated in connection with course work, independent research, and by the thesis and/or dissertation.

All graduate students are expected to participate in supervised research or teaching activities each semester.

General Program Requirements
The program is based around five major annual milestones:
Year 1: A first-year project
Year 2: Completion of the Master’s thesis
Year 3: Publication/Grant Submission
Year 4: Conceptual Presentation at Department Conference and Mini-Review
Year 5: Completion of Dissertation

There is no formal language requirement for either the master of science degree or the doctoral degree.

Master of Science
The requirements for the master of science degree include ten credits (eight course credits and two research credits) distributed as follows: completion of the graduate sequence in statistics (Psychology 107 and 108), one area core course, two upper-level psychology courses or seminars (100 level or higher), one additional 200 level core or seminar course, one independent reading/research course or other course credit, one professional preparation course, and successful completion of the first-year project (one credit) and the master’s thesis (one credit).

No more than two graduate-level courses, which have not been used to count toward another graduate degree, may be transferred from another institution toward the Tufts program.

The master’s thesis must be an empirical research study in psychology, which will be presented in written form and on which the candidate must take an oral comprehensive examination.

Students holding Tufts’ teaching and research assistantships are advised to register for five courses per year and should plan to spend more than one year in completing the degree. Only under exceptional circumstances should it require more than two years for completion. The department does not encourage part-time participation in the program.

Doctor of Philosophy
The doctoral degree requires thirteen credits (eight course credits and five research credits) beyond those required for the master’s degree.

These must include:
One additional core course, two 200-level seminars, one additional professional preparation course, four elective courses or independent reading/research courses, a credit associated with completion of the 3rd year publication/grant submission, a credit associated with the 4th year Conceptual Presentation at the Department Conference and Mini-Review, and 3 Dissertation research credits.

The doctoral candidate must submit a dissertation on his or her original empirical research and must take an oral examination in support of the dissertation. Upon successful completion of the dissertation and the examination, the candidate will be awarded five course credits.

In general, the student’s program of study is worked out with a faculty advisor, taking into account the student’s interests and background.

For more detailed information, please visit the website http://ase.tufts.edu/psychology.

Quantitative Economics
(FOR DEGREE REQUIREMENTS, SEE ECONOMICS.)
Religion

Professor Brian Hatcher, Chair; Hinduism and religion in modern South Asia
Associate Professor Joseph Walser, Asian religions
Assistant Professor Heather Curtis, History of Christianity, American religions
Assistant Professor Kenneth Garden, Islamic revival and renewal, Sufism
Senior Lecturer Peggy Hutaff, Biblical studies and feminist theologies
Senior Lecturer Elizabeth Lemons, Religion and culture
Senior Lecturer David O’Leary, Catholicism, religion and medical ethics
Professor Gary Leupp, Department of History, Japanese history and Japanese Buddhist studies
Associate Professor Kevin Dunn, Department of English, Bible as literature
Emeritus Professor Howard E. Hunter, Religion and culture

The Department of Religion concerns the various expressions of religion encountered in human experience. The student may investigate the field of religion in both its functional and theoretical aspects. Courses are designed to give a broad cultural appreciation of the subject in accordance with the principles of a liberal arts education.

A graduate degree in religion is not offered. Religion 106, 191, 192, and 194, however, are often taken in conjunction with other programs.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

Major in Religion
Ten courses are required for the major in religion. These courses are to be distributed as follows:


b. Diversity requirement (four courses): Students should have exposure to at least four different religious traditions. This may be accomplished through classes in which four different traditions are taught, or through four courses, each focused on a different religious tradition, or through some combination thereof. Students are to take four classes within the department to achieve the diversity requirement. The advisor and the chair of the Department of Religion must approve the courses taken to fulfill this requirement.

c. Depth requirement (three courses): Students must choose a subfield in religious studies. This may be one religious tradition, the traditions of a geographical region, or a religious textual tradition. Students must demonstrate that they have taken at least three classes in that specialty. One of the three courses must be in the doctrinal (theological and philosophical) aspects of religion. In their chosen areas of specialization, students must take two above-100 level courses. These may include an independent study or a senior thesis. The departmental advisor and the chair must approve the student’s area of specialization. No course may count for both the diversity and depth requirements.

d. In addition to the above eight courses, two additional courses listed or cross-listed in religion, regardless of subject area, are required.

UNDERGRADUATE MINOR PROGRAM

Minor in Religion
Five courses, distributed as follows, are required.


b. Students should have exposure to at least three different religions traditions. This may be accomplished through classes in which three different traditions are taught, or through three courses, each focused on a different religious tradition, or through some combination thereof. The advisor and the chair of the Department of Religion must approve the courses taken to fulfill this requirement.

c. One other course numbered above 100. This course may not be counted as one of the three courses of the above requirement.

For more detailed information, please visit the website http://ase.tufts.edu/religion/.

Romance Languages

Professor José Antonio Mazzotti, Chair; Latin American literature, colonial period, modern poetry, film studies
Professor Juan M. Alonso, Nineteenth- and twentieth-century literature of Spain, Spanish American literature
Professor Gérard Gasarian, Nineteenth- and twentieth-century French poetry
Professor Elizabeth T. Howe, Spanish Golden Age, medieval literature, mysticism
Professor Isabelle H. Naginski, Co-Director of International Literary & Visual Studies; Nineteenth-century French prose, Franco-Russian literary relations, women writers
Associate Professor Nina Gerassi-Navarro, Latin American literature, nineteenth-century, travel literature, film studies
Associate Professor Brigitte Lane, French cultural studies, contemporary French literature, film studies
Associate Professor Vincent J. Pollina, Medieval and Renaissance French and Italian literature
Assistant Professor Zeina Hakim, Seventeenth- and eighteenth-century French literature and culture
Assistant Professor Pablo Ruiz, Latin American literature, twentieth-century
Senior Lecturer Laura Baffoni Licata, Italian literature and culture
Senior Lecturer Marta Rosso-O’Laughlin, Spanish language coordinator
Lecturer Cristina Pausini, Italian language coordinator
Lecturer Anne Poncet-Montange, French language coordinator
Lecturer María-Concepción Lagunas Davis, Spanish language course administrator
Lecturer Charles Dietrick, Spanish language course administrator
Lecturer Kathleen Pollakowski, Spanish language and literature
Lecturer Claire Schub, Nineteenth- and twentieth-century French literature
Lecturer Agnès Trichard-Arany, French language course administrator
Lecturer Anne de Laire Mulgrew, Spanish language
Lecturer Nancy Levy-Konesky, Spanish language
Lecturer Anne-Christine Rice, French language
Lecturer Tracy Pearce, French language
Susan Sánchez-Casal, Director, Tufts in Madrid program
Monique Fecteau, Director, Tufts-in-Paris program
Carmen Gloria Guıñez, Director, Tufts-in-Chile program

The Romance languages all derive from the Latin spoken in different parts of the Roman Empire. Courses in French, Italian, Portuguese, and Spanish lead students to an understanding of the language when spoken or written, and allow them to read and appreciate each nation’s literature. At all stages of instruction students may deepen their linguistic sensibilities and expand their horizons by studying, through a Romance language, a civilization different from but connected to their own. Students may major in French, in Italian, or in Spanish Studies, and may minor in Italian. A special minor for engineering students allows them to minor in French, Spanish, or Italian. Portuguese is only offered at the language level. The Department of Romance Languages also participates in the programs of the Experimental College.

LANGUAGE HOUSES
The Department of Romance Languages sponsors the French House and the Spanish House. The houses are open to all students interested in these languages and cultures and are not limited to majors. They offer small-group living and an opportunity to enjoy an intensive language experience, often with native speakers, and to participate in many social and cultural events.

JUNIOR YEAR ABROAD
Through the Tufts-in-Madrid, the Tufts-in-Paris, and the Tufts-in-Chile programs, the Department of Romance Languages offers undergraduate majors an unusual opportunity for study in Spain, France, and Chile during the academic year. For more information, contact the Department of Romance Languages or the Office of Tufts Programs Abroad.

Tufts-in-Paris Program
Preparation equivalent to completion of French 21 and 22 is prerequisite to the program; completion of French 31 and 32 is highly recommended. Students are registered in the University of Paris I (Panthéon-Sorbonne), the University of Paris III (Sorbonne Nouvelle), and the private Institut Catholique and take most of their courses at these institutions. Courses are also offered within the Tufts-in-Paris program. Internships are available to full-year students.

Tufts-in-Madrid Program
(See Tufts Programs Abroad for description.) Preparation equivalent to completion of Spanish 21 and 22 is prerequisite to the program; completion of Spanish 31 or 34 and 32 or 35 is highly recommended. Students are registered in the Autonomous University of Madrid or the University of Alcalá and take most of their courses in the university. Courses are also offered within the Tufts-in-Madrid program.
For more information concerning the Tufts-in-Madrid Program, write to the Department of Romance Languages or to the Office of Tufts Programs Abroad.

**Tufts-in-Chile Program**
(See Tufts Programs Abroad for description.) Preparation equivalent to completion of Spanish 21 and 22 is prerequisite to the program; completion of Spanish 31 or 34 and 32 or 35 is highly recommended. Students are registered in the University of Chile in Santiago and take most of their courses in the university.

For more information concerning the Tufts-in-Chile Program, write to the Department of Romance Languages or to the Office of Tufts Programs Abroad.

**Tufts University European Center**
The Tufts University European Center sponsors a six-week summer study program in Talloires, on the Lac d’Annecy, in the heart of the French Alps. Students enroll for credit in two courses chosen from an array of offerings including French language, literature, and civilization. The courses, taught by members of the Tufts faculty, draw on the rich cultural and physical resources of this beautiful region of France. Classes are held in Le Prieuré (the Priory), which was formerly part of an eleventh-century Benedictine monastery. Each student lives and shares meals with a local French family; the residential component of the program adds an important dimension to the students’ experience of French daily life and culture. For more information, contact the Office of the Tufts University European Center.

**PLACEMENT OF ENTERING UNDERGRADUATES**
All entering students who elect courses in French, Spanish, or Italian and who have previously studied the language will be placed in the appropriate course level by their scores on the SAT II Subject Tests (formerly known as the CEEB Achievement Test), Advanced Placement Test, or the Tufts placement examination. The Tufts placement examination, which is for diagnostic purposes only, is given each September and January during the orientation period.

Students who place above French, Spanish, or Italian 3 may complete the language requirement by choosing any one of the three available options (see College of Liberal Arts Information, Foundation Requirements). One course credit equivalent to French/Spanish/Italian 21 or 22 is granted under certain conditions (see College of Liberal Arts Information, Advanced Placement and Acceleration Credit).

For further information, see the appropriate coordinator of language instruction.

**UNDERGRADUATE CONCENTRATION REQUIREMENTS IN FRENCH AND SPANISH**
Prospective majors in French or Spanish are advised to consult the guidelines for selecting a related field, which appear in the departmental course brochure and on the Romance Languages website. The department highly recommends that seniors returning from overseas programs enroll in two 100-level French or Spanish courses on the Tufts campus during their final year of study. At least one of the four 100-level literature courses must be taken during the senior year on the Tufts campus itself.

**Major in French**
Ten courses as follows:
French 21 and 22, or equivalent; French 31 and 32, or equivalent; four 100-level courses in literature; one 100-level course to be selected from among the various course offerings in advanced language and culture, including French 121, 122, 124, 125, 130, 140, 150, or their equivalents or one additional 100-level course in French literature. (Students participating in programs abroad may count toward the satisfaction of this requirement a wide range of courses in language, literature, art history, geography, history, civilization, and other areas, taught in the language of the major.) One course taught in French, in a related field, or one additional 100-level course in French literature. No more than one credit in Independent Study may be counted toward the major. No more than two credits combining an Independent Study and an honors thesis may be counted toward the major. All courses taken for credit in the major must be completed with a grade of C- or better.
Major in Spanish
Ten courses as follows:
Spanish 22, or equivalent; Spanish 31 or 34, and 32 or 35, or equivalent; three 100-level courses in literature; four 100-level courses to be selected from among the various course offerings in advanced language and culture, including Spanish 121, 122, 124, 130, 140, 150, or their equivalents. One course may be in English. (Students participating in programs abroad may count toward the satisfaction of this requirement a wide range of courses in language, literature, art history, geography, history, civilization, and other areas, taught in the language of the major.) No more than one credit in Independent Study may be counted toward the major. No more than two credits combining an Independent Study and an honors thesis may be counted toward the major. All courses taken for credit in the major must be completed with a grade of C- or better.

Undergraduate Minor Programs
Minor in Italian
Five courses as follows:
Four courses in Italian language, literature, and/or culture above the intermediate level (Italian 3–4), one of which must be in literature. These courses must be taught in Italian. One course chosen from among the following: a) a course, taught in English translation, on Italian literature or civilization (e.g., Italian 41, 42, 51, 52, 55, 75); b) one of the Italian culture courses listed in this bulletin at the end of the College of Liberal Arts Information section; c) one further course in Italian language, literature, and/or culture, taught in Italian on the Medford/Somerville campus; d) an upper-level course, completed in Italy, in one of a variety of disciplines. No more than one credit in Independent Study may be counted toward the minor.

It is highly recommended that seniors returning from overseas programs enroll in an appropriate Italian course in the Department of Romance Languages during their final year of study. Interested students should consult the designated advisor for the minor.

Special Minors for Engineering Students
The humanities and/or arts and social sciences requirements for students in the School of Engineering may be satisfied by a special minor in French, Spanish, or Italian language and culture comprising a total of six credits. Please note the following stipulations:
1) Of the five credits taken in the Department of Romance Languages, no more than one credit may be taken in English.

2) Students must determine their level of proficiency in the language by examination (placement test at Tufts, Advanced Placement Test score, or CEEB SAT II Subject Test score).

3) Students cannot receive credit toward the minor for courses taken below this initial placement.

4) Students must consult with the designated advisor for the special minor in the Department of Romance Languages.

5) Independent Studies will not be available.

6) All courses used in fulfillment of the minor must be taken for a grade.

FRENCH OR SPANISH
Five credits above French 3 or Spanish 3.

The sixth credit must be taken in the social sciences, concentrating on the area in which the target language is spoken.

ITALIAN
Five credits above Italian 2.

The sixth credit must be taken in the social sciences, concentrating on the area in which the target language is spoken.

DEPARTMENTAL HONORS
The departmental honors program provides the opportunity for majors in French, in Spanish, or in Italian Studies—in close cooperation with a faculty advisor—to write a senior honors thesis for one or two course credits. Each such credit may count toward the major as a 100-level literature course. No more than two credits combining an Independent Study and an honors thesis may be counted toward the major. Near the end of the spring term the thesis is defended before a committee of three readers, who determine whether the degree with highest honors in thesis, with high honors in thesis, or with honors in thesis is to be awarded at commencement.

The applicant’s name must have appeared on the Dean’s List prior to the first term of the senior year. Interested students should consult with the potential advisor and with the chair of the department toward the end of the junior year.

GRADUATE PROGRAM

Master’s Degree
A master of arts degree is offered in French language and literature. Preference is given to students who have a strong undergraduate major in French.

To qualify for the master’s degree, a student completes an approved program of at least ten courses, including a general examination. A student is expected to show evidence of scholarly attainment both in course work and in the general examination. Application forms are available from the Office of Graduate Studies in Ballou Hall.

For more detailed information, please visit the website http://ase.tufts.edu/romlang.

Russian
(For degree requirements, see German, Russian, and Asian Languages and Literatures.)

School Psychology
(For degree requirements, see Education.)

Sociology

Professor Susan Ostrander, Chair; Gender/feminist theory, nonprofit organizations, social inequalities, field research methods, social action/public service

Professor John E. Conklin, Criminology, sociology of law

Professor Paul Joseph, Sociology of war and peace, political sociology

Associate Professor Paula Aymar, Race and ethnic relations, family, religion, immigration

Associate Professor James Ennis, Sociological theory, quantitative research methods, social movements, social networks, sociology of art and artists

Associate Professor Rosemary C. R. Taylor, Political sociology, social policy, medical sociology, organizations, qualitative research

Assistant Professor Ryan Centner, Urban sociology, globalization, Latin America, leadership

Assistant Professor Helen Marrow, Immigration, race and ethnic relations, social inequalities and social policies, health, qualitative research methods
3. Globalization, Transnationalism, and Immigration

For more information on the Cluster Option, please visit
http://ase.tufts.edu/sociology/programsCourses.asp

UNDERGRADUATE MINOR PROGRAM

Minor in Sociology
The minor requires the completion of six courses; none may be taken pass-fail. One required introductory course numbered 1 through 50; one required methods course: Sociology 101 or 102; one theory course: Sociology 103; and three elective courses. Details are available from the department. Students should declare their minor by junior year. Students in the Class of 2013 and later must follow these requirements. Others can choose between this set of requirements and those in place at the time of their matriculation at Tufts.

For more detailed information, please visit the website http://ase.tufts.edu/sociology.

Spanish
(FOR DEGREE REQUIREMENTS, SEE ROMANCE LANGUAGES.)

Urban and Environmental Policy and Planning

Professor Julian Agyeman, Chair; Sustainability policy, environmental justice, education for sustainability

Professor Rachel G. Bratt, Housing and community development

Professor James Jennings, Urban and neighborhood politics, social welfare, community development

Professor Sheldon Krimsky, Environmental policy and environmental ethics

Professor Weiping Wu, China, urban planning, globalization

Associate Professor Francine Jacobs, Child and family policy, program evaluation

Assistant Professor Mary E. Davis, Environmental health

Assistant Professor Justin Hollander, Urban planning and policy development

Lecturer Laurie Goldman, Social welfare and housing policy, policy implementation, and public and nonprofit management

Sociology is the systematic study of social interactions, institutions, and identities. It considers how our selves, actions, and relationships are shaped by society, and how society itself is structured and changed in turn. Social categories such as class, race, and gender are of central concern, along with such institutions as law, the family, religion, the media, medicine, education, the military, business, nonprofit organizations, professions, science, and the arts. Sociology students learn theories and research techniques for understanding social structures and solving social problems. Techniques of critical and comparative analysis, along with alternative visions of society, are fostered.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

Major in Sociology
All Sociology majors, including those who elect to do one of the three clusters (see below), must complete ten Sociology courses, at least six of which must be listed or cross-listed by the Tufts University Department of Sociology. Of the 10 Sociology courses, 4 must be the following core courses, at least 2 of which must be taken in the Tufts University Department of Sociology:

1: Introduction to Sociology
101: Quantitative Research Methods
102: Qualitative Research Methods
103: Survey of Social Theory

Of the 10 required Sociology courses, one must be a seminar numbered 180 or above. Sociology 193, 197, 198 and 199 do not count as seminars. Five of the 10 required courses are unrestricted electives, except for students who choose to complete a cluster.

These requirements become effective in September 2011.

Majoring in Sociology Using a Cluster Option
Students can major in Sociology by choosing their electives to complete one of the following Cluster Options:

1. Media, Culture, and Society
2. Social Inequalities and Social Change

Assistant Professor Sarah Sobiera], Mass media, political sociology, civil society and the public sphere, sociology of culture, social movements

Associate Professor Francine Jacobs, Child and family policy, program evaluation

Assistant Professor Mary E. Davis, Environmental health

Assistant Professor Justin Hollander, Urban planning and policy development

Lecturer Laurie Goldman, Social welfare and housing policy, policy implementation, and public and nonprofit management
Lecturer Barbara Parmenter, Geographic information systems
Lecturer Ann Rappaport, Environmental management, environmental policy
Lecturer Robert Russell, Environmental law
Lecturer Jon Witten, Land use planning
Professor of the Practice Penn S. Loh, Environmental Justice
Adjunct Professor William Moomaw, International environmental policy

PART-TIME FACULTY:
Lecturer Margaret Barringer, Economic development
Lecturer Patricia Bonner-DuVal, Philanthropy and fundraising
Lecturer Mark Chase, Transportation planning, entrepreneurship and advocacy
Lecturer Christine Cousineau, Environmental design, land use history
Lecturer Louise Dunlap, Writing and public communication
Lecturer Scott Horsley, Land use planning
Lecturer Sylvia Johnson, Philanthropy and fundraising
Lecturer Magaly Koch, Remote sensing
Lecturer Jeffrey Levine, Regional planning, local government finance
Lecturer Alicia Doyle Lynch, Quantitative methods
Lecturer Tatjana Meschede, Quantitative methods
Lecturer David Orlinoff, Financial analysis and management
Lecturer Ingar Palmlund, International environmental Policy
Lecturer Brian Roach, Economics
Lecturer Alan Jay Rom, Legal frameworks of social policy
Lecturer Roberta Rubin, Homelessness, housing policy
Lecturer Marji Erickson Warfield, Quantitative methods
Adjunct Associate Professor Robert Burdick, Negotiation and conflict resolution

The Department of Urban and Environmental Policy and Planning offers a graduate public policy and planning program culminating in either a master of arts (M.A.) degree or a master of public policy (M.P.P.) degree. Our goal is the education of a new generation of leaders, “practical visionaries,” who will contribute to the development of more just and sustainable communities. A key step toward this is making our institutions more responsive to child, adult, and ultimately community well-being by helping them understand, empathize with, and respond to the social, economic, and environmental needs of individuals and communities.

AFFILIATED CENTERS AND INSTITUTES
Center for Interdisciplinary Studies—Environmental Studies Program
The Department of Urban and Environmental Policy and Planning is one of three Tufts departments that oversees the undergraduate environmental studies program. The environment and society track, for which UEP serves as the host department, examines the sociopolitical, humanistic, economic, and cultural aspects of managing environmental problems.

Urban Studies Minor
The Interdisciplinary Minor in Urban Studies provides students with an opportunity to pursue their love of cities and communities and to study urban issues in depth. Students can select from a rich variety of courses that examine the interplay among the different groups that occupy the urban space, the problems they confront, their struggle for recognition and power, and the forces that shape the physical terrain they inhabit. The Minor may be of interest to students contemplating graduate work in urban planning, environmental policy, public administration, public policy, law, or social work. It also can be an intellectually exciting focus for interdisciplinary exploration, because understanding urban phenomena requires synthesizing knowledge from a broad range of the social sciences and humanities. Five credits with at least one course from at least three different departments are required. In addition to the five credits, a student is required to complete an appropriate project, such as a thesis, an oral presentation, or a performance, which integrates the knowledge and methodologies of the disciplines involved. (See Interdisciplinary Minor Program for details.) Interested students should consult the faculty coordinator, Weiping Wu (Weiping.Wu@tufts.edu), for more information about specific courses that can be counted toward the Minor. For more detailed information, please visit: http://cis.tufts.edu/default.aspx

Global Development and Environment Institute (GDAE)
The Global Development and Environment Institute (GDAE) was established to gain a new understanding of how nations and societies at
differing stages of economic development can pursue that development in an environmentally and socially sustainable manner, and to assist the public and private sectors in applying this knowledge through appropriate policies that promote sustainability. Through research, curriculum development, a visiting scholars’ program, conferences, and faculty seminars, the institute offers opportunities for shared activities between the Fletcher School and Graduate and Professional Studies. It also provides employment opportunities for graduate students.

**Tufts Institute of the Environment (TIE)**

Created in 1998, the Tufts Institute of the Environment (TIE) is an interdisciplinary, university-wide education and research entity that facilitates and coordinates environmental programs at the university. TIE is devoted to advancing and disseminating knowledge about the many ways human interactions affect the environment. It meets this goal by assisting faculty to create new environmental courses; developing interdisciplinary research initiatives; coordinating efforts among existing departmental programs; supporting speakers and visitors; involving alumni; producing books, articles, reports, conferences, and other outreach activities; and supporting and recognizing outstanding Tufts students.

TIE focuses its activities on environmental research, technology, policy development, and education to improve environmental quality as it relates to human health. Within TIE, the Tufts Climate Initiative (TCI) focuses on taking actions at the university to reduce our emissions of greenhouse gases.

Student research projects play a key role in informing university decisions such as building renovation, equipment selection, and policy development.

**Tufts University Center for Children (TUCC)**

The Tufts University Center for Children (TUCC) is a resource for affiliated faculty with interests in child and family policy. TUCC catalyzes and facilitates interdisciplinary research, service, education, training, and social action to advance the well-being of children, their families and their communities. Through its various activities, TUCC seeks to increase the quality and quantity of research and scholarship on child development, health and policy; heighten public awareness of the needs of children and their families; increase community involvement in meeting the needs of children and families; and influence public opinion and public policy.

**Jonathan M. Tisch College of Citizenship and Public Service (Tisch College)**

Tufts University is explicitly committed to fostering an attitude of “giving back,” including promoting an understanding that active citizen participation is essential to freedom and democracy. The mission of the Jonathan M. Tisch College of Citizenship and Public Service (Tisch College) is to prepare Tufts undergraduate and graduate students for lifetimes of active citizenship, and to make public service an important dimension of their lives and work. Program activities designed to fulfill this mission include faculty and curriculum development, student leadership development, an information and resource clearinghouse, and seed grants for faculty and student initiatives. The Lincoln Filene Center, a component of Tisch College, increases knowledge about citizen action and community building, enhances public-service education and research at Tufts, and informs public decision making. The center acts as a catalyst to connect people and resources in new ways, and to develop new approaches to public problems.

**GRADUATE PROGRAMS**

UEP students focus on public problems in the broad areas of urban and social policy and planning, or environmental policy and planning, as well as on issues linking these various concerns. UEP’s goal is the education of a new generation of leaders, “practical visionaries” who will contribute to the development of more just and sustainable communities.

