

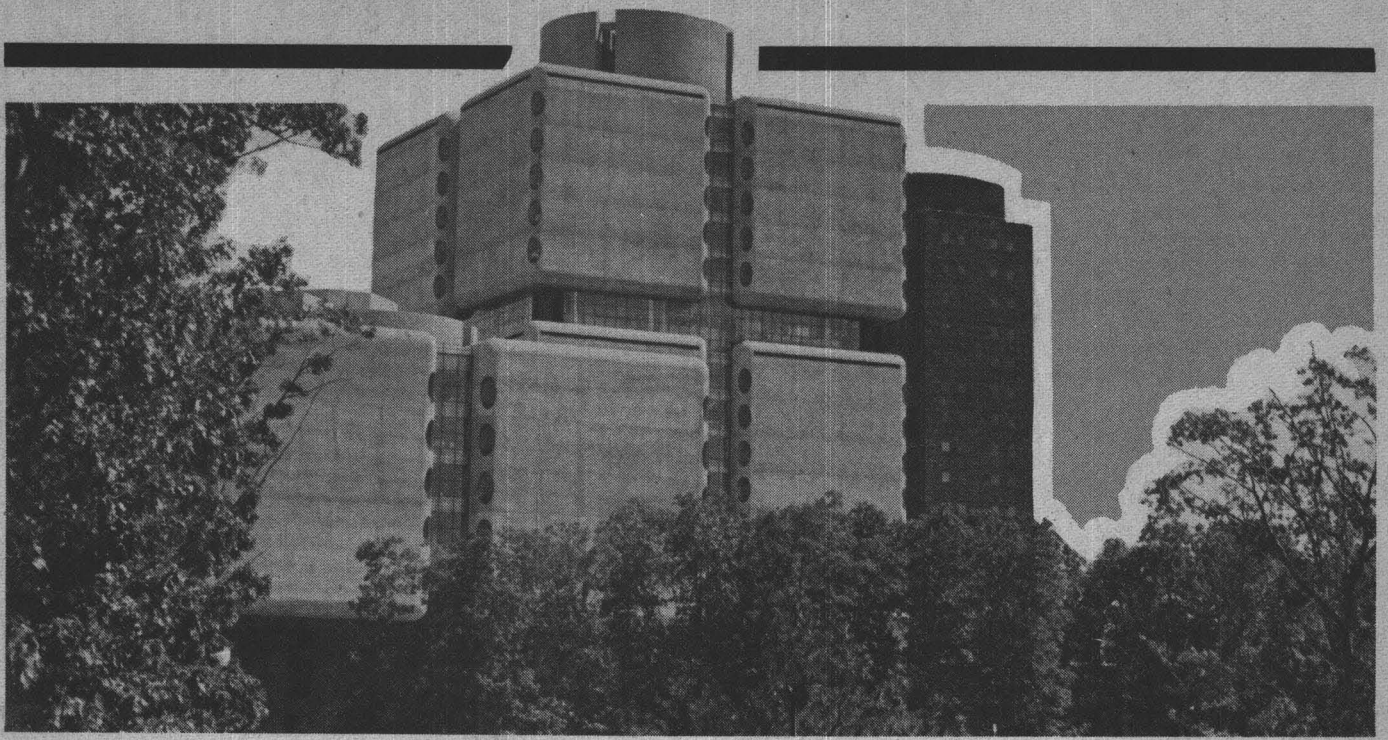


For Reference

From this room

Stony Brook

1981-83 UNDERGRADUATE BULLETIN



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State University of New York at Stony Brook

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Introduction to Stony Brook

Background

The State University of New York at Stony Brook is recognized as one of the nation's finest universities. It offers excellent programs in a broad spectrum of academic subjects, conducts major research, often of international significance, and manages many vital public service projects.

In recent years Stony Brook has become one of the nation's fastest growing public comprehensive university centers in research and development activity. Internationally renowned faculty offer courses from the undergraduate to the doctoral level for 16,300 students through about 100 undergraduate and graduate departments and interdisciplinary programs. Extensive resources and fine support services help foster intellectual and personal growth.

In 1960, the State Board of Regents and the late Governor Nelson Rockefeller established Stony Brook's mandate as a comprehensive University Center, to "stand with the finest in the country." In its latest reaccreditation, Stony Brook was praised for the quality of its programs and recognized for so quickly becoming "an institution of national stature."