A key step toward this is making our institutions more responsive to child, adult and ultimately community wellbeing by helping them understand, empathize with and respond to the social, economic and environmental needs of individuals and communities.

We offer two graduate programs in public policy and planning: a master of arts (M.A.) degree in urban and environmental policy and planning which is accredited by the Planning Accreditation Board and a master of public policy (M.P.P.) degree.
Both degrees equip public-spirited individuals for rewarding careers in government, nonprofit organizations, citizen advocacy groups, and the private sector.

UEP has a flexible MA and MPP curriculum built around a set of six core values:

- An appreciation of the inextricable linkages between social, economic and environmental issues and the ability to make policy and planning recommendations accordingly;
- An appreciation of the role of values in policy formation and planning and the ethical/social responsibility of policy and planning professionals to act accordingly;
- An appreciation of the deeply embedded nature of gender, age, race, class, disability, culture and sexual orientation in all aspects of public policy and planning;
- An appreciation of the centrality of spatial, social and environmental justice to all aspects of public policy and planning;
- An appreciation of the need to understand the role of individual and community rights and responsibilities in public policy and planning;
- An appreciation of the need to move society toward the development of sustainable communities where there is a high quality of human life; delivered in a just and equitable manner while respecting the limits of supporting ecosystems.

And, for the MA, a set of competencies based on three areas:

1) Knowledge—upon completion of the MA program, students should have basic familiarity with:

- The evolution, structures and functions of cities and metropolitan regions;
- The relationship between the ‘Market’ and the ‘Polis’ in economics, policy and planning;
- The role(s) of government, governance, citizenship and NGOs;
- The history, theory and processes of both policy making and planning together with implementation procedures and practices;
- The administrative, legal and political aspects of policy and plan-making;
- Areas of specific policy or planning content based knowledge related to your professional interest (s) and an in-depth knowledge of one policy or planning domain through thesis or other terminal project.

2) Skills—upon completion of the MA program, students should have basic skills in the following:

- Critical thinking;
- Individual problem identification and research methodology selection and primary and secondary data gathering and analysis;
- Quantitative analysis, computer proficiency and spatial analysis;
- Written, oral and graphic communication;
- Collaborative problem solving, negotiation and mediation;
- Synthesis and application of policy and planning content-based knowledge from theory into practice;

3) Policy and Planning in Practice—The MA program will provide the following professional opportunities:

- At least 150 hours, supervised, in an organization relevant to your interests;
- Demonstrate through the Internship Agreement and Learning Assessment that your Internship gave opportunity for significant learning in a field relevant to your interests and meets at least one of your career goals;
- Reflections on the role of ethics in professional policy and planning processes, practices and behavior.

**MASTER OF ARTS**

The Master of Arts (M.A.) requires completion of twelve courses plus a thesis for a total of fourteen credits. Each semester-long course at Tufts receives one credit. The program normally takes the equivalent of two years of full-time study, although it is possible to be enrolled in the program on a part-time basis.

**Degree Requirements**

The requirements for the master of arts degree are as follows:

- Five required core courses covering theoretical foundations of policy and planning, and the development of relevant professional skills;
• Race, class, and social welfare policy
• Child and family policy
• Land use planning
• Natural resource management
• Science/technology, ethics, and environmental policy
• Environmental risk
• Corporate responsibility and the environment
• Climate change
• International environmental policy
• Environmental education
• Program evaluation
• Applied research methods
• Planning tools, techniques, and strategies
• Non-profit organization
• Citizen roles in policy and planning

Internship
An internship (minimum 150 hours) is usually completed between the two academic years. Most internships are based in a public or nonprofit agency, and are usually paid. Alternatively, students may elect a research internship, working on a university-based or research institution-based project.

Although faculty provide assistance and advice, students are expected to secure their own internship placements.

Thesis
The thesis requirement provides students the opportunity to become proficient in framing a research question and carrying out an independent investigation on a topic of the student’s choosing. Building on competencies developed through course work, students present a well-reasoned analysis of a significant policy or planning problem. Theses may be technical studies, policy analyses, theoretical papers, research studies, or planning documents.

MASTER OF PUBLIC POLICY
The Master of Public Policy (M.P.P.) is designed for individuals with at least seven years of significant, relevant professional experience, who are interested in expanding their knowledge of public policy within urban, social, and environmental domains—or across these domains, such as programs and policies related to sustainable communities.
This degree program offers students the opportunity to strengthen their critical thinking, policy analysis, and communication skills; improve their professional practice in areas such as mediation, land use planning, or financial management; and establish close professional relationships and networks among faculty, affiliated agencies, and other students. Full-time students may complete this nine-credit degree in one year; part-time enrollment options are also available. The requirements for the M.P.P. are as follows:

Degree Requirements
• Four required core courses;
• Four elective courses in a public policy area;
• Two additional elective courses in policy and planning fields or professional skills;
• A required core curriculum enables students to reflect on their professional practice, examine dominant theories and themes in the public policy literature, and further refine and consolidate their perspectives on their career paths.

The four core courses are:
1) Economics for Planning and Policy Analysis
2) Quantitative Reasoning for Policy and Planning (introductory or intermediate)
3) Reflections on Public Policy Practice (one-half credit, fall, in the first semester of student’s program)
4) Integrative Seminar (one-half credit, spring, in the last semester of the student’s program, or in the semester prior to the completion of no more than two credits).

The M.P.P. seminar is composed of the two half-credit courses. It helps students examine their own professional experiences in the context of prevailing theories about policy and program development, implementation, and evaluation. The M.P.P. seminar is for M.P.P. degree students only. All other courses are taken with students in the M.A. in urban and environmental policy and planning program. Up to two courses may be selected from course offerings in other Tufts departments and schools, as long as they relate to public policy and are approved by the student’s advisor. In addition, with the advisor’s approval, one class at a consortium school may be taken in the second semester. Transfer credits will not be accepted. Students with significant background in economics or statistics may, with faculty approval, waive the relevant required courses and substitute electives of their choosing.

Public Policy Areas
Each student, working closely with his or her academic advisor, identifies an area of public policy interest(s). The student then selects four policy courses that deepen his/her theoretical and practical understanding of policy within their area(s) of interest.

All our courses focus on urban, social and/or environmental policy issues. You can choose from one or more of these areas or you can choose to focus on the intersection(s) between these areas, namely the arena of sustainable development.

Examples of Public Policy Courses
• U.S. Social Welfare Policy;
• Social Policy for Children and Families;
• Race, Class and Public Policy;
• Community Development, Planning and Politics;
• Community Economic Development;
• Real Estate Development and Finance;
• Climate Change Policy, Planning and Action;
• Environmental Law;
• Chemicals, Health and the Environment;
• Water Resources Policy and Planning and Watershed Management;
• Corporate Management of Environmental Issues;
• Developing Sustainable Communities;
• Environmental Justice, Security and Sustainability;
• Nonprofits, States and Markets.

Professional Practice Electives
Students also have opportunities to enroll in courses that enhance their professional practice skills, such as:
• Leadership and Organizational Development;
• Financial Analysis and Management;
• Philanthropy and Fundraising;
• Negotiation, Mediation, and Conflict Resolution;
• Program Evaluation.
Inquiries and requests for application materials for either the M.A. or M.P.P. degree program should be addressed to the Department of Urban and Environmental Policy and Planning, 97 Talbot Avenue, Tufts University, Medford, Massachusetts 02155, or call 617-627-3394. The application deadline for the M.A. program is January 15; the deadline for the M.P.P. program is April 30. Late applications may be considered.

INTERDISCIPLINARY DOCTORATE
The department participates in Tufts’ interdisciplinary doctoral program, which accepts a limited number of Ph.D. candidates (applicants must have completed a master’s degree) who design an individualized program of study. Students interested in this degree should address their inquiries to the Office of Graduate Studies. (See Interdisciplinary Doctorate in this bulletin for program description.)

COMBINED AND COLLABORATIVE DEGREE PROGRAMS
The Department of Urban and Environmental Policy and Planning offers joint master’s degree programs with the Departments of Biology, Child Development, Civil and Environmental Engineering, and Economics. Students complete core requirements in UEP and one of the affiliated departments to receive a single master’s degree (M.A. or M.S.). It is possible to complete joint degree requirements in two years. Interested students should check with individual departments regarding specific program requirements and application procedure. UEP also offers dual degree programs with the Fletcher School of Law and Diplomacy, the Department of Civil and Environmental Engineering in the School of Engineering, the Friedman School of Nutrition Science and Policy, and the Boston College Law School.

Please note: these programs are not available to students in the M.P.P. program.

UEP and Biology
The joint master’s degree in urban and environmental policy and planning/biology responds to the need for biological literacy by professionals working in policy areas. The program is designed for individuals who are interested in understanding the technical side of policy and planning, including the implementation of policy (e.g., regulations), and the formulation of policy (e.g., legislation), and accounting for biological aspects of land-use issues (e.g., working with governmental and nongovernmental conservation and planning organizations). Students have the choice of receiving the M.A. or M.S. degree.

UEP and Child Development
UEP and the Eliot-Pearson Department of Child Development offer a joint master’s degree program in child and family policy. The degree is designed for individuals interested in child and family program development, program evaluation, public and private agency administration and planning, policy-oriented research, child advocacy, and community organizing around child and family issues.

UEP and Civil and Environmental Engineering
UEP students may pursue either a joint- or dual degree program with the Department of Civil and Environmental Engineering in the School of Engineering. Both programs respond to the need for environmental professionals who are skilled in both a technical and policy perspective in the analysis, planning, and implementation of environmental management and health activities. The programs combine policy study skills with more technical training in civil engineering. The joint degree program results in the M.S. degree, while the dual degree program results in both the M.A. and M.S. degrees. The former requires twelve course credits, plus a thesis, while the latter requires seventeen course credits, plus a thesis, and can be completed in five semesters. The following programs within the Department of Civil and Environmental Engineering may be joined with the UEP degree: Environmental Health, and Environmental and Water Resources Engineering.

Please note: these programs are not available to students in the M.P.P. program.

UEP and Economics
Economics and public policy and planning are inextricably intertwined. Public policy issues have motivated some of the classic studies in economics and the tools of economic analysis can be applied to a wide variety of policy and planning questions. The joint-degree program between UEP and the Department of Economics provides students with
an opportunity to explore these long-standing linkages and to develop skills in policy analysis and planning based in economics.

**UEP and the Fletcher School**

The Fletcher School offers a broad program of professional education in international affairs. Its curriculum addresses international law and organization, diplomatic history and international political relations, international economic relations, and international political institutions and systems. UEP and the Fletcher School offer a dual degree program focusing on international environmental policy. This program provides an opportunity for a limited number of highly qualified students to earn both the master of arts degree in urban and environmental policy and planning and the master of arts in law and diplomacy (M.A.L.D.) at the Fletcher School. By combining the two programs, the dual degree can be completed in three instead of four years.

Interested students must submit separate applications to each program indicating a preference for the dual degree. Each school reviews candidates based on its own requirements and criteria. The candidate’s admission to UEP is not affected by the decision of the Fletcher School.

**UEP and the Boston College Law School**

This program is for students interested in exploring the connections between the law and urban and environmental policy and planning. Students receive two degrees—a Master of Arts and a Juris Doctor (M.A.J.D.). The dual degree program recognizes that the fields of law and planning are inexorably linked. Planning (including policy analysis) is a process of guiding future developmental patterns; and the law frames the mechanisms and limits of governments’ control over this process. Planning and law immerse students in broad debates and critical thinking about the environment, human settlements, social and environmental justice, corporate responsibility, and land use. All of these issues are guided by constitutional, equitable, and pragmatic principles.

The M.A./J.D. is offered through a collaboration between the Tufts University Department of Urban and Environmental Policy and Planning (UEP) and the Boston College Law School. There is currently no graduate program in New England which offers the combined strengths of this dual degree program.

During their first year, students choose to take courses either through UEP or the law school exclusively. Students split their courses between the department and the law school in the years that follow. Students are required to meet with the UEP program coordinator and academic advisors from both UEP and the law school to plan a course of study—one which balances each student’s background and interests with the requirements of the program. Advisors at both Schools will collaborate, under the auspices of an advisory committee, to
Certificate Program in Community Environmental Studies

The certificate in community environmental studies provides professional training for careers in the rapidly growing and changing environmental field. The program offers a rich and varied selection of environmental courses in planning, policy, economics, engineering, and science complemented by courses in negotiation, law, and nonprofit management. This program is designed for citizen advocates seeking to promote environmentally sustainable communities, environmental specialists in companies who interact with community leaders, and public agency personnel. (See Community Environmental Studies in this bulletin for description.)

This certificate requires four courses.

CES Core Courses
Select at least one core course from the following:

- UEP 200 Land Use Planning I: Nonregulatory Tools and Techniques (Fall)
- UEP 201 Land Use Planning II (Spring)
- UEP 207 Environmental Law (Fall)
- UEP 221 Climate Change Policy and Planning (Spring)
- UEP 223 Fundamentals of U.S. Agriculture (Fall)
- UEP 279 Water Resources Policy, Planning, and Watershed Management (Fall)

Course descriptions for these core courses can be found on the UEP website.

CES Course Electives
Select up to three skills and environmental policy electives from the following:

- UEP 161A Writing and Public Communication (Summer)
- UEP 173 Transportation Planning (Spring)
- UEP 174A Clean Air and Clean Water Policy (Summer)
- UEP 205 Urban Planning and Design (Fall)
- UEP 222 Biotechnology: Social and Environmental Issues (Spring)
- UEP 230 Negotiation, Mediation, and Conflict Resolution (Fall, Spring, and Summer)
- UEP 232 Introduction to Geographic Information Systems (Fall and Spring)
- UEP 265 Corporate Management of Environmental Issues (Fall)
- UEP 272 Real Estate Development and Finance (Spring)
- UEP 278 Environmental Justice, Security, and Sustainability (Fall)
- UEP 284 Developing Sustainable Communities (Fall)
- UEP 286 Environmental Ethics

ensure that students receive accurate and timely information about how they are to proceed through the dual degree program.

Students may transfer credits toward each degree, allowing them to concentrate their studies and complete the program in four years (as opposed to five, which would be typical if a student were pursuing each degree separately).

Interested students must submit separate applications to each program indicating a preference for the dual degree. Each school reviews candidates based on its own requirements and criteria. The candidate’s admission to UEP is not affected by the decision of the Boston College Law School. For detailed information on the requirements for the J.D., please contact the Boston College Law School, Newton, MA 02459.

http://www.bc.edu/schools/law/home.html

CERTIFICATE PROGRAMS

In addition to the master’s programs, the Department of Urban and Environmental Policy and Planning offers two certificate programs in community sustainability. The certificates in management of community organizations and community environmental studies emphasize participatory strategies for community self-determination and sustainability. These flexible programs enable working adults to gain the vital management and environmental skills necessary to enhance existing careers or to move into new professional work. A third certificate in program evaluation is offered in collaboration with the Department of Child Development, the Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy, and the School of Medicine.

To earn a certificate, students successfully complete four courses for credit. The certificate in program evaluation also requires completion of an applied practicum. Courses for the certificate programs are drawn from the curriculum of the master’s program. It is possible to complete a certificate program in as little as one year or to extend it over several years. The certificate programs are open to students with a bachelor’s degree. For more information, contact the Office of Graduate Studies at 617-627-3395 or visit http://gradstudy.tufts.edu/.
MCO Core Electives
Select up to three skills and urban and social policy electives from the following:

- **UEP 161A** Writing and Public Communication (Summer)
- **UEP 188** Seminar on Government and the Family (Spring)
- **UEP 191B** Philanthropy and Fundraising (Summer)
- **UEP 205** Urban Planning and Design (Fall)
- **UEP 213** Housing Policy (Fall)
- **UEP 215** Legal Frameworks of Social Policy (Spring)
- **UEP 230** Negotiation, Mediation, and Conflict Resolution (Fall, Spring, and Summer)
- **UEP 240** U.S. Social Welfare Policy (Fall)
- **UEP 251** Economics for Planning and Policy Analysis (Fall and Summer)
- **UEP 271** Community Economic Development (Fall)
- **UEP 272** Real Estate Development and Finance (Spring)
- **UEP 282** Social Policy for Children and Families (Fall)
- **UEP 284** Developing Sustainable Communities (Fall)
- **UEP 294B** Local Government Finance (Summer)
- **UEP 294-13** Running Effective Groups: An Interdisciplinary Experience (Spring)

(Student may substitute other Tufts graduate courses, subject to the approval of the certificate advisor.)

Certificate Program in Program Evaluation
Private funders and public agencies are increasingly demanding evaluation as a requirement for funding. Individuals with evaluation training are needed to assist programs, sponsoring agencies, and funders in planning and carrying out evaluations to address their needs for information and analysis. The certificate in program evaluation is designed for midcareer professionals who wish to learn about the design and implementation of effective evaluation strategies. Students learn practical skills that can be put to use in the evaluation of a wide range of social service, public health, community development, and environmental programs. In addition to a bachelor’s degree, applicants are expected to have three to five years of professional experience in a particular field. (See Program Evaluation in this bulletin for description.)

This certificate requires four courses and an applied practicum (format code: UEP = Urban and Environmental Policy and Planning; CD = Child Development, PSY = Psychology; NUTR = Nutrition; SOC = Sociology; OTS: Occupational Therapy; ED = Education; MPH = Public Health).
Courses in statistics, data analysis, and research methods are offered by several departments. Course substitutions can be made with the approval of the certificate faculty advisor.

1. Foundation course:
   Program Evaluation (UEP 256) (also CD 247)
2. One course in applied statistics and data analysis, for example:
   Problems of Research: Statistics (CD 140)
   Advanced Statistics (PSY 107/108)
   Principles of Biostatistics (MPH 205)
   Statistical Methods for Nutrition Research (NUTR 209)
   Nutrition Data Analysis (NUTR 211)
   Quantitative Research Methods (SOC 101)
   Quantitative Reasoning for Policy and Planning (UEP 254)
3. One course in research methods, for example:
   Problems of Research: Methods and Design (CD 142)
   Principles of Epidemiology (MPH 201)
   Methods of Educational Research (ED 271)
   Survey Research in Nutrition (NUTR 210)
   Field Research (SOC 105)
   Research Methods (OTS 210)
4. One elective in your area of interest or expertise: education, child development, nonprofit management, social or environmental policy, nutrition, or public health.
5. Practicum: Undertaken once coursework is completed, the practicum gives you an opportunity to design an evaluation and put into practice data collection and analysis skills.

For more detailed information, please visit the website [http://ase.tufts.edu/uep/](http://ase.tufts.edu/uep/).

### Urban Studies

**FACULTY COORDINATOR:**
Professor Weiping Wu, Urban and Environmental Policy and Planning

The Interdisciplinary Minor in Urban Studies provides students with an opportunity to pursue their love of cities and communities and to study urban issues in depth. Students can select from a rich variety of courses that examine the interplay among the different groups that occupy the urban space, the problems they confront, their struggle for recognition and power, and the forces that shape the physical terrain they inhabit. The Minor may be of interest to students contemplating graduate work in urban planning, environmental policy, public administration, public policy, law, or social work. It also can be an intellectually exciting focus for interdisciplinary exploration, because understanding urban phenomena requires synthesizing knowledge from a broad range of the social sciences and humanities. Five credits with at least one course from at least three different departments are required. In addition to the five credits, a student is required to complete an appropriate project, such as a thesis, an oral presentation, or a performance, which integrates the knowledge and methodologies of the disciplines involved. (See Interdisciplinary Minor Program for details.) Interested students should consult the faculty coordinator, Weiping Wu ([Weiping.Wu@tufts.edu](mailto:Weiping.Wu@tufts.edu)), for more information about specific courses that can be counted toward the Minor. For more detailed information, please visit: [http://cis.tufts.edu/default.aspx](http://cis.tufts.edu/default.aspx).

### Visual and Critical Studies

**Lecturer Diane O’Donoghue**, Chair; Asian art history and archaeology, theories of art and representation

**Lecturer Noit Banai**, History and theory of the avantgarde, 20th century art, post-war art, contemporary art

**Lecturer Hilary Binda**, English Renaissance, critical theory, poetry, gender and sexuality in literature

**Lecturer James Dow**, Photography, history of photography, contemporary art

**Lecturer Eulogio Guzmán**, Art of the ancient Americas, architecture of ancient and colonial Mexico, contemporary Central American art

**Lecturer Tina Wasserman**, Cinema studies, film and media theory, visual culture studies

The Department of Visual and Critical Studies is comprised of Tufts faculty who teach art history, cultural studies, and English courses at the School of the Museum of Fine Arts, Boston, primarily to students in the Tufts/Museum School Bachelor of Fine Arts program. These Tufts academic courses are specifically designed to engage visual thinkers and to encourage students to draw connection between the study of the discipline and their own art making.
The faculty of art historians who teach in this department situate their subject expertise within critical discussions that inform how we come to understand and analyze a diverse body of cultural objects. The department encompasses the English Program, with English faculty that include practicing literary scholars and creative writers. The department also runs the Writing Center, where students can drop in or make appointments to work with faculty on their own essays or creative writing.

UNDERGRADUATE COURSE OFFERINGS
Appealing to the specific interests and investments of Museum School students in the complexities of visuality and language, the art history faculty offer courses that consider art-making as productive of identities at institutions, both within particular cultural and geopolitical spheres (such as Post-War Europe, the Northern Renaissance, Pre-Columbian Americas, or early China) and the histories of media and process, such as film, photography, sculpture, and text-based arts.

The English Program at the School of the Museum of Fine Arts offers a wide variety of courses addressing the roles of literature and writing in a visually oriented culture. Through diverse offerings in U.S., British, and World literatures, creating writing, literary theory, and film, students study literary texts, often in conjunction with visual texts, in a variety of contexts: historical, social, political, theoretical, or philosophical. English at SMFA offers courses for incoming undergraduates, as well as for those working at the most advanced levels.

For more information about the departments, its faculty, or course offerings, please visit http://ase.tufts.edu/visualcriticalstudies.

Water: Systems, Science, and Society

Richard M. Vogel, Director and Cochair; Department of Civil and Environmental Engineering

Timothy Griffin, Cochair; Friedman School of Nutrition Science and Policy

Rusty Russell, Cochair; Urban and Environmental Policy and Planning

PROGRAM DESCRIPTION
The objective of graduate certificate program in Water: Systems, Science and Society (WSSS) is to train a new kind of professional who understands the causes and dynamics of water-related problems from multiple points of view, yet has the skills to be an expert in one discipline. To ensure sufficient depth and expertise in a particular discipline, students in the WSSS program must be accepted by and obtain their graduate degrees from an existing school or department. Tufts schools participating in WSSS include Arts and Sciences, Engineering, Medicine, Veterinary Medicine, the Friedman School of Nutrition Science and Policy, and the Fletcher School of Law and Diplomacy.

In addition, students in the program must:
1. take three elective courses from four broad core areas
2. attend weekly WSSS meetings
3. participate in the planning and execution of the annual WSSS symposium, and
4. complete the requirements for one of the two tracks outlined below.

Track R: Interdisciplinary Water Resources Research
Students are required to undertake a significant interdisciplinary water resources research project, culminating in (1) by the end of year 1, an MS/MA thesis or capstone proposal or a preliminary dissertation proposal, (2) a thesis, directed study or dissertation, (3) a refereed journal article 90% ready for submission by the time of graduation from the WSSS program, and (4) a presentation at the annual WSSS symposium and/or a major national or international conference. Partial funding in support of such a conference presentation will be provided by the WSSS program. Both M.S./M.A. and Ph.D. theses must be interdisciplinary and have committees with faculty members from at least two WSSS participating schools.

Track P: Practicum and Interdisciplinary Professional Experience (IPE)/Internship
Students are required to participate in the WSSS practicum, complete an Interdisciplinary Professional Experience (IPE)/Internship, and present a poster at the annual WSSS symposium.
**WSSS Practicum:** The WSSS Practicum will enable WSSS students to work in a small group on the integrated assessment of a water resources case study. The goal of the practicum is to expose students to the techniques and thought processes of integrated assessment in order to train them as researchers and professionals. The practicum is headed by Rusty Russell of the Urban and Environmental Policy and Planning Department with input from other participating WSSS faculty.

**Internship:** To foster individual student development, a problem-focused, domestic or international field experience with a public- or private-sector organization—the Interdisciplinary Professional Experience (IPE)—is required of WSSS students choosing Track P. The goal is for students to work in an area related to their WSSS research topics and thereby to further integrate training, practice, and research. Students and their faculty mentors, however, may select other IPE placements tailored to the student's interests. Through the IPE—which often takes the form of an internship—students gain professional-level experience and may develop opportunities for future research and subsequent employment. Students may secure their own IPE or seek the advice of WSSS faculty with similar interests. Indeed, WSSS faculty offer an impressive array of potential opportunities in a wide range of international and domestic organizations.

WSSS students conduct interdisciplinary research in four areas where Tufts has well-established research programs:

1. Water, Climate and Environmental Change
2. Water and Public Health
3. Water Pollution and Remediation Science
4. Watershed Management
5. Water, Food and Livelihood Security
6. Water Diplomacy

The WSSS graduate certificate requirements are completed in addition to the student’s degree requirements, but through the use of electives and co-listed courses, the WSSS program usually will not add significant time to a graduate degree program. Upon completion of these activities, students receive a Certificate in Water: Systems, Science, and Society as well as their graduate degree.

**Note:** There occasionally may be modifications to the requirements over time; therefore, please confirm with school coordinators or program cochairs at time of application.

For more information, please contact Richard.Vogel@tufts.edu, 617-627-4260

For more detailed information such as the WSSS handbook, meeting agendas, student and alumni information and many other resources, please visit the website [http://www.tufts.edu/water/](http://www.tufts.edu/water/).

### Women's Studies

**DIRECTOR:**

TBA

**PROGRAM ADMINISTRATOR:**

Andrea Carlino

**CORE FACULTY:**

- Professor Ina Baghdiantz-McCabe, History
- Professor Jane Bernstein, Music
- Professor Virginia Drachman, History
- Professor Lee Edelman, English
- Professor Judith Haber, English Associate
- Professor Isabelle Naginski, Romance Languages
- Professor Susan Ostrander, Sociology
- Professor Laurence Senelick, Drama and Dance
- Professor Kathleen Weiler, Education Associate
- Professor Xueping Zhong, German, Russian, and Asian Languages and Literatures
- Associate Professor Gloria Ascher, German, Russian, and Asian Languages and Literatures
- Associate Professor Paula Aymer, Sociology
- Associate Professor Linda Bamber, English Associate
- Associate Professor Cristelle Baskins, Art and Art History
- Associate Professor Nancy Bauer, Philosophy
- Associate Professor Nina Gerassi-Navarro, Romance Languages
- Associate Professor Sonia Hofkosh, English
- Associate Professor Ikumi Kaminishi, Art and Art History
- Associate Professor Jeanne Penvenne, History
- Associate Professor Sarah Pinto, Anthropology
- Associate Professor Elizabeth Remick, Political Science
- Associate Professor Pearl Robinson, Political Science
- Associate Professor Modhumita Roy, English
- Associate Professor Christina Sharpe, English
- Associate Professor Adriana Zavala, Art and Art History
- Assistant Professor Monica White Ndounou, Drama and Dance
Women's studies is an interdisciplinary field focusing on women in diverse contexts. Women's studies scholarship analyzes the various historical and political circumstances, socioeconomic forces, and cultural representations that shape gendered lives. Women's studies emphasizes the local and global interconnections across categories such as gender, race, ethnicity, class, and sexuality.

Feminist inquiry is a rigorous intellectual enterprise that fundamentally transforms traditional disciplinary assumptions and theories, creates new models for teaching and research, and develops practices for challenging systems of power. Each semester, Women's Studies at Tufts lists at least twenty courses in a range of departments and programs that are feminist in perspective and make use of recent scholarship on women and gender.

UNDERGRADUATE CONCENTRATION REQUIREMENTS

The major in Women's Studies offers students a flexible and focused concentration in the study of women and/or gender across many disciplines. Students pursuing the major take three interdisciplinary courses offered by Women's Studies (72, 190, and 193); two core courses within specific departments that explore the foundational feminist arguments in the disciplines; and five electives (from at least three different departments) that study women and/or gender in the context of particular issues, histories, materials, or cultures. Of the five electives, students choose three to cluster in a topic area that provides the framework for the culminating project in the senior year. The director of Women's Studies advises on topic areas, approves clustered courses, and meets with all students undertaking senior projects. With the director's approval, one internship for academic credit may substitute for one of the electives. All courses must be taken for a letter grade.

INTERDISCIPLINARY MINOR

Students pursuing the interdisciplinary minor in Women's Studies take a total of six courses, including three interdisciplinary courses offered by Women's Studies (72, 190, 193). In addition, students choose three electives (from at least two different departments) that study women and/or gender in specific contexts. The director of Women's Studies advises on course selection to fit each student's interests and to establish a basis for the culminating project in the senior year. The minor allows a focus on women and/or gender to complement a major concentration and provides an interdisciplinary framework for the independent work of the project. All courses must be taken for a letter grade. (See Interdisciplinary Minor Program for details.)

GRADUATE COURSES

Tufts is one of the eight participating institutions in the Graduate Consortium in Women's Studies which offers various interdisciplinary, team-taught courses for credit toward a Tufts graduate degree (with advisor approval). The courses have a Tufts registration number. For more information about the application process and other consortium programs for graduate students, contact the director of Women's Studies, call the consortium at 617-642-3485, or visit http://mit.edu/gcws/.

WOMEN'S STUDIES CURRICULUM

The Women's Studies curriculum at Tufts consists of many courses offered in a wide range of departments each semester.

For more detailed information, please visit the website: http://ase.tufts.edu/womenstudies.

World Literature

Tufts makes available a wide range of courses on foreign literatures in English translation, Anglophone literatures abroad, diaspora literatures and other cross-cultural literary surveys, as well as introductory survey courses of foreign literatures in the original languages. For a full list of such courses, see the information about International Literary and Visual Studies (ILVS) at the following site: http://ase.tufts.edu/grall/ILVS/courses.asp, and the course offerings of the various foreign language and
literature departments: Classics (which comprises Greek and Latin); Drama; German, Russian, and Asian Languages and Literatures (which comprises Arabic, Chinese, German, Hebrew, Japanese, Judaic Studies, and Russian); and Romance Languages (which comprises French, Italian, Portuguese, and Spanish). The nearest equivalent to a major in World Literature is the major in ILVS. Please see the description of that major at the site referred to above. The Department of English and the Department of Drama and Dance also offer majors with a broadly international and cross-cultural orientation. See those departmental websites for details.
Research and Educational Centers

Bioengineering Center
Professor David Kaplan, Director
Dr. Bruce Panilaitis, Program Coordinator
The center is located in the Science and Technology Center, 4 Colby Street. For more information, call 617-627-3607.

Center for Applied Child Development
Lynn Schade, Director
The center is located at 177 College Avenue. For more information, visit http://ase.tufts.edu/cacd_outreach or call 617-627-2892.

Center for Cognitive Studies
University Professor and Austin B. Fletcher Professor of Philosophy Daniel C. Dennett, Codirector
Seth Merrin Chair in the Humanities and Professor of Philosophy Ray Jackendoff, Codirector
The center is located in 111 Miner Hall. For more information, visit http://ase.tufts.edu/cogstud or call 617-627-3297.

Center for Engineering Education and Outreach
Professor Chris Rogers, Director
The Center for Engineering Educational Outreach is located in the lower level of Curtis Hall. For more information, visit www.ceeo.tufts.edu, call 617-627-5684, or e-mail chris.rogers@tufts.edu.

Center for Field Analytical Studies and Technology
Associate Professor Albert Robbat Jr., Director
The center is located in Pearson Hall. For more information, call 617-627-3474 or e-mail albert.robbat@tufts.edu.

Center for Reading and Language Research
Professor Maryanne Wolf, Director
The center is located in Miller Hall. For more information, visit http://ase.tufts.edu/crlr/ or call 617-627-3815.

Center for Regenerative and Developmental Biology
Professor Michael Levin, Director
The center is located at 200 Boston Avenue. For more information, visit http://www.drmichaellevin.org/ or call 617-627-6161.

Center for Science and Mathematics Teaching
Research Professor Ronald Thornton, Director
The center is located at 4 Colby Street in the Science and Technology Center. For more information, visit http://ase.tufts.edu/csmt/ or call 617-627-2825.

Center for South Asian and Indian Ocean Studies
Professor Ayesha Jalal, Director
The center is located in 102 East Hall. For more information, call 617-627-2133 or e-mail ayesha.jalal@tufts.edu.

Fares Center for Eastern Mediterranean Studies
Professor Leila Fawaz, Issam M. Fares Professor of Lebanese and Eastern Mediterranean Studies, Director
The Fares Center is located in the Cabot Intercultural Center, 160 Packard Avenue. For more information, visit http://farescenter.tufts.edu or call 617-627-6560.

Tissue Engineering Resource Center
Professor David Kaplan, Director
Dr. Bruce Panilaitis, Program Coordinator
The center is located at the Sciences and Technology Center, 4 Colby Street. For more information, visit http://ase.tufts.edu/terc or call 617-627-3607.

Alan Shawn Feinstein International Famine Center
Peter Walker, Director
The center has offices at 126 Curtis Street on the Medford campus. For more information, visit www.famine.tufts.edu or call 617-627-3423.

Global Development and Environment Institute (GDAE)
William A. Moomaw, Codirector
Neva Goodwin, Codirector
GDAE is located in Blakeley Hall at the Fletcher School. For more information, visit http://ase.tufts.edu/gdae or call 617-627-3530.
Institute for Applied Research in Youth Development  
Deborah L. Bobek, Managing director  
The center is located in the Lincoln Filene Center. For more information, visit http://ase.tufts.edu/iaryd/ or call 617-627-5558.

Thermal Analysis of Materials Processing Laboratory  
Research Assistant Professor Peter Y. Wong, Director  
For more information, visit www.tufts.edu/as/tampl/, e-mail pwong@tufts.edu, or call 617-627-5162.

Tufts Institute of the Environment (TIE)  
William A. Moomaw, Director  
TIE is located in Miller Hall. For more information, visit www.tufts.edu/tie or call 617-627-3645.

Tufts University Center for Children (TUCC)  
Howard Spivak, M.D., Director  
Lois Wainstock, Associate director  
TUCC is located in the lower level of Carmichael Hall, Room 40. For more information, visit www.tucc.tufts.edu or call 617-627-4375.

WaterSHED Center  
Research Professor Paul Kirshen, Director  
For more information, visit www.tufts.edu/watershed/ or call 617-627-5589.

Wright Center for Science Education  
Research Professor Eric J. Chaisson, Director  
The Wright Center is located in the Science and Technology Center, 4 Colby Street. For more information, call 617-627-5394 or visit www.tufts.edu/as/wright_center/.
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Note: Bold print indicates Tufts degrees
(P) indicates parent

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Faculty

In the following list, names of all professors, associate professors, assistant professors, instructors, and lecturers in the Faculty of Arts, Sciences, and Engineering are arranged alphabetically with degrees, degree date, college attended, and rank as of September 2011.

FULL-TIME FACULTY
Rana Abdul-Aziz, B.A., M.A. (2006), Tufts University, Lecturer in Arabic
Behrouz Abedian, B.S., M.S., Ph.D. (1979), Massachusetts Institute of Technology, Associate Professor of Mechanical Engineering
Daniel M. Abramson, A.B., M.A., Ph.D. (1993), Harvard University, Associate Professor of Art History
Linda M. Abriola, B.S., M.S., M.A., Ph.D. (1983), Yale University, Professor of Music and Dean of Civil and Environmental Engineering
Dany Adams, Ph.D., Research Associate Professor of Biology
James Haley Adler, Ph.D. (2009), University of Colorado at Boulder, Assistant Professor of Mathematics
Shuchin Aeron, B.S., M.S., Ph.D. (2009), Boston University, Assistant Professor of Electrical and Computer Engineering
Mohammed Nurul Afsar, B.S., M.S., Ph.D. (1978), University of London (UK), Professor of Electrical and Computer Engineering
Julian Agyeman, B.Sc., M.A., Ph.D. (1996), University of London, Professor of Urban and Environmental Policy and Planning
Randall K.Q. Akee, A.B., Ph.D. (2006) Harvard University, Assistant Professor of Economics
Astier Almedom, B.A., M.A, D.Phil. (2007), Oxford University, Professor of Practice in International Humanitarian Policy and Public Health, The Fletcher School, and inaugural Fellow, Institute for Global Leadership
Juan M. Alonso, B.A., M.A., Ph.D. (1967), Brown University, Professor of Spanish
Mohammed Alwan, B.A., M.A., Ph.D. (1970), Indiana University, Senior Lecturer in Arabic
Nalini Ambady, Ph.D. (1991), Harvard University, Professor of Psychology
Elizabeth Ammons, B.A., M.A., Ph.D. (1974), University of Illinois, Harriet H. Fay Professor of Literature, Professor of English
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Gloria Joyce Ascher, B.A., M.A., Ph.D. (1966), Yale University, Associate Professor of German
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Dale Peterson, Ph.D., Lecturer in English
Nancy Iffland Petrov, B.A., Lecturer in Russian
Shu Ching Quek, Ph.D., Research Associate Professor of Mechanical Engineering
Sheryl Read, M.B.A., Lecturer, Tufts Gordon Institute
Chance Reichel, B.A., M.A., Lecturer, Tufts Gordon Institute
Henry Rej, Lecturer, Tufts Gordon Institute
Elisabeth Rettelbach, M.A., Lecturer in German
Marion Reynolds, M.A., Lecturer in Child Development and Education
Kristen Ripley, M.Ed., Lecturer in Art Education
Katherine Risse, Ph.D., Lecturer in Spanish
Deborah Rochman, Lecturer in Occupational Therapy
Alan Jay Rom, J.D., Lecturer in Urban and Environmental Policy and Planning
Winifred Rothenberg, Ph.D., Associate Professor of Economics
Kareem Joseph Roustom, M.A., Lecturer in Music
Robert Rubin, J.D., Lecturer in Urban and Environmental Policy and Planning
Mary Beth Ruskai, Ph.D., Research Professor in Electrical and Computer Engineering
Howard Saltsburg, Ph.D., Research Professor of Chemical and Biological Engineering
Stephen N. Sarikas, Ph.D., Lecturer in Occupational Therapy
Cristina Schulze, Ph.D., Lecturer in Spanish
Judah Schwartz, Ph.D., Professor of the Practice in Education
Martha J. Sellers, Ph.D., Assistant Professor of Child Development
Jane Seminara, M.A., Lecturer, Tufts Gordon Institute
Paola Servino, M.A., Lecturer in Italian
Susan Setnik, M.A., Lecturer in Latin
Felice Shapiro, B.S.F.S., Lecturer, Tufts Gordon Institute
Jill Siebeking, Ph.D., Lecturer in Occupational Therapy
Mitchell Silver, Ph.D., Lecturer in Philosophy
Dana Simpson, M.A., Lecturer in Spanish
Sarah Everhart Skeels, M.P.H., Lecturer in Occupational Therapy
Larysa Smirnova, M.A., Lecturer in French
Cynthia Smith, M.S., Lecturer, Tufts Gordon Institute
Jennifer Smith, M.A., Lecturer in Spanish
Priscilla Neff, M.F.A., Lecturer in English
Christiane Soares, A.M., Lecturer in Portuguese
Gregory J. Sonek, Ph.D., Lecturer in Electrical and Computer Engineering
Emese Soos, Ph.D., Lecturer in French
Lynn Stevens, M.A., Lecturer in English
Randall Stiffler, Ph.D., Lecturer in English
Jonathan Strong, B.A., Lecturer in English
Lauren A. Sullivan, Ph.D., Lecturer in Anthropology
Jan Swafford, D.M.A., M.M.A., Lecturer in English
Daniel Swain, B.F.A., Lecturer in Dance
Katrina Swett, Ph.D., Lecturer in Political Science
Joseph F. Swingle, Ph.D., Lecturer in Economics
Andre Switala, M.A., Lecturer in Economics
Anne Taieb, M.A., Lecturer in French
Grace Talusan, M.F.A., Lecturer in English
Cheryl Anne Tano, M.A., Lecturer in Spanish
Nino Testa, B.A., Lecturer in Women’s Studies
Mila Thigpen, M.F.A., Lecturer in Dance
Viola Thomas, M.A., Lecturer in French
Ronald Thornton, Ph.D., Research Professor of Education
Robert P. Trant, Ph.D., Lecturer in Education
David Travis, Lecturer, Tufts Gordon Institute
Scott A. Trudeau, Ph.D., M.A., OTR/L, Senior Lecturer in Occupational Therapy
Kenneth Urban, Ph.D., Lecturer in Drama
Valentina Urbanek, Ph.D., Lecturer in Philosophy
David Valdes Greenwood, M.F.A., Lecturer in English
Laura Vanderberg, Lecturer in Child Development
Robert Viesca, Ph.D., Research Assistant Professor in Civil and Environmental Engineering
Mary Viola, Ph.D., Lecturer, Tufts Gordon Institute
Yvonne Wakeford, Ph.D., Lecturer in Psychology
Marji Erickson Warfield, Ph.D., Lecturer in Urban and Environment Policy and Planning
Moses Warick, Lecturer in Music
James Watson, Ph.D., Lecturer in Spanish
Ted Weesner Jr., M.F.A., Lecturer in English
Anna Wegel-Hajj, M.A., Lecturer in Spanish
Abbott D. Weiss, Ph.D., Lecturer, Tufts Gordon Institute
Virginia G. Weisz, Lecturer in Child Development
Raquel Weitzman, M.A., Lecturer in Spanish
Elizabeth Whitney, Ph.D., Lecturer in Occupational Therapy
Michael Wiklund, M.S., Lecturer in Mechanical Engineering
Carol Wilkinson, Ph.D., Lecturer in English
Inge Williams, B.S., B.F.A., M.B.A., Lecturer, Tufts Gordon Institute
Pamela Winer Goldberg, M.B.A., Program Director, Entrepreneurial Leadership Program
Ewa Winston, MSEM, Lecturer, Tufts Gordon Institute
Jon Witten, J.D., Lecturer in Urban and Environmental Policy and Planning
Peter Y. Wong, Ph.D., Research Associate Professor of Mechanical Engineering
Brian Wright, Lecturer in Education
Tara Young, Lecturer in Education
Souhad Zendah, B.A., Lecturer in Arabic
Michael Zimmerman, Ph.D., Professor of the Practice in Mechanical Engineering

COACH/LECTURERS
Kate Bayard, A.B., Harvard University (2005)
Carla Berube, B.A., University of Connecticut (2002)
Nancy Bigelow, B.S., M.S., Pennsylvania State University (1982)
Gary Caldwell, B.A., Yale University (1990)
John Casey, M.Ed., Tufts University (1983)
Jenna Cherenzia, B.S., M.S., Boston University (2009)
Patricia Cordeiro, B.S., M.S., Arizona School of Health Sciences (2001)
Michael Daly, B.A., M.A.T., Tufts University (1997)
Mark Doughtie, B.S., University of Massachusetts (1978)
Doug Eng, B.S., M.S., Ed.D, Ph.D., Tufts University (1995)
Adam Hoyt, B.A., M.A., Trinity College (2005)
Kenneth W. Legler, B.S., University of Rhode Island (1980)
Christine McDavid, B.S., Boston University (2004)
Kristen Morwick, B.A., Dartmouth College (2000)
Brian Murphy, B.A., M.Ed., Tufts University (1998)
Michael Pimentel, B.S., Northeastern University (1989)
Carol Rappoli, B.S., St. Anselm College (1985)
Joshua Shapiro, B.A., Middlebury College (1997)
Janet Silva, B.S., Northeastern University (1979)
Cora Thompson, B.S., M.Ed., Tufts University (2001)
Tim Troville, B.A., Northeastern University (2001)

EMERITI/AE FACULTY AND STAFF
Gustavo Alfaro, Ph.D., Professor of Romance Languages Emeritus (1978–2001)
Thomas J. Anderson, Jr., Ph.D., Fletcher Professor of Music Emeritus (1972–1990)
Diana Bailey, M.Ed., Ed.D., OTR, Associate Professor of Occupational Therapy Emerita (1986–2009)
Sylvan Barnet, Ph.D., Fletcher Professor of English Literature Emeritus (1954–1992)
Hugo Adam Bedau, Ph.D., Fletcher Professor of Philosophy Emeritus (1966–1999)
Gregory Dionysios Botsaris, Ph.D., Professor of Chemical Engineering Emeritus (1965–2004)
Linfield Brown, Ph.D., Professor of Civil and Environmental Engineering Emeritus (1970–2007)
Rocco John Carzo, M.Ed., Professor of Physical Education, Director of Athletics, and Commencement Marshal Emeritus (1966–1999)
Madeline Caviness, B.A., M.A., Ph.D., Mary Richardson Professor of Art History Emerita (1972–2007)
David Cavitch, Ph.D., Professor of English Emeritus (1972–2001)
Li-Li Ch'en, Ph.D., Professor of Chinese Emerita (1972–1994)
Alan J. Clayton, Ph.D., Professor of French Emeritus (1965–1986)
Benjamin Dane, Ph.D., Professor of Biology Emeritus (1966–2002)
Mark DeVoto, Ph.D., Professor of Music Emeritus (1981–2000)
David Elkind, B.A., Ph.D., Professor of Child Development Emeritus (1978–2009)
Allen Edward Everett, Ph.D., Professor of Physics Emeritus (1960–2003)
Sylvia Gruber Feinburg, Ed.D., Professor of Child Development Emerita (1964–1999)
Mary Ella Feinleib, Ph.D., Professor of Biology Emerita (1965–1995)
Ross S. Feldberg, Ph.D., Associate Professor of Biology Emeritus (1975–2009)
Denis William Fermental, B.S., M.S., Ph.D., Associate Professor of Electrical and Computer Engineering Emeritus (1958–2010)
Ivan Galantic, Ph.D., Professor of Art History Emeritus (1971–1989)
Vlasios Georgian, Ph.D., Associate Professor of Chemistry Emeritus (1960–1990)  

John Schuyler Gibson, Ph.D., Professor of Political Science Emeritus (1963–1995)  

Marilyn Tindall Glater, J.D., Associate Professor of Political Science Emerita (1987–2008)  

Ronald B. Goldner, Ph.D., Professor of Electrical Engineering Emeritus (1964–2005)  


Martin Burgess Green, Ph.D., Harriet H. Fay Professor of Literature Emeritus (1967–1994)  


Robert Greif, Ph.D., Professor of Mechanical Engineering Emeritus (1966–2008)  

N. Bruce Hanes, Ph.D., Professor of Civil Engineering Emeritus (1961–1992)  

Edward Shilling Hodgson, Ph.D., Professor of Biology Emeritus (1968–1989)  

F. Sheppard Holt, Ph.D., Professor of Mathematics Emeritus (1955–1985)  

Margot C. Howe, Ed.D., Professor of Occupational Therapy Emerita (1972–1989)  

Howard Hunter, Ph.D., Professor of Religion Emeritus (1957–1997)  

Karl Heinz Illinger, Ph.D., Associate Professor of Chemistry Emeritus (1960–2004)  

David Isles, Ph.D., Associate Professor of Mathematics Emeritus (1963–2006)  

Alexander Kaczmarsczyk, Ph.D., Professor of Chemistry Emeritus (1968–1992)  

Donald W. Klein, Ph.D., Professor of Political Science Emeritus (1973–1996)  

Ernest Donald Klema, Ph.D., Professor of Engineering Science Emeritus (1968–1986)  

Bobbie M. Knable, B.Mus., Dean of Students Emerita (1980–1999)  

John Gene Kreifeldt, Ph.D., Professor of Mechanical Engineering Emeritus (1969–2001)  

David Krumme, Ph.D., Associate Professor of Computer Science Emeritus (1977–2004)  


Alan Louis Lebowitz, Ph.D., Professor of English Emeritus (1964)  

George F. Leger, Ph.D., Professor of Physics Emeritus (1963–2003)  

Eva Claudia Kaiser Lenoir, B.A., M.A., Ph.D., Associate Professor of Romance Languages Emerita (1979–2009)  

Martine Astier Loutfi, D. ès L., Professor of French Emerita (1972–1998)  

George John Markopoulos, A.B., A.M., Ph.D., Professor of History Emeritus (1961)  

Kathryn A. McCarthy, Ph.D., Professor of Physics Emerita (1945–1993)  


Nancy Stafford Milburn, Ph.D., Professor of Biology Emerita (1958–1998)  

Richard Henry Milburn, Ph.D., John Wade Professor of Physics Emeritus (1961–1998)  

George Saltonstall Mumford, Ph.D., Professor of Astronomy Emeritus (1955–1997)  

Alice Lucille Palubinskas, Ph.D., Professor of Psychology Emerita (1952–1990)  

Aubrey Parkman, Ph.D., Professor of History Emeritus (1953–1980)  

Benjamin Perlman, B.S., M.S., Ph.D., Professor of Mechanical Engineering Emeritus (1967–2007)  

John Oliver Perry, Ph.D., Goldthwaite Professor of Rhetoric Emeritus (1964–1989)  


John Duncan Powell, Ph.D., Associate Professor of Political Science Emeritus (1968–1991)  

Georgette Vabre Pradal, D. ès L., Professor of Romance Languages Emerita (1962–1986)  


Robert L. Reuss, Ph.D., Associate Professor of Geology Emeritus (1969–2009)  


Philip Bowen Sampson, Ph.D., Moses Hunt Professor of Psychology Emeritus (1955–1992)  

James William Schlesinger, Ph.D., Associate Professor of Mathematics Emeritus (1964–2000)  

Analúcia Dias Schliemann, B.A., Ph.D., Professor of Education Emerita (1994–2010)  

Jacob Schneps, Ph.D., Vannevar Bush Professor of Physics Emeritus (1956–2011)  

Bradbury Seasholes, Ph.D., Associate Professor of Political Science Emeritus (1963–1995)  

Lynda Norene Shaffer, Ph.D., Professor of History Emerita (1972–2002)  

Yaacov Shapira, Ph.D., Professor of Physics Emeritus (1987–2007)  

Eli Charles Siegel, A.B., Ph.D., Professor of Biology Emeritus (1968–2010)
SAUL ABRAHAM SLAPIKOFF, Ph.D., Associate Professor of Biology and American Studies Emeritus (1966–1998)

DAVID A. SLOANE, B.A., M.A., Ph.D., Associate Professor of Russian Emeritus (1979–2011)

HOWARD MITCHELL SOLOMON, Ph.D., Professor of History Emeritus (1971–2003)

G. ROBERT STANGE, Ph.D., Harriet H. Fay Professor of English Literature Emeritus (1967–1984)

RUDOLF FRANCIS STORCH, Ph.D., Associate Professor of English Emeritus (1965–1988)

MARY ANN STURTEVANT, M.Ed., Professor of Physical Education Emerita (1962–1994)

LEILA ALINE SUSSMAN, Ph.D., Professor of Sociology Emerita (1966–1992)

SAMUEL SUTCLIFFE, Ph.D., Associate Professor of Civil and Environmental Engineering Emeritus (1964–1994)

SARAH MEIKLEJOHN TERRY, Ph.D., Associate Professor of Political Science Emerita (1978–2002)

JACK ROBERT TESSMAN, Ph.D., Professor of Physics Emeritus (1955–1986)

ELIZABETH ANH TOUPIN, M.A., Associate Dean of Undergraduate Education Emerita (1968–1994)

ARTHUR UHLIR, JR., Ph.D., Professor of Electrical Engineering Emeritus (1948–1994)

ALBERT ULLMAN, Ph.D., Professor of Sociology Emeritus (1946–1983)

VO VAN TOI, Ph.D., Associate Professor of Biomedical Engineering Emeritus (1984–2009)

KENNETH AUGUSTUS VAN WORMER, JR., Sc.D., Professor of Chemical Engineering Emeritus (1954–2007)

JUDITH WECHSLER, Ph.D., Professor of Art History Emerita (1989–2010)

JOHN C. WELLS, Ph.D., Professor of German Emeritus (1947–1983)

BARBARA EHRICH WHITE, Ph.D., Adjunct Professor of Art History Emerita (1965–2002)

ARTHUR W. WINSTON, Ph.D., Professor of the Practice Emeritus, Tufts Gordon Institute

STEPHEN S. WINTER, Ph.D., Professor of Education Emeritus (1971–1991)

MARY FRANCES WRIGHT, B.S., M.Ed., Associate Professor of Physical Education Emerita (1945–1987)

SCHOOL OF THE MUSEUM OF FINE ARTS

Administration

DEBORAH DLUHY, B.A., Ph.D., Dean of the School, Deputy Director of Education

SUZAN LUSH, B.A., M.Ed., Associate Dean of Academic Affairs

DAVID BROWN, B.F.A., M.F.A., Associate Dean of Academic Affairs

PATRICK CARTER, B.F.A., M.F.A., Coordinator, Tufts Studio Courses

ARTS, SCIENCES, AND ENGINEERING LIBRARIANS

MIRIAM H. ALLMAN, Associate Librarian, Science Bibliographer

CHRISTOPHER BARBOUR, Associate Librarian, Humanities Bibliographer

CHAO CHEN, Associate Librarian, Research and Instruction

ANNAH JONES, Affiliate Librarian, Research and Instruction

MARSHA REIK, Librarian, Research and Instruction and Coordinator, Government Documents

ALEX MAY, Affiliate Librarian, Technical Services

ALICIA MORRIS, Associate Librarian, Head of Technical Services

MARSHA S. PAISTE, Associate Librarian, Technical Services

REGINA RABOIN, Librarian, Research and Instruction and Coordinator, Data Management Services

CONSTANCE REIK, Librarian, Research and Instruction and Coordinator, Government Documents

MICHAEL ROGAN, Librarian, Music Librarian

BETH ROHLOFF, Associate Librarian, Research and Instruction and Coordinator, First Year Library Instruction Program

LAURIE SABOL, Librarian, Research and Instruction and Coordinator, Library Instruction Program

EVAN SIMPSON, Assistant Librarian, Research and Instruction

CHRISTOPHER STROUBER, Associate Librarian, Research and Instruction and Coordinator, Instructional Design

KAREN VAGTS, Assistant Librarian, Research and Instruction and Coordinator, Citation Tools

LAURA R. WALTERS, Associate Director for Teaching, Research, and Information Resources

LAURA WOOD, Librarian, Director, Tisch Library
College of Liberal Arts and Jackson College
The College of Liberal Arts and Jackson College have a coordinate relationship and together offer courses of study leading to the degrees of bachelor of arts and bachelor of science. From the student's point of view the two colleges are coeducational and indistinguishable. All references to the College of Liberal Arts in this bulletin are to these two combined colleges.

School of Engineering
The School of Engineering offers undergraduate and graduate degrees in several areas of engineering and computer science. The school offers courses leading to degrees of bachelor of science, master of science, master of engineering, master of science in engineering management, and doctor of philosophy. There are also combined programs with the School of Arts and Sciences, the School of Medicine, the School of Dental Medicine, the Fletcher School of Law and Diplomacy, and the Gordon Institute.

Graduate School of Arts and Sciences
The Graduate School of Arts and Sciences offers programs of study leading to the degrees of master of arts, master of science, master of fine arts, master of arts in teaching, master of public policy, educational specialist, doctor of philosophy, and doctor of occupational therapy.

College of Special Studies
The College of Special Studies, in conjunction with the School of the Museum of Fine Arts, Boston, offers courses of study leading to the degree of bachelor of fine arts. The college also offers continuing education programs in liberal arts and engineering fields through the Office of Graduate Studies.

ACCREDITATION OF TUFTS UNIVERSITY
A privately endowed New England institution founded in 1852.

Faculty of Arts, Sciences, and Engineering
Colleges of Liberal Arts and Jackson, Graduate School of Arts and Sciences, and College of Special Studies: New England Association of Schools and Colleges November 2003

School of Engineering
ABET, Inc.
July 2006

Boston School of Occupational Therapy
Professional Entry Level Occupational Therapy Program: Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA)
August 2005

The Fletcher School of Law and Diplomacy
New England Association of Schools and Colleges November 2003

School of Dental Medicine
Commission on Dental Accreditation of the American Dental Association
July 2008

School of Medicine
Liaison Committee on Medical Education of the American Medical Association and the Association of American Medical Colleges
June 2006

Graduate Programs in Public Health:
Council on Education for Public Health
November 2009

Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy
New England Association of Schools and Colleges November 2003

Sackler School of Graduate Biomedical Sciences
New England Association of Schools and Colleges November 2003

Cummings School of Veterinary Medicine
American Veterinary Medical Association March 2005
Scholarship Funds

University scholarship funds available to students in the College of Liberal Arts, Jackson College, and the School of Engineering are listed in this section. The endowment of the university’s scholarship funds has been invested and the income is used to provide financial aid to students as described in the financial aid section. Scholarship funds intended solely for Jackson College are preceded by an asterisk.

All of these funds are awarded based on financial need and the recipients are chosen by the financial aid office. No separate application is necessary.

The Alireza Family International Scholarship, established in 2000 to provide scholarships for highly qualified Muslim students who need financial assistance to be able to enroll at Tufts.

The Alice Harrison Allen Endowed Scholarship, established in 2008, in support of financial aid for Tufts undergraduate students in the School of Arts and Sciences.

The Lizzie P. Allen Scholarship, founded in 1900 by Lizzie P. Allen, of Derby Line, Vermont.

The Alpha Sigma Phi Fraternity Fund, founded in 1981. Preference is given to descendants of alumni who were members of Alpha Sigma Phi at Tufts.

The Alfred E. Anderson Scholarship, established in 2002 to provide scholarship awards to United States citizens.

The Anderson Scholarship, founded in 1890 by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.


The Gilbert A. and Robena J. Andrew Scholarship Fund, established in 1985 by the estate of Dr. Norman W. Andrew in honor of his parents to aid students in the field of premedical studies.

The Norman W. Andrew Scholarship Fund, established in 1985 by the estate of Norman W. Andrew to aid students in the field of biology.

The Eileen Fox Aptom, J90 and Lowell Aptom Endowed Scholarship, established in 2011 in the School of Arts and Sciences, to help strengthen and support Tufts University’s progress to become a need-blind institution.

The Jesse Moses Aronson Scholarship, established in 1951 by Jesse Moses Aronson of the Class of 1918, to be awarded each year to an outstanding applicant for admission to the School of Engineering who needs financial help to attend college.

*The Association of Tufts Alumnae, Inc. Scholarship, established in 1957 for an annual scholarship to be awarded to a Jackson student who has completed one year successfully and is selected by a university committee, with the approval of the dean of Jackson College.

The Jack and Myrtle Atlas Scholarship, established in 1987 to provide financial aid to needy undergraduates, with preference to students from California.

The Eugene Averell and Elizabeth Harlow Averell Scholarship, established in 1952 by provision in the will of Eugene Averell of the Class of 1895, the income to be paid annually to a meritorious student.

The Cyrus V. Bacon and Ada B.W. Bacon Scholarship, founded in 1915 by Mrs. Ada B.W. Bacon, of Hingham, Massachusetts.

The Bacow/Gordon Endowed Scholarship Fund was established in 2011 by Michael S. Gordon, A87 and Christina Gordon, in honor of Lawrence S. Bacow and Adele Fleet Bacow. This scholarship recognizes the visionary leadership President Bacow provided Tufts between 2001 and 2011 and supports his goal of removing economic obstacles to talented students seeking a college education.

The Mitchell and Ruth Bacow Endowed Scholarship Fund was established in 2003 as part of the Pritzker Challenge to benefit outstanding undergraduate students and to increase the diversity of the student body.

The Crosby F. Baker Memorial Scholarship, established in 1955 by colleagues, friends, former students, and family in memory of Crosby F. Baker of the Class of 1910, member of the faculty from 1900 to 1954.

The Balfour Scholarship Fund, established in 1989 by a generous grant from the L. G. Balfour Foundation to aid talented minority students in need of financial assistance.

The George Stevens Ballard Scholarship, founded in 1910 by Caroline D. M. Ballard, of Augusta, Maine.

The Almon Ballou, Carolyn Clark Scholarship, established in 1954 by Carolyn Clark Bigelow of the Class of 1900 in memory of her grandfather, Almon Ballou.

The Hosea Ballou II Memorial Scholarship, founded in 1891 by Mrs. Mary T. Goddard, of Newton, Massachusetts.

The Latimer W. Ballou Scholarship, founded in 1898 by Latimer W. Ballou, of Woonsocket, Rhode Island.

The John and Staci Barber Endowed Scholarship, established in 2008, to support scholarships within the University and to increase the diversity of the Tufts undergraduate student body.

The Barnard Scholarships, founded in 1897 by Mrs. Caroline M. Barnard, of Everett, Massachusetts.

The John K. and Margaret G. Baronian Scholarship was established in 1977 by John K. Baronian, A50, in memory of his immigrant parents, survivors of the Armenian Genocide.
of 1915, who provided the inspiration for his pursuit of education. It was with the desire to help others to pursue their educational goals that this memorial scholarship was given.

The Esther and Philip Barnet Endowed Scholarship Fund was established in 2011 by Dr. Sylvan Barnet, former Tufts professor, in honor of his parents. The scholarship benefits undergraduates in the School of Arts & Sciences.

The William L. Bradley and Clara M. Pizzarello Scholarship, established in 2011 in memory of Dean Grant Curtis to benefit undergraduates in the School of Arts and Sciences.

The Andrea Caponigro Berthel Scholarship, established in 1990 by the estate of John Twiss Blake to assist students in the School of Engineering.

The John Twiss Blake Fund, established in 1990 by the estate of John Twiss Blake to assist students in the School of Engineering.

The Newman Peter and Genevieve Blane Birk Scholarship, for worthy, deserving, and able students in the College of Liberal Arts and Jackson. Founded in 1984 in memory of two Braker Fellows who became distinguished professors of English at Tufts.

The Dr. Karl T. Benedict Sr. and Daisy Benedict Scholarship, established in 2007, to provide financial aid to achieve the educational benefits of diversity in the school of Arts and Sciences.

The Margaret Helen Bond Scholarship, established in 1933 for deserving Jackson students.

The Elizabeth Warren Bond Scholarship Fund, established in 1933 for deserving Jackson students.

The Charles and Fannie A. Miner Booth Scholarship, established in 1900 by Charles Booth, of Springfield, Vermont.

The Joseph A. Boccino Boston Post Society of Military Engineers Scholarship, established in 2007 to assist in finding the education of a student residing in Massachusetts, Northeastern Connecticut, Northern Rhode Island or Southern New Hampshire, enrolled in the civil or environmental engineering program.

The Estelle and Fredros Berenson Scholarship, awarded to a student entering the College of Liberal Arts and Jackson who has financial need, and who holds the promise of superior achievement as an undergraduate.

The Beelzebub Silver Anniversary Scholarship Fund, established in 1988 by the Beelzebub Alumni Association to provide scholarship to needy undergraduates who are members of the Beelzebubs.

The Rose Bendetson Memorial Scholarship Fund. This fund has been established by Mr. and Mrs. Norris Bendetson as a memorial to the mother of Norris Bendetson, A'41. The gift is to be used for needy and deserving students, with preference given to those who are residents of Haverhill, Massachusetts.

The Bendheim Family Scholarship, founded in 1985 by the family of Thomas L. Bendheim, A'85, of Scarsdale, New York, to enrich the diversity of the student body in the College of Liberal Arts and Jackson by supporting a student of high scholastic standing and limited means, with preference to students from the five boroughs of New York City.

The Bendheim Family Study Abroad Scholarship, established in 1999 to provide financial support to Tufts students studying abroad.

The Andrea Caponigro Berthel Scholarship, established in 1990 by friends and family of Andrea Caponigro Berthel, a former member of the Tufts University trustees’ office. This is the first scholarship in Tufts’ history to be named in honor of a staff member. The income from this fund will be awarded annually to two deserving students who are graduates of Medford and Malden high schools. The scholarship is to be based on merit as well as need.

Ronald Louis Blackburn, Jr., A85 Scholarship Fund, established in 1986 in memory of Ronald Blackburn to provide financial assistance to African-American students.

Selection of the recipients will be based on record of achievement, potential for leadership, and demonstrated financial need.
The Ellen F. Bragg Scholarship Fund, founded in 1928 to provide scholarships for students in the College of Letters showing the greatest intellectual and moral excellence.


The Brandes Family Endowed Scholarship, established in 2008, to give deserving students an opportunity to attend Tufts University.

The Dr. and Mrs. William F. Brennan and Family Scholarship, established in 2002 to provide aid to worthy and promising undergraduate students who are determined to be in need of scholarship funds.

The Ron Brinn Scholarship Fund, established in 1999 in honor of Ron Brinn, A’58, Tufts Director of Alumni Relations for sixteen years, to provide financial aid to needy students of the College of Liberal Arts and Jackson and the School of Engineering.

Budd Family Scholarship, established in 1996 by Edward H. Budd, A’55, and his family, to aid junior and seniors with a GPA of 3.0 or better who have demonstrated involvement in and dedication to enriching campus life at Tufts.

The Wellington Burnham Fund Scholarships, created by a bequest from Wellington Burnham of the Class of 1931. The Edith Linwood Bush Scholarship, established during the Second Century Fund campaign by classmates, former students, and friends in honor of Edith Linwood Bush of the Class of 1903, member of the faculty from 1920 to 1952, and dean of Jackson College from 1925 to 1952.

The Richard Perry Bush Scholarships, founded in 1910 by Mrs. Caroline M. Barnard, of Everett, Massachusetts.

The Francis Buttrick Fund for Scholarships, preferably for men from Waltham, Massachusetts.

The Godfrey Lowell Cabot Scholarship, established in 1951 by the Cabot Carbon Company in honor of Godfrey Lowell Cabot, the income to be used as a yearly scholarship to a deserving student of the School of Engineering.

The Cabot Corporation Scholarship Fund, established in 1955 by Godfrey L. Cabot, Inc., of Boston, the income to be used for scholarship aid for deserving students in any school or department of the university. In making the awards, preference is to be given to an otherwise qualified son or daughter of an employee of Godfrey L. Cabot, Inc., and its subsidiary companies.

The Calef Permanent Fund, given by Ira C. Calef in 1917 to provide scholarships for young men or women.

The Callahan-Lee Scholarship Fund, established in 1993 to provide scholarships to undergraduate students in need of financial aid with preference given to students from Swampscott and Gardner, Massachusetts, and Windham, New Hampshire.

The Callahan-Lee-Long Endowed Scholarship Fund was established with a gift from the estate of Mr. John T. Lee, Jr., A50.

The Jeanne A. Carpenter Memorial Scholarship, established in 2007 in memory of Jeanne A. Carpenter, J’74, to further the University's efforts to create an intentional, intellectual and broadly diverse community of scholars.

The Caserta Family Scholarship, established in 2007, to provide financial aid to a female student connected with the Class of 1962, a female student for whom elementary education is the focus of her studies, or a female student who is majoring in music or working towards a music degree.

The John A. Cataldo Scholarship, established in 1989 by Mr. Cataldo, E’46, to provide a full-tuition scholarship to be awarded annually to one or two meritorious students in the Department of Civil and Environmental Engineering.

The Lucille Cesari, J’S2, Endowed Scholarship, established in 2000 to provide scholarships to Tufts undergraduate students with financial need.

The Annie, Leon, and Madeline Chalfen Fund, endowed in 1963 for undergraduate scholarships.


The Ralph Stillman Charles, Jr., Scholarship, established in 1960 by Ralph S. Charles of the Class of 1923 and Mary Grant Charles, Jackson Class of 1920, in memory of their eldest son (1924–1934), for the benefit of any deserving students in any of the three colleges—Liberal Arts, Engineering, or Jackson—at the discretion of the college authorities.

The Kathryn Cassell Chenault 2010 Scholarship Fund, established in 2010, to support undergraduate scholarships that will help achieve the educational benefits of diversity at Tufts. Chenault Scholarships will replace the loan component of the recipients’ financial aid package.

The Kathryn Cassell Chenault J’77 Scholarship was established in 2002 to help attract, retain, and prepare a diverse student body who will make important leadership contributions to Tufts and to our global community. The Chenault Scholarship is part of the Jay Pritzker family of scholarships.

The Joseph R. Churchill and Anna Quincy Churchill Scholarship Funds, established in 1971 under the will of Mary C. Churchill to honor her husband and her daughter, Dr. Anna Quincy Churchill, M’17, Assistant Professor of Anatomy Emerita, to provide scholarships to students of biology (preferably botany).
The Charles P. Ciaffone and Lloyd W. Pote Scholarship, established in 1982 by Charles Ciaffone of the Class of 1941 and Lloyd Pote of the Class of 1937, the owners, and other employees of CPC Engineering of Sturbridge, Massachusetts. The income from this fund is to be awarded yearly to a deserving engineering student as determined by the faculty of the School of Engineering.

The Centennial Class of 1952 Endowed Scholarship, established in 2004, to be awarded to an undergraduate student, man or woman, from the School of Arts and Sciences or the School of Engineering. Recipients should meet the following criteria: commitment to community service, high academic standing, and demonstrated need. It is the hope of the Centennial Class of 1952 that recipients will always be loyal to their alma mater and will respond to the needs of the university by giving back in time and substance.

The Charles L. Clapp Scholarship, established in 2006, to provide financial aid to a student in the junior class who demonstrates superior academic achievement in the field of government or politics.

The Andrew J. Clark Memorial Scholarship, founded in 1891 by Mrs. Abbie B. Clark, of Orange, Massachusetts.

The Class of 1904 Scholarships, established in 1925 by the women of the Class of 1904 to provide financial aid to deserving undergraduate students.

*The Class of 1913 Women’s Memorial Scholarship Fund, established in 1925 by the women of the Class of 1913 to be used for Jackson undergraduates who need financial assistance at a time of emergency and need.

The Class of 1919 Scholarship, established at the fiftieth reunion of the Class of 1919 in honor of Dean George S. Miller, A’06. The income from this fund is to be awarded annually to an undergraduate in the College of Liberal Arts and Jackson or the School of Engineering in accordance with Tufts’s student aid policies.

The Class of 1920 Scholarship Fund, established by the members of the Class of 1920, Liberal Arts, Engineering, and Jackson College, on the occasion of the fiftieth anniversary of their graduation from Tufts. The fund aids deserving undergraduates with demonstrated financial need, as determined by the university’s financial aid office. The terms of the Class of 1920 Scholarship Fund stipulate that a woman undergraduate must be among the recipients of the fund’s benefaction not less than once every three years.

The Class of 1923 Scholarship Fund, to be awarded as directed by officers of the class.

The Class of 1926 Scholarship, founded in 1951 by the men and women of the Class of 1926, as their twenty-fifth reunion gift to the college, to be awarded in rotation to students in the College of Liberal Arts one year, Jackson College the next year, and the School of Engineering the third year.

The Class of 1928 Scholarship, founded in 1955 by the men and women of the Class of 1928, the income to be awarded to deserving students in Tufts College or Jackson College.

The Class of 1933 Scholarship Fund, established in 1990 by members of the Class of 1933 to provide scholarship funds for future students.

The Class of 1935 Scholarship, established in 1996 by members of the Class of 1935 to provide financial aid to deserving undergraduate students.

The Class of 1939 Memorial Scholarship, established in 1948 by the men and women of the class in memory of their classmates who gave their lives in World War II.

The Class of 1940 Memorial Scholarship, established in 1956 by the men and women of the Class of 1940, the income to be awarded on the joint bases of merit and need to undergraduate students, preference being given to descendants of the Class of 1940 who are otherwise qualified.

The Class of 1943 Scholarship, established in 1996 by members of the Class of 1943 to provide scholarship aid for future Tufts students.

The Class of 1944 Scholarship, established in 2000 by men and women of the Class of 1944 to be awarded annually to an undergraduate in the College of Liberal Arts, Jackson College, or the School of Engineering on the basis of need and merit as shown by outstanding scholarship and qualities of leadership in student and community activities. Preference is given to descendants of the Class of 1944 or other legacies whenever possible.

The Class of 1947 Victor Prather Scholarship Fund, established by the Class of 1947 on the occasion of their twenty-fifth reunion to memorialize a respected friend and classmate. Victor A. Prather, Jr., A’47, M’52, was a flight surgeon assigned to aviation and space medicine research when he lost his life at the end of a high-altitude flight in a strato-lab balloon designed for space equipment testing. He was a scholar devoted to the advancement of knowledge, and he was a leader uncompromising in his ideals. Financial assistance is awarded to students who meet the university’s criteria for need and who demonstrate in their studies the same enthusiasm for learning that Victor Prather did in his lifetime.
The Class of 1952 Endowed Scholarship, established in 2004, to be awarded to an undergraduate student, man or woman, from the School of Arts and Sciences or the School of Engineering. Recipients should meet the following criteria: commitment to community service, high academic standing, and demonstrated financial need. It is the hope of the Centennial Class of 1952 that recipients will always be loyal to their alma mater and will respond to the needs of the university by giving back in time and substance.

The Class of 1957 Scholarship, established in 2002 to be awarded to a Tufts undergraduate with good moral character, community service experience, high academic standing, and demonstrated financial need.

The Class of 1958 Scholarship Fund, established in 2003 for the benefit of Tufts students of the Faculty of Arts and Sciences.

The Class of 1959 Scholarship, established in 1984 for the benefit of future generations of Tufts students. This special endowment fund represented one of the major gifts made to Tufts by members of the Class of 1959 on the occasion of their twenty-fifth reunion, and it has been substantially increased by classmates on a continuing basis over the years thereafter. Income from this fund is to be awarded annually on a combined basis of merit and need to one or more deserving undergraduate students in accordance with Tufts financial aid policies, with preference to be given to descendents of the Class of 1959 who are otherwise deemed to be fully qualified.

The Class of 1960 Scholarship, established by members of the Tufts Class of 1960 to provide aid to a deserving student who is an undergraduate.

The Class of 1961 Scholarship, established in 2001 by members of the Tufts Class of 1961 to provide financial aid to worthy and promising students with financial need, with preference to students who have demonstrated service to the community.

The Class of 1962 Scholarship, established in 1962, to provide scholarships to undergraduate students in the Faculty of Arts and Sciences. First preference is given to students who are direct descendents of members of the Class of 1962.

The Class of 1963 Scholarship Fund, established in 2003 in honor of the Class of 1963 and in memory of those who are no longer with us, will be awarded to an undergraduate student who is of good character, with proven academic achievement, a commitment to active citizenship, and demonstrated financial need. The Class of 1963 is especially committed to helping individuals who have overcome significant obstacles in order to attend Tufts University. It is their hope that the recipients of this scholarship will form lifelong connection with the university and through their service and support become role models for others.

The Class of 2000 Scholarship, established in 2000 by members of the Class of 2000 to provide scholarships to Tufts undergraduate students with financial need.

The Class of 2002 Scholarship, established in 2008, to provide scholarships to be awarded to one or more worthy and promising student who is determined to be in need of scholarship funds.

The Allan Clemow Scholarship, established in 2007 in honor of Allan Clemow E’65, the Director of Admissions at Tufts University, to support scholarships in the School of Engineering with preference towards students in the Entrepreneurial Leadership Program

The Henry E. Cobb Scholarship, founded in 1891 by Henry E. Cobb, of Boston.

The Lloyd H. and Ruth M. Coffin Scholarship, established in 1952 by Mr. and Mrs. Lloyd H. Coffin, of Marblehead, Massachusetts.

The Monte Cohen Scholarship Fund, established in 1972 in honor and memory of industrialist Monte Cohen, of West Newton, Massachusetts, by his son Leon H. Cohen of the Liberal Arts Class of 1948 and other members of the family. The income each year is distributed to an undergraduate student deemed worthy of such aid by the financial aid office.

The Ricky and Peter Cohen Family Scholarship Fund, established in 2003 as part of the Pritzker Challenge to be used to help Tufts attract, retain, and prepare talented African American, Hispanic American, and Native American students who will make important contributions to Tufts and to our global community.

The Sarah Rebecca and Myer Cohen Memorial Scholarship, established in 1951 in memory of Sarah Rebecca and Myer Cohen by Edward I. Cohen of the Class of 1919, his daughters Sandra and Jacquelyn Cohen, and James Cohen of the Class of 1921.

The Harold E. Collins Scholarship Fund, established by the will of Harold E. Collins, A’17, to assist needy and worthy students.

The Sherwood Collins Scholarship Fund, established in 1990 by an anonymous donor. Awarded to graduate students in drama.

The Conti-Dicken Family Scholarship Fund, established in 2004 to be awarded with preference to female students at Jackson College with limited means who possess high academic potential and a demonstrated commitment to achieving scholastic excellence in the study of arts and sciences.
The Katherine E. Coogan Scholarship, established in 1994 by Ruth E. Coogan in memory of her daughter, Katherine E. Coogan, Class of 1964, to be used for scholarships in economics for native-born Americans.

The Davis Cook Scholarship, founded in 1904 by Davis Cook, of Cumberland, Rhode Island.

The James M. and Emily Cook Scholarship, founded in 1903 by Henrietta J. States, of Boston.

The William Oscar Cornell Scholarship, founded in 1890 by William Oscar Cornell, of Providence, Rhode Island.

Cornfeld Scholars Program, established in 1989 by Dr. Robert M. Cornfeld, D’55, to provide financial assistance to undergraduate students who show exceptional promise to become future biomedical researchers.

The Sanda Countway Scholarship Fund, established by bequest of Sanda Countway, WA 1904. The income from this fund is to be used to provide financial assistance to deserving undergraduate students in Jackson College, the College of Liberal Arts, and/or the School of Engineering of Tufts University.

The Cousens Scholarship, founded in 1891 by John E. Cousens, of Brookline, Massachusetts, in the name of John E. and Sara C. Cousens.

The Howard E. Cousins Scholarship, established as a bequest in 1966 by the late Howard E. Cousins, of Arlington, Massachusetts, member of the College of Engineering, Class of 1909. The income from the invested principal shall be used to provide financial aid to students enrolled in the School of Engineering and qualifying for such aid, with preference to be given to residents of Salem and Arlington, Massachusetts.

The Stephen and Bessie Cowey Scholarship, established in 1990 by Thelma Cowey Swain, J’31, to honor her parents and to provide lasting assistance for Tufts students from the state of Maine.

The Annie L. Cox Scholarship Fund, established in 1946.

The George Howland Cox Scholarship, established in 1949 for the benefit of students of high scholastic standing who are in need of financial aid.

The Reverend Austin Crowe Scholarship Fund, established in 1987 in memory of Austin Crowe (brother of Blanche Haslam and father of Austin Crowe, Jr., A’61) to provide funds to aid worthy and needy students.

The Margaret Smith Cullen, J’46 Endowed Scholarship, established in 2008, to be awarded to undergraduate students in any class at the University and may be continued up to four years as long as the recipients remain in good standing.

The Waldo O. Cummings Memorial Scholarship Fund gives preference to residents of Tyngsborough, Massachusetts.

The William M. Currier Scholarship Fund, established under the will of William M. Currier, of Quincy, Massachusetts. Preference given to residents of Georgetown or Danvers, Massachusetts.

The James O. Curtis Scholarship, founded in 1915 by Betsy B. Curtis, of Medford, Massachusetts.

The Isabella C. Cutler Scholarship Fund, established in 1985, in memory of Isabella Cutler, J’14, of Lexington, Massachusetts. Scholarships from the income of this fund are given to aid needy students, as requested by the donor.

The Florence D. Cwirko Scholarship, established in 1978 in memory of Florence D. Cwirko, J’47, by her mother Mrs. Julia Cwirko. Income is to be used to provide financial assistance to students in the undergraduate college.

The Elizabeth Slade Dalrymple Scholarship, established in 2008, by a bequest from Elizabeth Dalrymple.

The Boryana Damyanova International Students Scholarship Fund, established in 2006 to honor the memory of Boryana Damyanova, Class of 2006. The fund will provide scholarships for highly qualified international students who need financial assistance to be able to enroll at Tufts.

The Benjamin H. Davis Scholarship, founded in 1897 by the Reverend B. H. Davis, of Weymouth, Massachusetts, for the benefit of students of the College of Liberal Arts who are preparing to enter the Christian ministry.

The Moses Day Scholarship, founded in 1880 by Moses Day, of Roxbury, Massachusetts.

The Stephen G. Demirjian Scholarship, established in 2001 to provide aid to needy students of Armenian heritage first and secondarily to students of Greek heritage.

The Devejian Family Scholarship Fund, established in 2010 by a bequest from Mr. and Mrs. Robert Devejian, E44, to provide scholarships for needy students in the Tufts School of Engineering.

The Dewar Scholarship, established in 1990 by the Dewar Foundation. Preference in awarding the scholarship is given to graduates of Oneonta Senior High School, Oneonta, New York.

*The Cora Polk Dewick Scholarship, established during the Second Century Fund campaign by classmates and friends in honor of Cora Polk Dewick of the Class of 1896, Alumni Trustee 1920–1940.

The Jeannie Diefenderfer Scholarship, established in 2008 to support scholarships with the School of Engineering.

The Leonard A. DiLorenzo, E66 and Annmarie P. Garceau Endowed Scholarship Fund was created in 2010 to provide financial aid for undergraduates in the School of Engineering, with the hope that this scholarship would
encourage female students to pursue engineering studies at Tufts.

The Catherine P. and Arland A. Dirlam Scholarship, established in 1949 by Catherine Price Dirlam, Class of 1927, and Arland A. Dirlam, of the Class of 1926, the income to be awarded in alternate years to a student in Jackson College and to a student in the School of Engineering. The Leon E. Dix Memorial Scholarship.

The Frank C. Doble Scholarship, established in 1997 in memory of Frank Currier Doble, founder of the Doble Engineering Company, and a recipient of two Tufts degrees: bachelor of science in electrical engineering in 1911, and an honorary doctor of science in 1962. The income is awarded to worthy undergraduate students in the Department of Electrical and Computer Engineering.

The Doherty Family Scholarship, awarded with preference to students from Medford, Massachusetts. If in a given year no qualified students from Medford can be identified, preference will be given to students from surrounding communities. Preference will also be given to students who have wide-ranging interests and have proven themselves to be driven, energetic, and of high leadership potential.

The Abraham and Marianna Dranetz Endowed Scholarship, established in 2004 to provide scholarship to students in the Tufts School of Engineering who demonstrate financial need and high academic achievement. Preference is given to students enrolled in biomedical research programs in the engineering school.

The John Druker and Bertram A. Druker Scholarship Fund, the income to be used for scholarships or loans as determined by the director of the Office of Financial Aid.

The Priscilla N. Dunne Scholarship Fund, established in 1980 by Ms. Dunne, J’75, for students demonstrating need. Preference is given to those majoring in psychology.

The Elizabeth and Maxwell W. Dybiec Endowed Scholarship Fund, established in 1999 to be used for educational and scholarship purposes.

The William F. Eastwood A’65 Scholarship, established on the occasion of his retirement in 2002, in honor of Bill Eastwood, A’65, who worked in the Tufts Financial Aid Office for thirty-four years and who served as Director of Financial Aid for fifteen of those years. Preference shall be given to students with financial need from the North Shore of Massachusetts or the Upper Valley of Vermont and New Hampshire.

The George W. Eaton Fund, established in 1942 by bequest of George W. Eaton, of Peabody, Massachusetts, the income to be expended in aiding poor and worthy students to secure an education at Tufts College.

The Carlos P. Echeverria Scholarship, established in 1951 by Carlos P. Echeverria of the Class of 1912.

The Thomas R. B. Edmands and Abbie Whittmore Edmands Scholarship Fund, established in 1973 by Anne Edmands Hall in memory of her parents.

The Eliot-Pearson Scholarship, awarded to a student major in the Eliot-Pearson Department of Child Development.

The Edward A. Ellis Scholarship, established in 2008, to support promising and deserving students. The scholarship will be awarded to undergraduates in any class and may be continued for up to four years as long as the recipients remain in good standing.

The Susan F. Emerson Scholarship, established by provision in the will of Susan F. Emerson, of Boston. To be awarded annually to a student in Tufts College who attains distinction in athletics as well as in scholarship.

The Frederick J. Emmett Scholarship, established in 1991 to benefit students in the Tufts School of Engineering.

The Environmental Engineering Scholarship, was established in 1990 by Martha M. Wyckoff E’77 to provide scholarships for undergraduate engineering students who are pursuing an interdisciplinary approach to the study of the environment.

The David R. and Betsy Banks Epstein Endowed Scholarship, established in 2005 to provide need based financial aid to Tufts undergraduate students studying theatre.

The Steven B. and Deborah Epstein Endowed Scholarship was established in 2006 in support of the Pritzker Challenge and to increase diversity on the Tufts campus.

The Harry Esses Scholarship, established in 2008, to provide need-based undergraduate scholarships for African American, Hispanic American and Native American students in the School of Arts and Sciences and the School of Engineering.

The Meade S. and Robert W. Fasciano, A56 Endowed Scholarship Fund, established in 2009, to support undergraduate Tufts students who are qualified to receive financial aid. Preference is given to students who are active in extracurricular activities on campus and who are residents of Somerville, Massachusetts.

The Wesley J. Fastiff, A54 and Bonnie B. Fastiff, ’60 Endowed Scholarship Fund was established in 2011 in support of financial aid in the School of Arts and Sciences.

The James H. Farrell, Jr., Scholarship, founded in 1986 by James H. Farrell, Jr., of the Engineering Class of 1959, for the benefit of deserving students in need of financial aid. Income from the fund is to be awarded annually to one or more undergraduates in the College of Liberal Arts, Jackson
College, or the School of Engineering. Where feasible, the scholarship will be awarded with preference given to graduates of Boston College High School.

*The Wilton B. and Helen R. Fay Memorial Fund, established in 1979 by Helen R. Fay, the income of which shall be used to assist deserving needy students of Jackson College in acquiring a college education; preference to be given to young women whose homes shall be in Middlesex County, Massachusetts.

The Robert L. Feldman Scholarship, established in 1989 by Mr. Feldman, A’69, to aid worthy students in need of assistance in meeting their educational costs.

The Felton Family Endowed Scholarship Fund established in 2011 by Gregg J. Felton A92 and Marla J. Felton J92 to benefit undergraduates in the School of Arts and Sciences.

The Edward W. Fickett Scholarship, established in 1963 by bequest of Bertha D. Chellis in memory of the late Edward W. Fickett of the Class of 1896, the income to be awarded to a deserving student.

The Fickett Scholarship, established in 1944 under the will of the late Edward W. Fickett, of Somerville, as “The Fickett Scholarship in memory of my sister, M. Grace Fickett of the Class of 1896, the income of this fund to be awarded annually to a deserving student, either male or female, who is majoring in the Department of Education.”

The Benjamin and Alice Finn Memorial Scholarship Fund, established in memory of the parents of Philip H. Finn of the Class of 1942 and Alvan D. Finn of the Class of 1945. Income from this fund is to be awarded on the basis of merit and need to an undergraduate, and every fourth year to a Fletcher School of Law and Diplomacy student.

The Fisher Veterans Scholarship, established in 2008, to provide financial aid for students who have served in the United States military.

*The Ella Bowker Flagg, Class of 1905 Scholarship Fund, established in 1972 under the will of Ella Bowker Flagg of the Class of 1905 for the benefit of students in Jackson College.

The Austin B. Fletcher Scholarship, founded in 1905 by Austin Barclay Fletcher, of New York City.

The Morris and Freda Fraidin Scholarship Fund, established in 1986 by Stephen Fraidin in honor of his parents, to aid worthy students in the arts and sciences. The Frischkorn Family Scholarship Fund, established in 2003 to provide financial aid to worthy and promising undergraduates who are actively engaged in the study of German or Economics.

*The Volney Sewell Fulham Scholarships for women of Jackson College.

The Parisis J. and Bessie Georgian Student Aid Fund, established in 1971 by gift of Parisis J. Georgian, to aid undergraduate students of Tufts University.

The Rob and Lisi Gheewalla Endowed Scholarship Fund was created in 2010 by Robert R. Gheewalla, A89 and Ilisa C. Criss, J88 to benefit undergraduates in the School of Arts and Sciences.

The Leona and John Ghublikian Educational Fund, established in 1989 by Leona and John R. Ghublikian, E’39, to provide scholarships to deserving students enrolled in the Department of Chemical and Biological Engineering.

The Luther Gilbert Scholarship, founded in 1902 by Mrs. Luther Gilbert, of Roxbury, Massachusetts.

*The Mary and Luther Gilbert Scholarships, founded in 1902 and 1904 by Mrs. Mary C. Knight, of Roxbury, Massachusetts, for the benefit of women students.

The Gerald R. Gill Memorial Scholarship, established in 2008 in memory of Gerald Gill, Professor of History at Tufts University, to provide financial aid to increase the diversity of the Tufts campus.

The Calmon and Hortense Ginsberg Scholarship, founded in 1964 by Mr. and Mrs. Calmon Ginsberg, of New York City, for the benefit of worthy students in Tufts University.

The Nancy Glass Endowed Scholarship, established in 2008 for support of undergraduates in the Tufts School of Arts and Sciences.

The Gleason Family Endowed Scholarship, established in 2007, to further the University’s highest priorities of providing financial aid to students in need.

The Herbert D. Goff Scholarship Fund, established in 1944 under the will of the late Herbert D. Goff, of Cranston, Rhode Island.

The Dr. James Laurence Golden and Helen Murphy Golden Scholarship Fund, established in 1982 by Maurene L. Golden of the Class of 1959, the income to be used to aid undergraduate students of proven academic promise and dedication in the arts and sciences, who have also displayed exceptional leadership and service within their hometowns or communities.

The Martha Goldthwaite Memorial Scholarship, founded in 1890 by Willard Goldthwaite, of Salem, Massachusetts.

The Ellen R. Gordon Endowed Scholarship, established in 2008, in support of financial aid for Tufts undergraduate students in the School of Arts and Sciences majoring in the sciences.

The Gorra Family Scholarship, established in 2002 to provide a scholarship award to a deserving student each year.
The Alfred J. and Beverly Green Scholarship, founded in 1961 by Alfred J. and Beverly Green, of New York, the income to be awarded to an undergraduate or graduate student who needs financial aid.
The Mary Sheldon Green Scholarship, established in 2002 to provide financial aid to Tufts' undergraduate students.
The Harold Greisman Scholarship, established in 2008, to endow a fund at Tufts to support scholarships in the School of Arts and Sciences in perpetuity.
The Mortimer Griffith Scholarship Fund, established to provide financial aid to needy students in the School of Engineering.
The Willis Wentworth Griffiths Scholarship, established in 1951 by William H. Griffiths of the Class of 1928, in memory of his father, Willis Wentworth Griffiths of the Class of 1899, to be awarded on the basis of need to a senior who has demonstrated leadership in worthwhile extracurricular activities.
The Mary L. Groce Scholarship, founded in 1906 by Mary L. Groce, of Roxbury, Massachusetts.
The Morris H. and Ethel M. Gudwin Scholarship Fund, established in 1999 by the will of Morris H. Gudwin.
The Emily E. Guild Scholarship, funded by the donor, of Brattleboro, Vermont, in 1964.
Marcy and Robert Haber Scholarship Fund, established in 1997 by Marcy and Robert Haber, E’79, G’80, to provide scholarships to students in the School of Engineering with immigrant parents.
The David N. Hadad Memorial Scholarship, founded in 1985 by his family and friends from the Class of 1980. Preference is given to students in the School of Engineering who come from greater Lawrence, Massachusetts.
The Frank Oliver Hall Memorial Scholarship, established in 1954 by the people of the Universalist Church of the Divine Paternity in the city of New York, in memory of Reverend Frank Oliver Hall, D.D., of the Class of 1884, Minister of the Universalist Church of the Divine Paternity from 1902 to 1918 and from 1929 to 1938, Professor of Homiletics in Tufts School of Religion from 1918 to 1929. The income of this fund is to be awarded annually, preference being given to a graduate student who is a member of the Church of the Divine Paternity.
The William J. Halligan Scholarship, established in 1953 By William J. Halligan of the Class of 1923, to be awarded annually to worthy students in the School of Engineering.
The Ronald E. Halvorsen Scholarship Fund, established in 1988 to provide scholarships to deserving students in the School of Engineering.
The Sharon Halverson Scholarship, established in 2008, to provide scholarships to undergraduates in the School of Arts and Sciences.
The George H. Hammond Memorial Scholarship, established in 1999 by colleagues, friends, and former students of Professor G. H. Hammond, E’35, in honor of his loyal service to Tufts for over 40 years as an outstanding teacher and mentor. The income is awarded to worthy undergraduates in the Department of Electrical Engineering and Computer Science.
The Roland Hammond Scholarship Fund, established in 1978 by Dr. Roland Hammond, A’98, H’39, in memory of his father, Roland Hammond, Class of 1868. Income shall be used only toward the payment of tuition or other charges of such worthy student or students as the officers of the college may select.
The Edward W. and Patricia C. Hanley Scholarship Fund, founded in 1983 to aid an appreciative undergraduate student at Tufts University.
The Hervey A. Hanscom Scholarship, established in 1954 by Hervey A. Hanscom, of Medford, Massachusetts. The income is to be used each year to aid a deserving boy, preferably a country boy from the state of Maine and/or the children of employees of Hervey A. Hanscom.
The Harold and Ruth Haskell Scholarships, established in 1951 by Harold and Ruth Sibley Haskell, both of the Class of 1906. The income from the fund is to be given to deserving students from the states of Delaware, Maine, and Massachusetts, in this order if possible.
*The Marian Titus Hayford Scholarship Fund, established in 1977 by the late Mrs. F. Leslie Hayford, a graduate of the Women of Arts, Class of 1902, the income to be used for scholarships to one or more undergraduate women.
The Monte R. and Jane Haymon Endowed Scholarship, established in 2006 by Monte R. Raymon, E’59, and Jane Kraft Haymon, J’60, to benefit students with financial need in both the School of Engineering and the School of Arts and Sciences.
The William Randolph Hearst Endowed Scholarship, established in 1994 to provide scholarships for participants in training programs at the Lincoln Filene Center.
The Herbert and Elaine N. Heller Student Scholarship Fund, established in 2003 to benefit underprivileged Jewish students at the School of Arts and Sciences and the School of Engineering.
*The Heptorean Club Scholarship, founded in 1898 by the Heptorean Club of Somerville, and including the Gerta Colby Donnelly Fund. Awarded annually to a graduate of the Somerville High School who is already attending Tufts.
The Captain Charles C. Hersey Scholarship, established in 1989 under the will of Captain Hersey, A’30, to aid qualified students at Tufts College.

The Morris and Sid Heyman Memorial Fund, founded by Mrs. Sid L. Heyman in 1980 in memory of her late husband, Morris Heyman, Class of 1918. Awards are made to deserving students in the undergraduate electrical engineering program.

The Frederick Sherman Hickok Scholarship, established in 1963 under the will of Conde Wilson Hickok for the benefit of engineering students.

The Martin J. Higgins Memorial Scholarship Fund, established in 1987 by William Dougherty of the Class of 1960, in memory of Martin J. Higgins, student leader, outstanding athlete, enthusiastic alumnus, and respected colleague. The income from this fund is to be awarded annually to a deserving undergraduate student in the College of Liberal Arts or Jackson College.

The Clara Bell Hight Scholarship Fund, established under the provisions of the Clara Bell Hight Trust as a permanent scholarship fund. The income generated from the principal is to be used for financial assistance to needy and deserving students enrolled in Tufts University.

The Samuel Greeley Hilborn Scholarship, founded in 1940 under the will of Grace Hilborn Webster.

The Hill Faculty/Staff Scholarship Fund, established through payroll deductions from Tufts faculty and staff to provide financial aid to needy undergraduate students.

The Ralph and Rachel G. Hill Scholarship, established through the estate of Rachel G. Hill in memory of her parents, to provide financial aid to deserving students in the Faculty of Arts, Sciences, and Engineering with preference given to undergraduates studying in the fields of engineering or biology.

The Robert W. Hill Scholarship, established in 1955 by the late Judge Robert W. Hill of the Class of 1904, for many years a trustee of Tufts College.


The Clarence P. and Henry C. Houston Scholarship, established in 1953 by classmatess, friends, and former students of Clarence P. Houston of the Class of 1914 and Henry C. Houston of the Class of 1910.

The Albert S. Hovannesian Scholarship, endowed in 1978 by Albert S. Hovannesian, a graduate of the College of Engineering, Class of 1946, provides financial assistance to students in the undergraduate colleges. His own personal understanding of the special problems which under-financed students and their families experience is the reason why he chose to fund this scholarship. Preference is given to needy students who are industrious and who also work part-time to help defray their educational expenses.

The Hovannesian-Howorth Scholarship Fund, established in 1989 in honor of Mrs. Claire L. Howorth of Stoneham, Massachusetts, to provide aid to electrical/mechanical engineering students whose particular interests are in microwave technology degree work.

The William H. and Arlene E. Howard Scholarship, established in 2009 for support of students in the Music Department, Tufts University College of Liberal Arts and Jackson.

The Howland Scholarship, established in 1865 from the income of the bequest of Edwin Howland, of South Africa.

The Paul O. Huntington Scholarship (E’13) is given to a student in the academic or engineering program in memory of the husband of Harriet S. Huntington.

*The Hunton Scholarship, founded in 1921 by Mrs. Gertrude Hunton Sweet, of Attleboro, Massachusetts, for the benefit of women.

*The Lydia Glidden Hutchinson Scholarship Fund, founded in 1985 by Lydia Glidden, Jackson ’28, for deserving women attending Jackson College.


The Ives Memorial Scholarship, founded in 1966 by Harriet Raillon Ives of Woodstock, New York, in memory of her family.

Haig Jafarian Memorial Scholarship Fund, established in 1992 by Ethel J. Duffett and Dana Paul Bowie in memory of their beloved brother and uncle, Haig Jafarian. The income is to provide scholarships to students in the College of Liberal Arts and Jackson, with preference to students of Armenian ancestry who have expressed interest in the course known as “A Survey of Armenian History.”

The Paul and Alice Darakjian Jafarian Memorial Scholarship, established in 1990 by Ethel J. Duffett in memory of her parents, to provide scholarship assistance to students in the College of Liberal Arts and Jackson. Preference will be given to students of Armenian ancestry who have expressed an interest in Armenian studies.

The Christine Jankowski Graduate Fellowship for Romance Languages, established in memory of Christine Jankowski of the Class of 1970, awarded to a graduate student in the field of romance languages.

The Japha Family Scholarship, established in 2001 to provide scholarships to students with a record of above average academic performance and contributions of earnest service to and/or beyond the Tufts community.
The Jepshon Educational Trust Endowment Fund, established in 1999 for aid to undergraduate students who show exceptional promise but whose families are particularly disadvantaged.

The Raymond L. Johnson Scholarship Fund, established in 1999 by the will of Raymond L. Johnson.

The Peter and Clare Kalustian Scholarship, established in 2008, to provide scholarships to mechanical and chemical engineering student, with a preference to be given to students of Armenian descent.

The Arnold S. Katz Scholarship. A member of the class of 1963, Mr. Katz founded this scholarship in 1981 to aid students in the College of Liberal Arts and Jackson. Preference is given to students from York County, Maine.

The Elsa Orent Keiles Scholarship Fund, established in 1996 by the will of Elsa Orent Keiles, J’25.

The Michael T. Kelleher Scholarship, established in 1951 in honor of Michael T. Kelleher, of Boston, the income to aid each year an outstanding young man who needs help in order to go to college.

The Andrew P. Kerr/Adam F. Kerr Scholarship, established in 1988 by Andrew P. Kerr, Class of 1960. This scholarship benefits students who are in need of financial aid and who are in good academic standing in the College of Liberal Arts and Jackson.

The Kier-Wain Family Scholarship, established in 2000 to provide financial aid to Tufts students with financial need. First preference in selection will be given to an undergraduate woman of Cuban-American heritage. If a Cuban-American woman is not available for the scholarship, preference will be given to a woman of other Hispanic heritage.

Killam Canadian Fund, established in 1997 in memory of Isaac Walton Killam of Nova Scotia by his Massachusetts sisters through their testamentary trusts, to help Canadian students with limited financial circumstances enroll at Tufts University.

The Elson T. Killam Memorial Scholarship Fund, established by a bequest made in trust in memory of the late Elson T. Killam, a 1922 graduate of the College of Engineering. The income from the principal is to be used for general scholarship needs of the university.

Kimball University Scholarship, established in 1994 by David N. Kimball, A’68, to provide financial aid to students of high achievement who show promise of future success.

The Kindler-Sullivan Scholarship, established in 2008, to support the university’s efforts to create an intentional, intellectual, and broadly diverse community of scholars.

*The Dr. Barbara Knight-Meyers Scholarship, established in 1963 by Dr. and Mrs. Edward R. Knight. This scholarship is to provide financial aid to a deserving student in Jackson College.

The George T. Knight Memorial Scholarship, established in 1951 by classmates, former students, friends, and family in memory of George Thompson Knight of the class of 1872, professor in the Crane Theological School from 1883 to 1910, member of the faculty 1875–1910.

Mabel Hoyle Knipe Scholarship Fund, established in 1998 from the estate of Mabel Hoyle Knipe, J’28, with preference given to graduates of Fairhaven High School.

The Robert A. Kolankiewicz Scholarship Fund, established in living memory by the family, classmates, and friends of the late Robert A. Kolankiewicz, Liberal Arts graduate of the Class of 1952 and husband of Cynthia (Reynolds) Kalankiewicz Foss, Jackson College, Class of 1953. The scholarship income is to benefit deserving undergraduates in the College of Liberal Arts and Jackson.

The Kovler Family Scholarship Fund, established in 1987 by the Blum-Kovler Foundation at the request of Jonathan and Peter Kovler, for the benefit of undergraduate students in need of financial assistance.

The Frieda Kress Scholarship, established in 2006 to provide need based undergraduate financial aid to promote diversity at Tufts.

The Michael Kuhn Memorial Financial Aid Fund, established in 2001 to provide aid to Tufts students with financial need.

The Carolyn Guber Langelier Scholarship, established in 2008, to support scholarships within the School of Arts and Sciences, in order to increase the diversity of the Tufts student body.

The Landsberger Family Endowed Scholarship, established in 2007, to support scholarships to help achieve the educational benefits of diversity in the School of Arts and Sciences.

The Rosewell B. Lawrence Scholarship, founded in 1922 by Rosewell B. Lawrence, of Medford, for scholarships and loans for worthy students. Preference is given to graduates of Medford High School already attending Tufts.

The Dr. Howard L. and Mary McCarthy Leary Scholarship Fund, established in 1987 by Mrs. Leary for qualified premedical students in the College of Liberal Arts and Jackson.

The Lebovitz Family Endowed Scholarship, established in 2001 to provide financial aid to needy undergraduate students who are residents of New Milford.

The Leibowitz Family Endowed Scholarship, established in 2006 to provide need based undergraduate financial aid to promote diversity at Tufts.

The Mabel Hoyle Knipe Scholarship, established in 1998 from the estate of Mabel Hoyle Knipe, J’28, with preference given to graduates of Fairhaven High School.

The Robert A. Kolankiewicz Scholarship Fund, established in living memory by the family, classmates, and friends of the late Robert A. Kolankiewicz, Liberal Arts graduate of the Class of 1952 and husband of Cynthia (Reynolds) Kalankiewicz Foss, Jackson College, Class of 1953. The scholarship income is to benefit deserving undergraduates in the College of Liberal Arts and Jackson.

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The Leibowitz Family Endowed Scholarship, established in 2006 to provide need based undergraduate financial aid to promote diversity at Tufts.
Hampshire, with preference to students who are in their second year of employment at a New Hampshire golf course.

The Maud Amelia Leighton Scholarship Gift, the income from a Trust Fund established by George A. Leighton, of Los Angeles, California, for the benefit of engineering students.

The Henry Leir International Scholarship, established in 1999 to provide financial aid for outstanding Tufts undergraduate students who wish to study abroad or who demonstrate commitment to the study of international affairs.

The Allen and Eleanor Lester Scholarship, established by a bequest in 2009 to benefit undergraduate students at Tufts University.

The Alvin Levin Scholarship, established in 1994 to provide scholarships to women of color enrolled in the Urban and Environmental Policy program.

The Louis Levin Scholarship Fund, a scholarship fund established in 1961 by William A. Levin of the Class of 1943 in memory of his father. Income from the fund provides financial aid for undergraduates, with preference given to students majoring in one of the sciences.

The Freda Lewis Scholarship, established in 2002 to provide scholarships for students attending Jackson College, preference being given to students who are members of or affiliated with a Universalist Church.

The Blanche M. Lewis Scholarship, established by Gerald Lewis of the Class of 1954 in honor of his mother, awarded annually with preference for a young woman showing promise in literature or fine arts, who would be unable to attend Tufts without financial assistance.

The Frank T. Lewis Scholarship Fund benefits engineering students with preference to those majoring in mechanical engineering.

The Leo Rich Lewis Memorial Scholarship, established in 1950 by classmates, former students, family, and friends in memory of Leo Rich Lewis of the Class of 1887, Fletcher Professor of Music and member of the faculty from 1892 to 1945. Preference is given to students majoring in music.

The Jacob Lewiton Scholarship, established in 2000 by bequest of Jacob Lewiton, Trustee Emeritus. The scholarship fund is for needy students who commute to Tufts College. It is the hope of the family that further contributions will be made from time to time to this scholarship fund.

The Edwin A. Locke Scholarship, established under the will of Edwin A. Locke of the Engineering Class of 1915, the income to be used to award scholarships to engineering students.

The William L. Locke Scholarship, established in 1961 by Mrs. William L. Locke in memory of her husband of the Class of 1900. The income from this gift is to provide financial aid to a junior or senior in the Department of Civil and Environmental Engineering.

The Jerome T. Loeb Scholarship, established in 1989 by Mr. Loeb, A’62, is awarded annually to an undergraduate, with preference for students from St. Louis, Missouri, and surrounding communities.

The Loomis Scholarship Fund, founded in 1985 in memory of Samuel Loomis, A’15, and his wife Bernice C. Loomis. Seventy-five percent of the annual income is to be used for scholarships and the remainder is to be added to the principal of the fund annually.

The Lawrence Loventhal Endowed Scholarship, established in 2008, in support of financial aid for Tufts undergraduate students of the School of Arts and Sciences.

The Loulakis Family Endowed Scholarship, established in 2007 by Michael Loulakis, E’76, to provide need based financial aid for juniors and seniors in the School of Engineering who plan to pursue a career in law or public policy related to the E & C industry. Preference will be given to Civil Engineering students who have demonstrated high academic achievement and leadership.

The Norman E. and Marjorie W. MacCuspie Scholarship, established in 1981 to provide financial aid for qualified men and women at Tufts College and Jackson College.

The Frances Booth MacGowan Endowed Scholarship Fund, established in 1999, with preference that awards from the fund be granted to female students in the College of Liberal Arts and Jackson.

The Leslie and Bruce Male University Scholars Fund, established in 1990 by Leslie and Bruce Male, A’63, to provide financial aid to students of high achievement who show promise of future success.

The Frank Marcucella Scholarship, established in 1953 by Frank Marcucella, of Medford, Massachusetts.

The Nathan Margolis, A’31, G’34 Memorial Scholarship, established in 2005 by Esther Margolis to promote excellence in teacher training. The Margolis Fund will be awarded annually to one or more students engaged in the study of Education, with a preference for students pursuing a Master of Arts in Teaching degree.

The Myron W. Marr Scholarship, established in 1956 by Dr. Myron W. Marr of the Class of 1904 and the Medical School Class of 1907.
The Laurence K. Marshall Scholarship, established in 1977. This scholarship exists to help others fulfill their educational objectives while encouraging them to explore and to excel. Awards are made annually to students in the School of Engineering who demonstrate academic excellence, who have financial need, and who have areas of interest and accomplishment outside of their major fields of study.

The Marvin Scholarship, established in 1952 by Reignold Kent Marvin, of Boston, Massachusetts. The income of this fund is to be used for the benefit of descendants of Thomas E. O. Marvin, or any student excelling in scholarship and athletics, in that order.

The Arthur E. Mason Memorial Scholarship, established in 1954 by Mrs. Arthur E. Mason, of Newton, Massachusetts, in memory of her husband, Arthur E. Mason, for many years treasurer and trustee of Tufts College. The income from this fund is to be awarded annually to a student residing in New England.

The David Lee Maulsby Memorial Scholarship, established in 1951 by classmates, former students, family, and friends in memory of David Lee Maulsby and the Class of 1887. Dr. Maulsby was professor of Oratory and English Literature from 1891 to 1910.

The Wallace Mayo Scholarship, founded in 1925 by Wallace Mayo, of Dayton, Ohio.

The Edward J. McCabe Scholarship, established in 1994 to provide scholarships for worthy students attending the School of Engineering.

The Kathryn A. McCarthy J’45 Endowed Scholarship, established in 2002 to provide scholarships to deserving and financially needy undergraduates who have good scholastic achievement as well as qualities of leadership and citizenship within the community.

The Kathryn A. McCarthy Special Endowed Scholarship was established in 2004 as part of the Pritzker Challenge. The scholarship will increase the diversity of the student body of current or prospective students within the Schools of Arts, Sciences and Engineering with preference given to the students of the North Cambridge High School, Cambridge, MA.

*The Sarah Nelson McFarlane Scholarship, established in 1959. To be awarded to a member of any class in Jackson College who, in the opinion of the dean or other qualified person, is worthy and in need of financial assistance.

The McMahon Memorial Fund, established by the friends and family of William A. McMahon, Esq. in his memory. The fund provides scholarships to undergraduate students in the School of Arts and Sciences.

The Jean Griswold Mead Scholarship, established in 1968 in memory of Mrs. Leonard C. Mead by her family and friends.

The Memorials Scholarship, established in 1956 to provide suitable recognition of contributions made in memory of beloved Tufts people. Income from this fund is used for scholarships for needy students.

The Alex Mendell Memorial Scholarship is awarded annually to a sophomore or junior who, through his or her leadership in a variety of campus activities, brings together students representing a broad spectrum of the community. Like the student in whose memory the award is made, the recipient should demonstrate a generosity of spirit and character that both contribute to the self esteem of others and to their love of Tufts.

The Richard Mergendahl Memorial Scholarship, established in 1951 by classmates, friends, and family in memory of Richard Mergendahl of the Class of 1944.

Guy Rindge and Alice Barbour Merrill Scholarship, established in 1997 to provide financial aid for undergraduate students.

The Merrin Family Scholarship, established in 1997 to provide financial aid to students from the five boroughs of the City of New York who demonstrate academic promise and financial need.

The Frank Merritt Scholarship. Preference will be given to direct descendants of Mr. Frank Merritt of the Class of 1879, founder of the scholarship. Next in preference shall be some worthy student of the engineering school. For each recipient the founder has this message: “Loyalty and patriotism are akin and are noble qualities. It is hoped that the persons receiving benefits from this scholarship will always be true and loyal to their Alma Mater, and if fortune should smile upon them at some future time they will respond to the needs of the college.”

The Robert W. and Gladys S. Meserve Scholarship Fund, established in 1995 in memory of Robert W. and Gladys S. Meserve by family and friends to provide financial aid to students from Waltham High School and Medford High School. Robert W. Meserve was an Alumni Trustee (1955–59), a Life Trustee (1959–79), Chairman of the Board of Trustees (1964–69), and Trustee Emeritus (1979–95).

The Millenium Challenge Fund, established in 2009, to provide need based financial aid to undergraduate students at Tufts, and to give others incentive to invest in financial aid at Tufts.

The Charles L. Miller Fund, established as a bequest in 1969 by the late Charles L. Miller, of Greenwich, Connecticut, as an endowed scholarship fund with the income only to be used for the purpose of providing financial aid to worthy and needy students of the university.

The Marion Stratton Miller Scholarship, established in 1976 in memory of Marion Stratton Miller, for many years an active and loyal member of the Tufts community. In awarding the income of this scholarship, preference is to be given to her direct descendants.

The Pamela A. Milligan and Richard A. Henige Endowed Scholarship Fund, established in 2010, to support scholarships within the School of Arts and Sciences.

The A. A. Miner Scholarships, founded in 1864 and 1890 by Alonzo Ames Miner, D.D., of Boston.

The Adelbert H. Morrison Fund, founded in 1958 under the will of Helen C. Morrison for the benefit of needy and worthy students majoring in engineering, preferably graduates of Boston Technical High School already attending Tufts.

The Gina George Morse Endowed Scholarship, established in 2009 by Gina George Morse, J84, AG87 in support of financial aid for undergraduate students in the School of Arts and Science, with preference to students studying child development.

The Joseph W. Morton Memorial Scholarship, established in 1956 by the men and women of the Class of 1931 as their twenty-fifth reunion gift, to be awarded annually to a student in one of the undergraduate schools of Tufts University, preference being given to descendants of members of the Class of 1931 who are otherwise qualified. Named in honor of Joseph W. Morton, A’11, H’56, alumni secretary, 1924–1956.

The Hannah S. Moulton Scholarships, founded in 1914 by Hannah S. Moulton, of Kensington, New Hampshire.

The John Martin Mugar Scholarship Fund, established in 2007, to provide need based financial aid to create an intentional, intellectual, and broadly diverse community of scholars. The Neubauer Scholars Advisory Committee assists the scholars in the pursuit of scholarly activities.

The Newhouse Scholarship, established in 1960 under the will of A. Florence Nichols of the Class of 1899, the income from which is to be given annually to some needy and deserving young woman who is working her way through college.

The Eugene M. Niles Scholarship Fund, founded in 1927 for scholarships and other student aid.

The Fred P. Nickless, Jr., Scholarship Fund, established by the Alumni Association in honor of Fred P. Nickless, Jr., A’48, G’49, for his long and loyal service to Tufts as alumni secretary for thirty years. The income is to be awarded annually to a deserving undergraduate or graduate student(s) in the Colleges of Arts and Sciences. Preference is to be given to Tufts alumni and their children.

The Michael and Josephine Nackel Scholars Fund, established in 2000 to provide scholarships for undergraduate students of Arab-American heritage or students from the Medford community.

Rosamond Najjar Scholarship Fund, established in 1998 to offer scholarships with preference to graduates of Medford High School.

The Michael and Lisa Nash Scholarship, established in 2008, to support the university’s efforts to create an intentional, intellectual, and broadly diverse community of scholars.

The Neubauer Scholars Program, established in 2000 by Trustee Joseph Neubauer. The program attracts and enrolls intellectually talented students from across the country and around the world. Neubauer scholars are encouraged to take advantage of research, internship, and study abroad opportunities to broaden their experience and perspectives. The Neubauer Scholars Advisory Committee assists the scholars in the pursuit of scholarly activities.

The New City Scholarship, established in 1997 to offer financial support to low-income students from New York City.

Murdock H. Newman Scholarship Fund, established in 1997 from the estate of Catherine H. Newman in memory of her husband Murdock H. Newman, A’31, to provide financial assistance to deserving students, with preference given to students from Grafton Country, New Hampshire.

The New York City Scholarship, established by a private charitable foundation in 1996 to provide financial aid for needy undergraduate students from New York City high schools.

The A. Florence Nichols Scholarship Fund, founded in 1960 under the will of A. Florence Nichols of the Class of 1899, the income from which is to be given annually to some needy and deserving young woman who is working her way through college.

The Malcolm and Mabel Nickerson Scholarship, established by a bequest in 2009 to be invested in the general scholarship fund of Tufts University.

The Fred P. Nickless, Jr., Scholarship Fund, established by the Alumni Association in honor of Fred P. Nickless, Jr., A’48, G’49, for his long and loyal service to Tufts as alumni secretary for thirty years. The income is to be awarded annually to a deserving undergraduate or graduate student(s) in the Colleges of Arts and Sciences. Preference is to be given to Tufts alumni and their children.

The Eugene M. Niles Scholarship Fund, founded in 1927 for scholarships and other student aid.
The Norcross Scholarship, founded in 1890 by James A. and Mary E. Norcross, of Worcester.

The Ronald F. Noreen Scholarship, established in 2007 to benefit students in the School of Arts and Sciences and to increase the diversity, broadly defined, of the Tufts student body.

The North Shore Tufts Club Scholarship, founded in 1969 for the benefit of students of Tufts University. Preference is given to students whose homes are in the communities served by the club on the North Shore of Massachusetts.

The O'Connor-Birmingham Family Endowed Scholarship, established in 2006 to provide scholarship funds to increase the diversity of the Tufts student body. Preference will be given to students who have completed the "Step up to Excellence" program, or students who have graduated from public high schools in culturally diverse communities and who have demonstrated personal responsibility and community leadership.

The Offer Family Scholarship Fund, established in 1983 by Mr. Charles Offer, Sr., to aid worthy and appreciative students.

The William R. O'Reilly & Elizabeth Ross Endowed Scholarship Fund was created in 2006 for the benefit of undergraduates at the School of Arts and Sciences. The Fund supports need-based financial aid and promotes the educational benefits of diversity at Tufts University.

The Osher Reentry Scholarship, established in 2009, to be awarded to students who have experienced a gap in their education of at least five years and anticipate participation in the workforce for a significant period of time subsequent to graduation.

The Susan and Richard Pallan Scholarship, established in 1989 to benefit any full-time undergraduate student in need of financial aid.

The Charles A. Pappas Endowed Scholarship, established in 1990 by the Thomas Anthony Pappas Charitable Foundation, Inc., for needy students possessing high scholastic abilities at the College of Liberal Arts and Jackson College.

The Parets Family Scholarship, established in 2005 to provide financial aid to Tufts students, with preference to students of limited financial means who possess high academic potential and a demonstrated commitment to achieving scholastic excellence in the study of arts and sciences.

The Theodore L. and Ruth B. Parrella Scholarship Fund, established in 2007 by Carol L. Parrella E'85 in memory of her parents, to support undergraduates in the School of Engineering with preference given to a female student majoring in Mechanical Engineering.

The Adoniram J. and Jane L. Patterson Scholarship, founded in 1920 by Adoniram J. Patterson, of Roxbury, Massachusetts.

The Ethel L. Peabody Scholarship Fund, established in 1975 by Miss Ethel L. Peabody of the Jackson College Class of 1915. Preference is given to former students of the Fitchburg, Massachusetts, High School already attending Tufts.

The Ellery E. Peck Memorial Scholarship, founded in 1891 by Henry Rollins, of Bangor, Maine.

The Pederson Memorial Scholarship, established in 2008, to benefit of undergraduate students of the Faculty of Arts, Sciences, and Engineering who are pursuing academic majors in the humanities, including Classics, Comparative Religion, English, Foreign Languages, History, Philosophy, Visual and Critical Studies, or similar areas.

The Joseph and Rosaria Peduto Scholarship, established in 2008, to support a preference to provide financial aid to students of Italian decent.

The William L. Peduto Scholarship, established in 2008, to support the University’s efforts to create an intentional community of diverse learners.

The Dorothy Penniman Latin Scholarship, established in 1979 through the generosity of Dorothy Penniman Hubbard of the Jackson Class of 1925. The donor studied Latin at Tufts, later taught Latin, and understands the lasting and multiple benefits of knowledge of the subject. She has established this fund in the hope that it will encourage other students to pursue the study of Latin. First preference at all times is given to students in need of financial aid enrolled in Latin courses in the Department of Classics.

The Penniman Scholarship, established in 1944 by Dorothy Penniman Hubbard and Ruth Penniman Ware in memory of their parents, Dr. and Mrs. George Wallace Penniman, the income from which is to be used annually to aid some deserving student with preference to students majoring in religion.

The Ralph Wentworth Penniman Memorial Scholarship, established in 1982 by Dorothy Penniman Hubbard of the Jackson Class of 1925 in memory of her brother, who was a graduate of the Tufts College Class of 1910. Income from the fund is restricted to students in the College of Liberal Arts, with preference to students majoring in history.

The Louis and Mary Perito Memorial Scholarship, established in 1982 by Paul L. Perito of the Class of 1959, in memory of his parents. The income from this fund is to be awarded annually to a deserving student in the College of Liberal Arts or Jackson College.

The John Perkins Scholarship, founded in 1896 by Ann Maria Perkins, of Medford, Massachusetts.

The Nancy Tabb Pfannenstiehl Memorial Scholarship Fund, established in 1993 by her family and friends, given with preference to undergraduate women majoring in romance languages.

The Joseph D. Pierce Memorial Scholarship, founded in 1898 by the children and other relatives of J. D. Pierce, D.D., of Attleboro, Massachusetts.

The Julius Pinkus Scholarships, founded in 1987 from the estate of Julius Pinkus in memory of Barney and Tobey Pinkus, Dr. Louis Pinkus, M’25, and Julius Pinkus. The income is divided equally among the School of Medicine, the College of Liberal Arts, and the Department of Music to be used as scholarship aid to worthy students.


The Frank W. Pote Memorial Fund, established in 1982 in memory of Frank W. Pote, professor of physics at Tufts from 1912 to 1953, by his family and friends. The income from this fund is to be utilized to help deserving students who are majoring in physics.

The Marion S. Potter Scholarship Fund, founded in 1958 under the will of Marion S. Potter, to be used to provide scholarships for worthy students in the College of Liberal Arts of Tufts University.

The Melvin and Shirley Prague Scholarship, established in 2000, to be awarded to a member of the Tufts student body who has established and maintained a record of above average academic performance, has contributed earnest service to and/or beyond the Tufts community, and has demonstrated financial need.

The Theresa Winsor Pratt Endowed Scholarship, established in 2001 by Joel W. Reynolds, Jr., of the Class of 1923 and Marion Newhall Reynolds, Jackson Class of 1924. The income from this fund is to be divided equally each year between a student of the School of Engineering and a student of Jackson College.

The Rhode Island Scholarship, founded in 1899 by several persons in Rhode Island.

The Paul Pryor Scholarship Fund, established in 1988 by the estate of Paul I. Pryor, A’18, for the benefit of deserving male students in the College of Liberal Arts with preference given to those active in extracurricular activities.

The Carolyn Fraser Pulling Scholarship Fund, established in 1980 to aid worthy students by bequest of Mrs. Arthur (Carolyn Fraser) Pulling, Women of Arts, Class of 1908.

The Gregory and Christine Randolph Scholarship, established in 2008, to provide scholarship support for students who have demonstrated financial need.

The Saul C. Ravitch Memorial Scholarship, established in 1952 by Mrs. Sylvia Ravitch in memory of her husband Saul C. Ravitch of the Class of 1922.

The Reed Family Endowed Scholarship Fund, established in 2010 by Bruce N. Reed E47 in honor of his family and in support of undergraduate scholarships at Tufts, with preference to students who are descendants of Tufts Naval V-12 and Naval ROTC participants during the years 1941 to 1948.

The Joel Reed Memorial Scholarship, established in 1988 to provide a scholarship fund for commuting students who exemplify Joel Reed’s academic diligence and community service, thereby encouraging this effort and ensuring that Joel’s name and spirit live on.

The Rennert Family Scholarship, established in 2008, to support scholarships within the School of Arts and Sciences.

The Resnek Family Scholarship Fund, established in 1988 by Frank, Barbara, and Paul Resnek, A’97, to provide tuition assistance for talented students attending Tufts University, with preference to citizens of the United States.

The Joel W. and Marion Newhall Reynolds Scholarship, established in 1951 by Joel W. Reynolds, Jr., of the Class of 1923 and Marion Newhall Reynolds, Jackson Class of 1924. The income from this fund is to be divided equally each year between a student of the School of Engineering and a student of Jackson College.

The Rhode Island Scholarship, founded in 1899 by several persons in Rhode Island.

The Mary A. Richardson Scholarship, founded in 1904 by Mrs. Mary A. Richardson, of Worcester, Massachusetts.

The William B. Richardson Scholarship, established in 1923 by William B. Richardson of the Class of 1915.

The Rittenburg Family Scholarship Fund, established in 1989 by members of the Rittenburg family to provide scholarships to deserving students of the School of Engineering. Scholarships shall be awarded by the Dean and the Office of Financial Aid.
The Pilar Crespi Robert Scholarship Fund, established in 2003 as part of the Pritzker Challenge to benefit outstanding undergraduate students of African American, Hispanic American, and Native American heritage.

The Rebecca T. Robinson Scholarship, founded in 1890 by Charles Robinson, LL.D., of Newton, Massachusetts.

The Emily Graham Rose Memorial Scholarship, established in 1965, for the benefit of deserving students in Jackson College and Tufts College.

The Gertrude Rubel Scholarship, established in 1998 to provide financial aid for undergraduate students from Medford and Somerville, Massachusetts.

The Elbridge Rust Scholarship Fund, founded in 1926 by Elbridge Rust, of Peabody, Massachusetts.

David and Gertrude M. Saklad Fund, established in 1990 under the will of David Saklad, E’21, to provide scholarships to students in engineering science and computer science who have completed freshman year, have shown academic skill, and require financial assistance.

The Lori Winters Samuels and Ted Samuels Family Scholarship, established in 2006 to provide need based undergraduate financial aid to promote diversity at Tufts.

The Herbert J. and Harriet S. Sandberg Family Scholarship, established in 2004 to provide scholarship to African American, Native American, and Hispanic American students with financial need. Preference is given to students meeting these criteria who have graduated from Medford High School in Medford, Massachusetts.

The Albert W. Sayles Scholarship, founded in 1899 by Albert W. Sayles, of Lowell, Massachusetts.

The Sarah E. Sayles Memorial Scholarship, founded in 1891 by Albert W. Sayles, of Lowell, Massachusetts.

The Scaramucci Family Endowed Scholarship was established in 2006 for the benefit of undergraduate students in the School of Arts and Sciences and to increase the diversity of the student body.

The Irving and Hannah Schwartz Scholarship, established in 1951 by Joseph and Irving Schwartz of the Class of 1937, in honor of their parents and in honor of Dr. Siegfried Thannhauser.

The William and Lillian Schwartz Student Scholarship, established in 1997 to provide financial assistance to undergraduate students who are in good academic standing.

The Frank S. and Eva A. Shapiro Scholarship Fund, established in 1955 by Frank S. Shapiro of the Class of 1916, the income of this fund is to be used annually to aid students of the School of Engineering, with particular preference to students who are Dalit and/or come from an impoverished background.

The William J. Sen Scholarship Fund, established in 1982 by William J. Sen, E’40. The income of this fund is to be used annually to aid students of Armenian descent at the Fletcher School, and third preference goes to undergraduate students of Armenian descent at the College of Liberal Arts and Jackson College, who are studying political science, economics, prelaw, or journalism.

The Usha and William Sellers Scholarship, established in 2009 to provide financial aid to international undergraduate students coming to study at Tufts from India, with particular preference to students who are Dalit and/or come from an impoverished background.

The Evelyn and Joseph Shapiro Endowed Scholarship, established in 2007, to provide annual scholarship funds to undergraduate students who are in good academic standing.

The Frank S. and Eva A. Shapiro Scholarship Fund, established in 1955 by Frank S. Shapiro of the Class of 1916, the income to assist worthy undergraduate students with preference being given to students interested in chemistry.

The Mildred and Sumner Shapiro Scholarship, established in 1997 to provide financial assistance to students in the Tufts College of Liberal Arts.

The Edwin A. Shaw Memorial Scholarship, established in 1952 by former students, family, and friends in memory of Edwin Adams Shaw of the Class of 1898 and professor of education, 1919–1950.

The Henry J. and Louise O. Shea Scholarship, established in 1987 to provide scholarships to needy and deserving students.


The A. Shuman Scholarship, founded in 1923 by A. Shuman of Boston.

*The Hettie Lang Shuman Memorial Fund was founded in 1905 by Mr. A. Shuman in memory of his wife. The interest of this fund is expended annually in aiding deserving women students.

The Seymour and Marcia Simches Scholarship Fund, established in 1986 by friends and family members of Professor Seymour Simches. This fund will be awarded annually to an outstanding student in financial need who is majoring in one of the humanities.
The Simmons Scholarships, founded in 1895 by Robert F. Simmons, of Attleboro, in the name of Mary F. and Robert F. Simmons.

The Miriam Charef Simonds Scholarship Fund, established by her sister, Pauline Charef Simonds, Jackson ’54, with assistance from family, friends, and colleagues. An ardent student of American political life, Mimi Simonds possessed, to an exceptional degree, an ability to respond creatively and effectively to the social and political issues of her time. She performed outstanding public service at the community, state, and national levels. In keeping with the compelling interests of her life, it is the family’s wish that the annual income from this scholarship fund be awarded to a student in the graduate Program in Public Policy and Citizen Participation who is deemed both financially and academically worthy of this recognition and who has completed one year of study. For Mimi Simonds, hope for the future was a premise that sustained her until her death. It is the intent of this scholarship to provide a living legacy of that hope and a memorial to the commitment which she brought to public service.

The Simons Family Scholarship, established in 1987 to provide a partial scholarship in the College of Liberal Arts.

The Simons Memorial Scholarship, founded in 1891 by Mrs. Mary A. Simons, of Manchester, New Hampshire, in memory of Hiram H. Augustus and Frank Simons.

The Simons Family Scholarship, established in 1891 by John Sprague, of Lowell, Massachusetts.


The Capt. Benjamin Sklaver Endowed Scholarship Fund was established in 2010 in memory of Benjamin Sklaver, A99, F03.

The John Richard Skuse, Class of 1941, Memorial Scholarship, established in 1999 by the bequest of John Richard Skuse to provide financial aid to Tufts students based on ability, achievement, and need. First preference is given to students from the town of Exeter, New Hampshire.

The Michael B. Sloane, A89 Endowed Scholarship for Talloires, established in 2010 in memory of Michael Bennett Sloane, A89, to benefit students with demonstrated financial need, whose plan of study includes the European Center in Talloires.

The Abraham and Sonya Slifka Scholarship Fund, established in 1991 to provide financial aid for undergraduate students.

The Phyllis E. Sloan Endowed Scholarship, established in 2009 to support undergraduate scholarships within the University.

The Charles E. Smith Scholarship, established in 1952 by Charles Eugene Smith of the Class of 1922, the income to be awarded to a young man in the College of Liberal Arts.

*The Rena Greenwood Smith Scholarship Fund, established in 1986 by the Richard Ilsey Smith Trust to benefit a worthy student of Jackson College.

The Richard Ilsey Smith Scholarship Fund, established in 1986 to benefit a worthy student of the university.

The Simeon C. Smith and Emily A. Smith Scholarship Gift. The income from a trust fund established by Simeon C. Smith to be known as the Simeon C. Smith and Emily A. Smith Fund, allocated by the trustees for scholarship purposes.

The George A. Spencer Scholarship, established in 2000 to benefit deserving students from the School of Engineering at Tufts University.

The Virginia Nold Spencer Memorial Scholarship, established in 1996 to help ensure a Tufts engineering education to the most qualified students regardless of their financial capabilities.

The John Murray Sprague and Eliza Fletcher Sprague Scholarship, founded in 1908 by John Sprague, of Lowell, Massachusetts.

The Miriam Carleton Squires Scholarship, established in 1971 under the will of Miriam Carleton Squires, of Broken Bow, Nebraska, a member of the Class of 1908.

The Marjorie Cohen Stanzler Scholarship Fund, established in 2002 to provide financial aid to needy students who are citizens of the United States.

The Edwin Carter Starr Memorial Scholarship, established in 1859 in accordance with a resolve of the Commonwealth of Massachusetts.

The William and Mary-Jane Sterling Scholarship, founded in 1985 by William C. Sterling, Jr., of the Class of 1956 to aid worthy undergraduates in obtaining the benefits of education.

The Stowe Scholarship, founded in 1890 by Mrs. Eugenia D. Stowe, of Meriden, Connecticut.

The Frederick W. Storck Memorial Fund, established in 1986 by the Richard Ilsey Smith Trust to benefit a worthy student of Jackson College.

The Richard Ilsey Smith Scholarship Fund, established in 1986 to benefit a worthy student of the university.

The Simeon C. Smith and Emily A. Smith Scholarship Gift. The income from a trust fund established by Simeon C. Smith to be known as the Simeon C. Smith and Emily A. Smith Fund, allocated by the trustees for scholarship purposes.

The George A. Spencer Scholarship, established in 2000 to benefit deserving students from the School of Engineering at Tufts University.

The Virginia Nold Spencer Memorial Scholarship, established in 1996 to help ensure a Tufts engineering education to the most qualified students regardless of their financial capabilities.

The John Murray Sprague and Eliza Fletcher Sprague Scholarship, founded in 1908 by John Sprague, of Lowell, Massachusetts.

The Miriam Carleton Squires Scholarship, established in 1971 under the will of Miriam Carleton Squires, of Broken Bow, Nebraska, a member of the Class of 1908.

The Marjorie Cohen Stanzler Scholarship Fund, established in 2002 to provide financial aid to needy students who are citizens of the United States.

The Edwin Carter Starr Memorial Scholarship, established in 1859 in accordance with a resolve of the Commonwealth of Massachusetts.

The William and Mary-Jane Sterling Scholarship, founded in 1985 by William C. Sterling, Jr., of the Class of 1956 to aid worthy undergraduates in obtaining the benefits of education.

The Stowe Scholarship, founded in 1890 by Mrs. Eugenia D. Stowe, of Meriden, Connecticut.

The Frederick W. Storck Memorial Fund, established in 1986 by the Richard Ilsey Smith Trust to benefit a worthy student of Jackson College.
The Lloyd H. Taylor Scholarship, founded in 1902 by bequest of Mrs. Stowe of Lawrence, Massachusetts, “for the benefit of the lady students department.”

The Harry Louis Strecker Scholarship, established in 1969 as a bequest by the late Harry L. Strecker, Class of 1913, of Livingston, New Jersey. The income thereof is to be used to assist a worthy student in the electrical engineering department.

The Carl and Alice Stroehmann Scholarship, established in 1953 by Carl F. Stroehmann of the Class of 1919.

The Students Against All Odds Scholarship, established in 2005, to be awarded to one or more worthy and promising students who are determined to be in need of financial aid. Scholarships may be awarded to students in any class and may be continued up to four years as long as the recipient remains in good standing.


The Frederick W. Tibbets Memorial Fund, established in 1942 by bequest of M. Helen Tibbets, late of Gloucester, Massachusetts, as a memorial to her late brother Frederick W. Tibbets of the Class of 1879. Income is used to aid worthy and needy students.

The Walter V. Towlle Scholarship Fund, established in 1963 by bequest of Grace H. Towlle, the income to be used to assist students of the highest scholastic standing.

The Travelli Scholarship, founded in 1890 by Mrs. Emma R. Travelli, of Newton.

The Hyman S. and Edith Rieva M. Trilling Scholarship, established in 1997 to provide financial aid and to assist with the tuition of qualified undergraduates who are pursuing their educational goals.

The Tyler Scholarship, founded in 1919 by Susan E. Tyler, of Lowell, Massachusetts.

The Irving Usen Scholarship, established in 1952 by Irving Usen in memory of W. A. Carroll. The income is to be available for a qualified, needy young man or young woman whose parents are fishermen residing in New England and preferably residents of Gloucester, Massachusetts, or Portland, Maine.

The Albert Whittier Vanderhoof Scholarship, established in 1959 in honor of Albert W. Vanderhoof of the Class of 1924.

The Villamil-Davis Family Scholarship, established in 2004 to attract, retain, and prepare under-represented minority students who will make important leadership contributions to Tufts and to our global community.

The Teri Volpert ’84 and Barry Volpert Endowed Scholarship, established in 2005, awarded to students with demonstrated financial need who have excelled in the classroom.

The Peter J. Wade Scholarship, established in 1999 to provide scholarships to students pursuing studies in studio art or graphic design. Preference is given to juniors or

The Joshua S. and Harriet N. White Scholarship, established in 1896, to provide aid to students from St. Paul's Universalist Church, Springfield, Massachusetts.

The Mark Weisberg Scholarship Fund, established in 1906 in honor of William J. Walker, M.D., of Newport, Rhode Island, and payable from the income of the Walker Fund.

The Julia Ward Scholarship, established in 2007 to further Tufts' efforts to create an intentional, intellectual and broadly diverse community of scholars, to include students from a wide variety of socio-economic, geographic, cultural, ethnic, and political backgrounds.

The Mary Ann Ward Scholarship, founded in 1892 by Sylvester L. Ward, of Boston.

The Warren Educational Fund Scholarship. The income for the benefit of a worthy student, preference being given to students from St. Paul's Universalist Church, Springfield, Massachusetts.

The Warren Scholarship, founded in 1905 by Dr. Ira Warren, of Boston.

*The Sarah A. Watson Scholarship Fund, founded in 1958 under the will of Sarah A. Watson for the benefit of Jackson College, the income and interest to be expended for the aid of a deserving student who would not otherwise have the benefits of further education.

The Alice Weeks-Jesse Dowse Endowment Fund, established in 1990 by the estate of Albert W. Weeks in memory of Alice M. Weeks and her mother, Jesse Dowse, both graduates in mathematics at Tufts, to provide financial aid to students attending Tufts College or the Graduate School of Arts and Sciences.

The Gerald and Ruth Weil Scholarship, established in 2008, to provide need-based financial aid to undergraduate students and to increase the diversity of the Tufts undergraduate student body.

The Willner Family Scholarship, established in 2004, to provide financial aid to academically promising students from New York City with family incomes that are particularly modest. Additional preference will be given to students showing promise in the visual or performing arts at Tufts.

The Gladys Emilia Wilson Scholarship is an endowed scholarship that benefits students at the School of Arts and Sciences. The scholarship was established in 2010 with a gift from the estate of Gladys Emilia Wilson, A69.

The Thomas F. Winkler Scholarship, established in 2008, to provide need-based financial aid to undergraduate students. Preference will be given to students with first preference to female students attending Tufts College or the Graduate School of Arts and Sciences.

The Paul I. and Alice T. Wren Memorial Scholarship, established in 1940, and dean (1907–1939).

The Joseph N. Wright Memorial Scholarship, for undergraduate students studying in Tufts Programs Abroad, with preference for those studying in Germany.

The Robert Yanofsky, A’38 Endowed Scholarship, established in 2004, to provide financial aid for undergraduates. Preference will be given to students with

seniors who have shown excellence in some area of studio art or graphic design and who are enrolled in the five-year, dual-degree program with the Museum School of the Museum of Fine Arts, Boston.


The Walker Mathematical Scholarship, established in 1865 in honor of William J. Walker, M.D., of Newport, Rhode Island, and payable from the income of the Walker Fund.

The Julia Ward Scholarship, established in 2007 to further Tufts' efforts to create an intentional, intellectual and broadly diverse community of scholars, to include students from a wide variety of socio-economic, geographic, cultural, ethnic, and political backgrounds.

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The Gerald and Ruth Weil Scholarship, established in 2008, to provide financial resources to needy students who are identified by the university as increasing diversity at Tufts.

The Mark Weisberg Scholarship Fund, founded in 1948 by Mark Weisberg of the Class of 1918.

The J. Frank Wellington Scholarship, established in 1931.

The Jonas Clark Wellington Scholarship, founded in 1906 by Mrs. Sarah C. Fisher Wellington, of Cambridge, Massachusetts.

The West Medford Woman's Club Scholarship, established to provide scholarship assistance to students in Jackson College and Tufts College, with preference given, when possible, to a resident of Medford, Massachusetts.

The Joshua S. and Harriet N. White Scholarship, founded in 1896 by Joshua S. White, of Pawtucket, Rhode Island.

The Nathaniel White Scholarship, founded in 1899 by Armenia S. White, of Concord, New Hampshire.

The Amasa and Hannah L. Whiting Scholarship, founded in 1890 by Mrs. Hannah L. Whiting, of Hingham, Massachusetts.

The Whittier Scholarship, founded in 1890 by Charles Whittier, of Roxbury, Massachusetts, in the name of Charles and Eliza Isabel Whittier.

The Alton T. and Dorothea Danver Williams Scholarship, established in 1989 by Kenneth D. Williams in honor of his parents, Alton T., A’19, and Dorothea Danver Williams, J’18, to support students in good academic standing, with financial need, pursuing a major in environmental studies.

The Willner Family Scholarship, established in 1998 to provide aid to academically promising students from New York City with family incomes that are particularly modest. Additional preference will be given to students showing promise in the visual or performing arts at Tufts.

The Gladys Emilia Wilson Scholarship is an endowed scholarship that benefits students at the School of Arts and Sciences. The scholarship was established in 2010 with a gift from the estate of Gladys Emilia Wilson, A69.

The Thomas F. Winkler Scholarship, established in 2008, to provide need-based financial aid to undergraduate students. Preference will be given to students with first preference to female students attending Tufts College or the Graduate School of Arts and Sciences.

The Paul I. and Alice T. Wren Memorial Scholarship, established in 1940, and dean (1907–1939).

The Joseph N. Wright Memorial Scholarship, for undergraduate students studying in Tufts Programs Abroad, with preference for those studying in Germany.

The Robert Yanofsky, A’38 Endowed Scholarship, established in 2004, to provide financial aid for undergraduate students. Preference will be given to students with
limited financial means who possess high academic potential and a demonstrated commitment to achieving scholastic excellence.

**The Francis Yirrel Scholarship.** A scholarship founded in memory of Francis Yirrel of the Class of 1949, established by his friends and classmates to assist deserving students.

**The Doris W. York Endowed Scholarship Fund,** established in 2005 by a bequest from Doris York of Somerville, Massachusetts to provide financial aid to female students who attended Somerville High School.

**The Howard S. Young Scholarship Fund,** established in 1982 to provide scholarships for civil engineering students.

**The Young Men’s Philanthropic League Scholarship,** established in 1960 by the Young Men’s Philanthropic League of New York, the income from this fund to be used for scholarships for undergraduate and graduate students in Tufts University.

**The Stanton “Bud” Yusem Endowed Scholarship,** established in 2000 to provide financial aid to Tufts undergraduate students with financial need.

**The Zeta Psi Class of 1969 Scholarship,** established in 2009 to provide scholarships to undergraduate students with financial need who are likely to contribute to Tufts’ educational and mission-related goals, including the benefits associated with a diverse student body. Preference will be given to qualified students who are currently fraternity brothers of the Zeta Psi fraternity.

**Prize Scholarships and Academic Awards**

In addition to the above university scholarship funds, the following endowed funds have been established, and prizes from the income are awarded annually in recognition of exceptional academic achievement and extracurricular activities. These prizes are not awarded unless, in the opinion of the Committee on Academic Awards, qualified candidates appear.

At an awards ceremony held each spring, public announcement is made of the recipients of these prize scholarships. Since election is made by the Committee on Academic Awards, no application is necessary. Nominations are made by faculty and staff members. Student nominations are not allowed, but students can discuss deserving peers with faculty members. Inquiries concerning these prize scholarships should be addressed to the Committee on Academic Awards.

**The Vida H. Allen Prize** is presented annually to the student who has written the best senior honors thesis in the Department of History.

**The Alpha Omicron Pi Prize Scholarship,** founded by the Boston Alumnae of the Delta Chapter of Alpha Omicron Pi, is awarded to that student who best represents the combination of very high scholarship and significant participation in social service work.

**The Alpha Xi Delta Prize Scholarship,** founded by the Boston Alumnae Chapter of Alpha Xi Delta, is awarded to that junior who, throughout the freshman and sophomore years, has attained a high scholastic record and who, by loyal cooperation in college activities of merit, has given evidence of the greatest promise of future achievement.

**The Nancy W. Anderson Award for Environmental Sustainability,** awarded to a junior or senior normally majoring in environmental studies whose work in the natural and social sciences, engineering, or humanities promotes integration of those subjects in informing public policy decisions that may protect endangered natural resources while promoting sound social and economic development.

**The Department of Anthropology Prize** is awarded annually to a student who has shown excellence in anthropological studies.

**The Architectural Studies Prize** is awarded annually to a senior majoring in architectural studies who has demonstrated academic excellence and a commitment to the field...
of architectural studies. The prize is supported by the memorial fund for Margaret Henderson Floyd, professor of art and architectural history. 

**Art & Art History Prize**, each year the Department of Art & Art History awards a prize to a graduating senior who has demonstrated a combination of superior academic achievement in course work (and independent study) and commitment to the field through participation in relevant activities beyond the classroom, such as work, internships or exhibitions, study abroad, and involvement with professional groups. Attention is given to the number, range and level of classes taken in Art & Art History, performance in FAH 100 (our capstone course), and to the quality of written work produced throughout. Selection is by faculty vote, and advisors are responsible for recommending candidates.

**The Robert Asch Prize**, established in 2002 by friends and family of Bob Asch to honor the former director of the Tufts-in-Tübingen program. A beloved friend to all who knew him, Bob served as director from 1972 to 2001. He was known both for his zest for life and a humanistic approach to his quest for international understanding. Awarded to juniors or seniors who will use the fund for research, projects, or internships in a German-speaking country.

**The Asian Studies Prize** is awarded to a graduating senior who has demonstrated excellence and interest for future development in Asian studies.

**The Association of Tufts Alumnae Seventy-fifth Anniversary Award** is established to honor a woman student who has provided meritorious service to the Tufts University community, adding to the university by her presence. The student should be a junior or senior with good academic standing. This award was established by the Association of Tufts Alumnae on the occasion of its seventy-fifth anniversary.

**The Michael E. Avtges Memorial Prize**, established in 1989 by Mr. and Mrs. Nicholas E. Avtges and the Boston Chapter, Society of American Military Engineers in memory of Michael E. Avtges, a student in the College of Engineering. Prizes are awarded to deserving students in the Department of Civil and Environmental Engineering with preference to those who are interested in computer science and engineering.

**The Peter Belfer Award in Political Science** is given annually for the outstanding piece of written work done in a political science course or independently by a political science major. This award was established in 1973 by Mrs. Ann Belfer Goldstein in memory of her late husband, Peter Belfer, A'67.

**The Bennett Memorial Scholarship**, founded in 1924 by the Class of 1914 in memory of William Joseph Bennett, scholar, soldier, athlete, and a member of this class, who met his death during World War I. The scholarship is awarded to that student who best exemplifies the qualities of true sportsmanship as exhibited by the man whose name it bears.

**The Berger, Lehman Scholars Fund**, honoring the lifelong contributions of Dr. Berger, E'36, as a valuable alumnus and trustee of Tufts University, and Dr. Berger's partner, Lawrence H. Lehman, and his family, including his son Scott, A'82. The fund is to provide students within the Department of Geology with assistance for their studies and to encourage the students to pursue a career in geology.

**The Charles G. Bluhdorn Prize in Economics**, awarded annually to an undergraduate majoring in economics who has demonstrated outstanding scholastic ability. This prize was founded in 1983 by Donald Gaston in memory of Charles G. Bluhdorn.

**The Anne E. Borghesani Memorial Prize** is an annual incentive award that will enable the recipient(s) to undertake a project, activity, or plan of study in any field involving international issues. The prize is designed to encourage personal growth and independence, while increasing one's understanding of all peoples and encouraging a commitment to the world community. The award honors the memory of Anne E. Borghesani, J'89, an international relations major. Anne's years at Tufts were a time of intellectual and personal challenge, adventure, and increasing commitment to her friends, the Tufts community, and the world. Anne's love of people and her fascination with travel and other cultures made her major a natural choice.

**The Boston Greek Prize**, founded in 1962 with income from a fund raised by the Committee for the Promotion of Greek Studies at Tufts University, is awarded for meritorious achievement in the Greek language only when students of conspicuous merit are nominated by the Department of Classics faculty.

**The Benjamin G. Brown Scholarships**, established in 1947 by the bequest of Robert C. Brown of the Class of 1888 in honor of his father, Benjamin G. Brown, onetime Walker Professor of Mathematics at Tufts. These scholarships are awarded to seniors who have shown promise in scientific research in fields other than chemistry.

**The Moses True Brown Prize**, established in 1903 by Moses True Brown, who was Tufts College's first professor of Oratory (from 1866–1890). The prize is awarded, whenever a suitable candidate appears, to a senior majoring in drama who combines high achievement in dramatic scholarship...
with a strong potential for successful teaching in the field of dramatic literature, criticism, and theatre history.

The Harry Poole Burden Prize in Electrical Engineering, established in 1973 by friends of Harry P. Burden, H'53, dean of the College of Engineering from 1936 to 1957, is for one or more prizes for the best design or research project done by an undergraduate electrical engineering student or students during the academic year of the project.

The Professor Kalman A. Burnim Prize for Scholarly Excellence, awarded annually to a Ph.D. student in drama who has completed all steps toward the degree except the dissertation and who has demonstrated distinction by excelling academically and in research and by contributing to the life of the program in an outstanding manner. The prize was established by alumni, colleagues, and friends in honor of Kalman A. Burnim, Emeritus Fletcher Professor of Drama and Oratory, and Tufts alumnus (A'50), who created the Ph.D. program in drama. During his 28 years at Tufts, Professor Burnim chaired the department for nine years and earned his reputation as a world-renowned scholar in theatre history.

The Thomas Harrison Carmichael and Emily Leonard Carmichael Prize Scholarship, established in 1950 by Leonard Carmichael of the Class of 1921, seventh president of Tufts College, in memory of his parents, is awarded to an academically able junior or senior who has shown ability in physiological psychology or general physiology.

The Helen Morris Cartwright Memorial Prize is awarded to a senior who has shown excellence and earned his reputation as a world-renowned scholar in theatre history.

The Mary Grant Charles Prize Scholarship Fund, established in 1975 by Ralph S. Charles, A'23, and his two sons, Grant H. Charles, A'51, and Ronald A. Charles, E'57, in loving memory of wife and mother, Mary Grant Charles, is awarded to an outstanding undergraduate possessing the same creative qualities in the writing of prose and poetry as Mrs. Charles, and preferentially to a student whose writing reflects an interest in ancestry and genealogy.

The Shirley and Stanley Charm Scholarship in Food and Biotechnology, established in 1984 by Dr. Stanley Charm, who was chair of the Chemical Engineering Department from 1981 to 1985, is used in the Department of Chemical and Biological Engineering as a stipend for a senior, graduate, or postdoctoral student who is committed to study and research in food science or biotechnology.

The Department of Chemical and Biological Engineering Prize is awarded to a senior who has shown excellence in chemical engineering studies.

The Chemical Engineering Special Recognition Award is awarded to a senior who has shown character and perseverance in achieving high academic standards in chemical engineering studies while overcoming difficult circumstances.

The Chinese Language and Literature Prize is awarded annually to a graduating senior who has demonstrated excellence in the studies of Chinese language, literature, and culture.

The Anna Quincy Churchill Prizes in General Biology, established in 1954 by Dr. Churchill, M'17, a member of the anatomy department in the Tufts School of Medicine and Dental Medicine from 1918 until her retirement as assistant professor emerita in 1954, are awarded annually for excellence in the study of botany and zoology in the general biology course.

The Gemma Cifarelli Memorial Scholarship, established in 1956 by classmates and fellow students in memory of Gemma Cifarelli of the Class of 1957, is awarded to a junior who has combined good academic standing with participation in activities of importance to the university.

The Prize Scholarship of the Class of 1882, founded by Dr. Arthur Winslow Pierce, A'82, Litt. D.'99, in the name of his college class, is reserved for an undergraduate student with great potential for intellectual leadership and creativity.

The Class of 1898 Prizes, from a fund established by the Class of 1898, are awarded as follows: one prize each to that student in the College of Liberal Arts, in Jackson College, and in the College of Engineering who, having completed two years at Tufts University, has best demonstrated high scholarly ability together with a wide range of intellectual interests and competence.

The Class of 1911 Prize Scholarships, from the Class of 1911 Fund, are awarded to seniors of engaging personality who, from matriculation as freshmen to the senior year, have, in the judgment of the Committee on Academic Awards, made most progress as measured both by academic record and by successful participation in extracurricular activities of enduring worth.
The Class of 1921—Leonard Carmichael Prize Scholarship Fund, established through the gifts of members and friends of the Class of 1921 in honor and memory of their classmate Leonard Carmichael, seventh president of Tufts, secretary of the Smithsonian Institution, and vice president of the National Geographic Society with special responsibilities for research and exploration, awarded by the Department of Psychology to a third-year student or students whose academic achievements have been judged as outstanding.

The Class of 1942 Prize Scholarship was founded in 1985 by Elaine and Grant Curtis in honor of the women and men of the class who served their country, and in particular the five who served their Alma Mater for more than an aggregate 125 years (Professor Freeland Abbott, Dean Grant Curtis, Dr. Nelson Fontneau, Professor Burleigh Wellington, and William Wells, Esq.). The prize is awarded annually to seniors considered by other undergraduates, faculty, or staff as “the most likely to become outstanding university teachers, counselors, or administrators.” Written nominations, stressing how the nominee has already served or contributed to the university, should be sent to the Faculty Committee on Academic Awards.

The R. M. Karapetoff Cobb Chemistry Fund is awarded to the two Jackson College chemistry majors with the highest academic standing at the end of their junior year.

Morton N. Cohen Creative Writing Award is given to undergraduates who demonstrate in a substantial piece of creative writing, the greatest distinction in creative writing. The recipient is selected by a special committee from the Department of English.

The Community Service Award is presented annually to undergraduate and graduate students who have provided exceptional community service that is much needed by the beneficiaries, even though it often goes unnoticed by the general public. The award recognizes those who, as individuals or as part of a Tufts volunteer organization, have given special service at Tufts or to the larger community. Service should generally represent activities which occur outside the student’s required program of study and outside of elective office or employment.

The James Schmolze Prize for Excellence in Computer Science is awarded annually to a junior or senior who has demonstrated excellence in computer science studies. The Donald A. Cowdery Memorial Scholarship, founded in 1946 by Jeanetta Wilson Cowdery Black, F’46, in memory of her husband, Donald A. Cowdery, Class of 1939, who was killed in action in World War II, is awarded annually to that senior or junior whose academic achievements and personal qualities of leadership and high principle have been outstanding.

The Dance Studies Award is given to a student who has demonstrated excellence in writing and (or) creative work in dance courses and who has an ideal attitude about learning in the liberal arts environment.

The Mabel Daniels Prize in Music and Literature, established in 1960 by Mabel Wheeler Daniels, Hon. M.A. ’33, the distinguished composer, is awarded to a junior or senior who shows marked creative talent and accomplishment in music or literature.

Daughters of the Revolution Prize Scholarship, is awarded on recommendation of the Department of History to a student demonstrating marked interest in American colonial history as well as excellence in scholarship.

The de Florez Prize in Human Engineering, established in 1964 by the bequest of Admiral Luis de Florez, USN (retired), H’46, is awarded to an undergraduate student, ordinarily majoring in psychology, engineering, or science, who has acquired a high degree of theoretical sophistication and demonstrates an interest in the practical application of knowledge to problems of human engineering.

The Distinguished Achievement Award in International Relations is given annually to an outstanding international relations major of high academic standing who has participated widely in the program and who, having proven a spacious understanding of and sensitivity to the richness of the international community, intends to pursue a professional career in the field of international relations.

The Amos Emerson Dolbear Scholarships, established in 1947 by the bequest of Katherine E. Dolbear of the Class of 1897 in memory of her father, the eminent scientist and inventor, who was professor of physics at Tufts from 1874 to 1910, are awarded to two seniors who have shown promise in the field of either electrical engineering or physics.

The Priscilla N. Dunne Prize Fund, founded in 1980 by Mrs. Doris Scheff in honor of her daughter, Priscilla N. Dunne, J’75, is given annually to an undergraduate psychology major with an excellent record and great promise of future achievement in the field.

The Durkee Scholarship, established by the bequest of Robert C. Brown of the Class of 1888 in honor of his sister, Henrietta N. Durkee, WA’93, G’95, G’18, and her husband, the late professor Frank W. Durkee, A’88, G’89, H’21, and their children, is awarded to senior students in the Department of Chemistry who have undertaken a research problem in the field of chemistry. The prize commemorates Professor Frank W. Durkee, A’88, G’89, H’21, who was long chairman of the...
department, a renowned chemist, a man of great energy and diligence in all that he undertook, and a most loyal alumnus of Tufts.  

The Alex Elias Memorial Prize Scholarship, established in 1966 by the Brotherhood of Alpha Epsilon Pi and friends of Alex Elias within and outside the university, is awarded to that junior or senior who best displays those high standards in community activities and in athletic and scholastic pursuits for which Alex Elias was well known.  

The Eliot-Pearson Department of Child Development Prize is awarded to that senior majoring in child development who best exemplifies a combination of high academic achievement and the promise of outstanding teaching ability.  

The James Vance Elliott Political Science Prize is awarded in the senior year to the student majoring in political science whose achievements best combine academic excellence with active participation and effective leadership in campus and civic affairs.  

The Frederick M. "Fish" and Dorie Ellis Memorial Prize, established in 1968 by fellow alumni, students, and friends of the late Professor Frederick "Fish" Ellis of the Class of 1929, the outstanding four-sport athlete of his day and possibly the greatest Tufts College has ever known, is awarded to a student who has demonstrated marked athletic versatility, a modest manner, successful academic achievement, and the potential for effective leadership of youth.  

The Department of English Prize was created by the Class of 1898 Fund and is awarded to that student who has shown excellence in English studies.  

The Ivan Galantic Special Achievement in Humanities Prize, named after Ivan Galantic, Professor of Art History 1971-1989, is awarded to a student who has demonstrated the inclination and capacity to cultivate an integrative approach to learning; one who reaches for wisdom, not simply knowledge.  

The Constantine Ghikas Prize in Romance Languages was established in 1957 by George C. Ghikas in memory of his son, Constantine Ghikas of the Class of 1941, for excellence in a program of major study in romance languages.  

The John S. Gibson Award, named after the first director of the International Relations Program at Tufts University, is given to the author of the most outstanding paper written by an undergraduate in one of the participating departments in the International Relations Program.  

The Goddard Rhetorical Prizes, from a fund created in 1862 by Thomas A. Goddard, then treasurer of Tufts College, are provided annually in the field of dramatic interpretation and acting. These undergraduate prizes may, at the discretion of the Department of Drama, be awarded for marked excellence in acting as demonstrated during the student’s career in stage productions of the university theatre.  

The Graduate School of Arts and Sciences Outstanding Academic Performance Award recognizes the overall academic achievement of graduate students as evidenced by course grades, quality of papers, theses, and projects in the arts, humanities, natural sciences, and social sciences.  

The Graduate School of Arts and Sciences Outstanding Contributions to Undergraduate Education Award recognizes excellence as a teaching assistant or other roles such as mentoring undergraduates in the arts, humanities, natural sciences, and social sciences.  

The Graduate School Council Awards are given annually to outstanding graduate student organizations and faculty mentors.  

The Graduate Student Research Awards are given semiannually to graduate students enrolled in either the School of Arts and Sciences or the School of Engineering. Awards are competitive and decisions are made by student peers and based on the proposal, significance of the scholarly activity and need.  

The Marjorie B. Greene Award is made to a graduate occupational therapy student who has demonstrated outstanding achievement in the areas of leadership and involvement in student and professional activities.  

The Greenwood Prize Scholarship, created in 1877 by Mrs. Eliza M. Greenwood of Malden, Massachusetts, is awarded for excellence in state production and technical arts, as demonstrated during the student’s career in the university theatre.  

The Audrey Butvay Gruss Science Award is awarded annually, with preference for a female student, to a student who has demonstrated outstanding academic work in any of the sciences and who is a scholarship recipient. This award was established in 1992 by Audrey Butvay Gruss, an alumna of Jackson College.  

The Robert P. Guertin Student Leadership Award recognizes outstanding graduate student leadership in the arts, humanities, natural sciences, and social sciences. The award is given to individuals or groups of students enrolled in either the School of Arts and Sciences or the School of Engineering for accomplishments in such areas as academic or social programming, curricular initiatives, supporting the work and lives of fellow students, community service, and developing improved policies.  

The Martin Guterman Award in memory of Martin Guterman, beloved faculty member in the Department of Mathematics, for the first-year student with the highest
academic achievement in mathematics, to encourage further study in that field. The Audrey L. Hale Prize, established in 1995 in honor of Audrey L. Hale for forty-seven years of extraordinary service to Tufts University, including fourteen years as assistant provost, is to be awarded to an undergraduate student in the junior or senior year who has demonstrated academic excellence and a commitment to international understanding through acts of compassion and humanity. The recipient, who is able to achieve his/her educational goals through personal and financial sacrifice, will be determined and recommended by the dean of students. The Ethel M. Hayes Scholarship, founded by the Tufts Alumnae Association in 1946, in memory of Ethel M. Hayes, Class of 1896, college librarian (1896–1943), is awarded to an undergraduate dependent to some extent on his or her own efforts to meet the cost of education and whose work throughout the preceding year has been of such excellence that he or she is deemed worthy of high academic distinction. The Jane Anne Herman Prize is given in honor of Jane Anne Herman, J’87, who will always be remembered for her devotion to friends and family, her generosity during Thanksgiving, and her appreciation of the arts. This award is given by the Department of Drama and Dance for excellence in directing and/or stage management, as demonstrated during the student’s career in the university theatre. The Morris and Sid Heyman Prize Scholarships, established in 1980 by the bequest of Mrs. Sid L. Heyman in memory of her husband, Morris Heyman, who graduated from Tufts University in 1919 with a bachelor of science degree in electrical engineering, are awarded to one or more undergraduate students in the Department of Electrical Engineering and Computer Science, based on academic achievement and future promise. The Marshall Hochhauser Prize is presented annually to seniors who exemplify the altruistic spirit of the man whose name it bears, while working within the system to broaden and enrich the intellectual climate at Tufts without regard for personal gain. The prize honors the memory of Marshall Hochhauser J’82P, E’79P, who, as National Chairman of the Parents’ Fund at the onset of the Campaign for Tufts, labored on behalf of undergraduate education at Tufts far beyond the call of duty. The prize may be awarded to one or two seniors. The Board of the Experimental College selects the recipients of this award. The Rob Hollister Award for Community Service and Citizenship recognizes graduate students who have contributed their time and effort to the community outside of Tufts. This contribution could be in the form of volunteer work, activism in community issues, or participation in public service activities. The award is given to individuals or groups of students in either the School of Arts and Sciences or the School of Engineering. The Marion Ricker Houston Prize Scholarship in Economics, established in memory of a faculty wife whose friendship and gracious hospitality enriched the lives of many generations of Tufts and Jackson students, is awarded to junior or senior economics majors who have been responsible citizens of the Tufts community and who, in the opinion of members of the economics department, have made substantial progress in mastery of their chosen field. The James D. Hume Field Geology Scholarship Prize was established in 1996 by alumni, colleagues, friends, and family in memory of Jim Hume, exemplary teacher and geology department chairman, who shared his enthusiasm, knowledge, and cheerful nature with everyone he knew. This award is presented annually to one or more outstanding geology students to further their field experience in geology. The Albert H. Imlah European History Prize, named after Albert Imlah, Professor of History 1927–1956, Walter S. Dickson Professor of English and American History 1958–1970, is awarded to a student or students for distinguished work in European history, or to promote summer reading in the honors program, or in comparable programs in history. The Albert H. Imlah Excellence in History Prize, named after Albert Imlah, Professor of History 1927–1956, Walter S. Dickson Professor of English and American History 1958–1970, is awarded to a senior for excellence in history. Through this award Professor Imlah sought to encourage high academic performance. The International Letters and Visual Studies Prize is awarded annually to a graduating senior who has demonstrated excellence in the studies of literature, film, and visual media in an international context. International Relations Research Scholars Program, established in 2001, supports original, high-quality undergraduate international research. Awarded jointly to selected IR juniors who plan to undertake a senior honors thesis or other capstone research experience and their faculty mentors, the scholarship financially supports a minimum of eight weeks of summer research on an international topic. The program’s objectives are to promote intensive faculty-student mentoring and to advance the development of strong international research skills critical to professional and academic goals in an increasingly interdependent world.
The Japanese Language and Literature Prize is awarded annually to a graduating senior who has demonstrated excellence in the studies of Japanese language, literature, and culture.

The Ralph S. Kaye Memorial Prize was founded in 1947 by members of Omicron Chapter of Phi Epsilon Pi as a memorial to Ralph Sumner Kaye, of the Class of 1937, who died while serving as a lieutenant aboard a destroyer sunk in the naval battle for Okinawa (Guanto) in 1945. It is awarded to a junior or senior who, at the conclusion of two years or more of mathematics courses and irrespective of his/her major field of concentration, demonstrates a favorable combination of proficiency in mathematics and participation in extracurricular activities.

The William J. King Applied Music Award, for piano performance was established by Mrs. Margaret King in memory of her husband, who was a professor of Music at Tufts for 41 years. Each spring, the award is presented to one or more students who demonstrated outstanding ability in piano performance in either classical or jazz music. Students are nominated for the award by their faculty instructors based on their fall semester performance.

The N. Hobbs Knight Prize Scholarship in Physics, established in 1957 by Mrs. Esther F. Martin in honor of her father, the late Nathaniel Hobbs Knight, a member of the faculty in the Department of Physics from 1911 to 1953. The scholarship provides two annual awards to be presented to two juniors or seniors who are majoring in physics and who have demonstrated outstanding ability in theoretical and experimental physics, selected in such manner as the Committee on Academic Awards shall determine.

The Laminan Prize in Romance Languages, established in 1963 by Toivo, A’31, and Margaret C. Laminan is awarded each year to a student for distinguished work in the Department of Romance Languages.

The Earle F. Littleton Scholarship is awarded to worthy juniors, seniors, or graduate students in the civil engineering program who are active in professional or community affairs and show promise of becoming active and loyal alumni.

The Lewis F. Manly Memorial Prize was established by friends, family, and former students in memory of Lewis F. Manly, for forty years a member of the Tufts faculty, twenty-six of them as chairman of the Department of Economics. He also served for six years as head coach of basketball and for fifteen years as head coach of football, uniquely combining a dedicated career as teacher and as an athletic coach. His loyalty, devotion, and service to Tufts were of a high order. The prize is to be awarded to an undergraduate at Tufts University who combines a record of academic excellence with superior athletic performance. Preference shall be given to an economics major where there is a choice among otherwise highly qualified candidates.

The Lt. Commander Robert James Manning Memorial Prize is awarded annually to an engineering undergraduate who is industrious, competent, enthusiastic, and who shows the same commitment to excellence that Lt. Commander Manning demonstrated throughout his life. The prize was established in 1990 by Lt. Commander Manning’s wife Nancy E. Manning, and by his parents Mr. and Mrs. Edward V. Manning, with the support of his friends and family. Lt. Commander Manning was a 1970 Tufts graduate.

The Mechanical Engineering Prize is awarded to a senior who, in the judgment of the mechanical engineering faculty, has excelled in the study of Mechanical Engineering.

The Alex Mendell Memorial Scholarship is awarded annually to a sophomore or junior who, through his or her leadership in a variety of campus activities, brings together students representing a broad spectrum of the community. Like the student in whose memory the award is made, the recipient should demonstrate a generosity of spirit and character that both contributes to the self-esteem of others and to their love of Tufts.

The Melissa Beth Meyers Award is presented annually to a graduating BFA or BFA in art education student in recognition of academic excellence, personal growth and his/her ability to achieve this success while overcoming substantial educational and/or personal obstacles.

The Russell E. Miller History Prize is awarded to an undergraduate of exceptional ability whose participation in advanced history courses has demonstrated an eagerness to explore problems of historical analysis and interpretation.

The Paul Montle Prize Scholarship is awarded to upperclassmen or women who demonstrate entrepreneurial skills and who accept along with the scholarship a moral obligation to return to Tufts later in life, much more than they received, in terms of financial aid and educational benefits.

Mary Ann Mulcahy Service in Education Award, The Department of Education and the University College of Citizenship and Public Service created this award to honor a graduate student completing the MAT middle and high school teacher licensure program who has demonstrated a strong commitment to both public service and effective classroom practice in the field experience portion of their program.
The Outstanding Contribution to Music at Tufts Award is given annually to a senior student whose service to the department, creativity, musical achievements, and contribution to the musical atmosphere at Tufts exemplify the highest distinction.

The Multicultural Service Award is for an undergraduate who has made significant efforts to define Tufts as a multicultural environment in which race, ethnicity, religion, class, gender, and sexual preference are not barriers to the full enjoyment of community membership.

The Ellen C. Myers Memorial Prize was established in 1982 in honor of Ellen Myers, J’82, an example of great courage and mental fortitude as she pursued her degree while battling an incurable illness. The prize is to be awarded to a junior or senior who has shown character, diligence, and perseverance in achieving high scholarship standards in the face of adverse circumstances while working toward a bachelor's degree at Tufts University.

The Navy V-12/NROTC Memorial Prize was established in 1998 by Tufts V-12/NROTC alumni who were enrolled in the program at Tufts during World War II. The prize is to be awarded to junior or senior students from the Tufts undergraduate colleges who are direct descendants of participants in the Tuskegee Institute V-12/NROTC programs during World War II, July 1943-June 1946, or are enrolled in an NROTC program. The award is based on scholastic achievement, demonstrated leadership, and significant contributions made by the candidates to the university and greater community.

The Robert L. Nichols Scholarship Prize, established in 1979 by friends and students of Robert L. Nichols and the Department of Geology, is awarded to one or more students of demonstrated ability in geology, for the purpose of expanding their knowledge of geology by field experience.

O’Leary Design Award, The James P. O’Leary Award is named in honor of James P. O’Leary, Associate Professor of Mechanical Engineering, and is presented annually to a Mechanical Engineering senior who has made outstanding contributions in the area of design.

The Daniel Ounjian Prize in Economics was established by alumni, friends, colleagues, and family in memory of Daniel Ounjian, an esteemed professor of economics at Tufts for thirty-one years. The award is given annually to a junior economics major who, in the judgment of the Tufts Department of Economics, should be encouraged to pursue graduate studies in economics and whose contributions to the Tufts community reflect the loyalty and commitment that his students and peers appreciated in Daniel Ounjian.

The Wendell Phillips Memorial Scholarship is one of two scholarships (the other being assigned to Harvard College) that was established in 1896 by the Wendell Phillips Memorial Fund Association in honor of Boston’s greatest preacher and orator. The scholarship is given annually to the junior or senior who has best demonstrated both marked ability as a speaker and a high sense of public responsibility. The recipient of the scholarship traditionally gives an address at commencement. Candidates for this award are recommended by the Committee on Student Life.

The Sarah Plummer Memorial Prize is awarded annually to a graduate student or students who demonstrate a deep commitment to the field of classical archaeology or classical studies; to the Tufts University Department of Classics and to the broader community.

The Class of 1947 Victor Prather Prize was established by the Class of 1947 to honor the memory of their classmate, Victor A. Prather, Jr., A’47, M’52, whose research for the early space program contributed to eventual manned space flights. In 1961 he lost his life during a strato-lab balloon high-altitude flight designed for testing the space suit used in the first manned flight. Dr. Prather was a scholar and a leader devoted to the advancement of knowledge. The prize will be awarded to a student (or students) from the School of Engineering and the College of Liberal Arts and Jackson College. Those receiving the prize will be engineering or science majors who have demonstrated excellence in scientific research, enthusiasm for the pursuit of knowledge, and a dedication to scholarly achievement.

The Pride on the Hill Award is named for the lesbian, gay bisexual, and transgender alumni organization of Tufts. The award will honor undergraduate or graduate students who, through community involvement, artistic expression, written work, or scientific research have contributed the most to an understanding at Tufts of gay, lesbian, bisexual, or transgender identities during the preceding academic year.

The William Howell Reed Prize in German, established through a fund left to Tufts University by Professor Reed, a member of the German department from 1904 until the time of his death in 1949, is awarded to a member of the junior or senior class for excellence and promise in German studies. The recipient should demonstrate those qualities of learning, discrimination, and taste that characterized...
Professor Reed’s distinguished career on the Tufts campus.
The Department of Religion Prize is awarded each year to a Religion major who has shown excellence in religious studies.
The Resumed Education for Adult Learners Prize Scholarship is awarded to the continuing education senior who has demonstrated both the greatest perseverance in pursuing his/her academic goals and the greatest generosity and effectiveness in helping other continuing education students to achieve their academic goals.
The Russian Prize is awarded annually to a junior or senior who has demonstrated excellence in the Russian language and Russian-related studies.
The Rhonda Saad Graduate Prize in Art History recognizes graduating Masters students in Art History or Art History/Museum Studies for outstanding academic excellence, as well as related achievement in teaching, research, museum work, or community involvement. The award is established in memory of Rhonda Saad MA’08, with the generous assistance of Rhonda’s classmates. A scholar of Islamic Art, pursuing a PhD at the time of her death, Saad was a cherished student, teacher, colleague, and friend whose zest and optimism profoundly impacted the lives and work of all those around her.
The Howard Sample Prize Scholarship in Physics is named in memory of Howard Sample, who was a professor in the Department of Physics at Tufts University. Professor Sample was known for his love of physics and for his generosity in assisting colleagues, graduate and undergraduate students, and for his kindness to all. The award is given annually to undergraduate students for outstanding performances in Physics 11 and Physics 12.
The Stephen Sapuppo Prize, established in 1993 by Helen and Michele Sapuppo and family in loving memory of their son and brother Stephen, A’81, is awarded to a junior who has demonstrated outstanding academic achievement in drama, with preference for a member of Torn Ticket Two.
The School of Engineering Outstanding Contributor to Engineering Education Award is focused on full-time graduate students who through T.A. work, voluntary service, and other activities have enhanced significantly the education programs of their departments.
The School of Engineering Outstanding Graduate Researcher Award is focused on full-time, thesis program students who have distinguished themselves in research, especially technical publication.
The Charles F. Seymour, Jr., Prize is to be awarded annually with preference for a junior or senior participant in musical theatre who has an interest in business studies or career.
The Frederic J. Shepler Memorial Prize in French was established in 1984 by alumni, friends, colleagues, and family in memory of Frederic J. Shepler, an esteemed professor of French in the Department of Romance Languages. The prize is awarded annually to that senior French major who has demonstrated high achievement in the study of French literature and in the understanding of poetry in particular.
The Dr. Philip E. A. Sheridan Prize was established in 1977 by bequest of Dr. Sheridan, classes of Liberal Arts, 1908, and Medicine, 1912. The prize is awarded annually to the student who has shown the most improvement through the junior year in bachelor of arts course work.
The Sociology Prize is awarded to the member of the junior or senior class who, in the opinion of the Department of Sociology, has shown exceptional promise in either general sociological analysis or empirical social research.
The Charles E. Stearns Scholarship Prize, established in 1997 by students, colleagues, friends, and family, honors the exceptional fifty-year career of Charlie Stearns as a gifted student, a caring and intellectually stimulating professor, and a loyal and insightful dean. This award is presented annually to one or more geology students who have demonstrated attention to detail, thoughtful analysis, and insight to their geological studies.
The Joseph and Sara Stone Prize is given to a student in the field of Judaic studies who demonstrates excellence in the field and whose concern for others reflects the enormous efforts of Joseph and Sara Stone to overcome great financial hardship in attaining for themselves and their children the benefit of an excellent education.
The Joanne Mary Sullivan Prize is awarded to a junior or senior who has shown excellence and promise in the study of psychology. This prize was established in 1990 in memory of Joanne Mary Sullivan, who held a B.A. in psychology, by her parents Eugene and Vilma, her brother Eugene, Jr., G’90, and family and friends.
The Elizabeth Verveer Tishler Prize in Music Performance, established in 1984 by Elizabeth Verveer Tishler, J’31, is awarded on the basis of a competition, open to all undergraduates except those enrolled in the Tufts-NEC dual-degree program. In order to be informed of the rules of the competition, those intending to compete must register not later than December 1 with the chair of the music department. Performance will be limited to classical, jazz, or modern work.
The Max Tishler Prize Scholarship, established in 1951 by Merck and Co., Inc., to honor Dr. Max Tishler of the Class of 1928, H’55, is awarded each year to an outstanding student in the sciences, preferably in chemistry, entering the senior year.

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Trefethen Research Award The Lloyd MacGregor Trefethen Award is named in honor of Lloyd Trefethen, professor of Mechanical Engineering, and is presented annually to mechanical engineering senior who has conducted outstanding undergraduate research.

The Norbert Wiener Award in Mathematics is given on those rare occasions when a very young student exhibits such prodigious strength in mathematics as to recall the highly unusual talents of the child prodigy Norbert Wiener, LA1909, who went on to become one of the giants of twentieth-century mathematics. Aside from his vast legacy within mathematics, he left his mark on popular culture by founding the discipline and coining the term “cybernetics,” which has spawned today’s notions of cyberspace.

The Etta and Harry Winokur Prize for Outstanding Achievement in Artistic or Scholarly Work Award in the Department of Music for music majors in junior or senior years is given in recognition of outstanding achievement in artistic work such as composition or performance, and/or scholarly works such as a thesis.

The Etta and Harry Winokur Prize for Outstanding Contribution to Performance Award in the Department of Music for music majors in junior or senior years is given in recognition of continuing outstanding contribution to the performance activities sponsored by the music department, such as leadership in performance studies and department ensembles, chamber groups, and recitals, and/or leadership in audience development, concert management, and arts administration.

The Marianne J. H. Witherby Prize in Archaeology was established by Marianne Witherby, an alumna of Tufts who is a devoted supporter of archaeological studies at the university. The prize is awarded each year to an archaeology major in recognition of scholastic ability, dedication to the discipline, and resourcefulness.

The William Frank Wyatt Prize, established in 1962 for excellence in the translation of Greek or Latin, is awarded by the Department of Classics to the student who best exemplifies Professor Wyatt’s sound scholarship and catholicity of interest. Professor Wyatt was a teacher of Greek at Tufts from 1914 until his death in 1961, and chairman of the classics department from its establishment in 1940 to 1952.

The John W. and Katherine L. Zarker Award for Excellence in Classical Studies is awarded to a student who has demonstrated overall excellence in studies as determined by the members of the Department of Classics. Preference will be given, but not limited, to students who plan to pursue a teaching career.
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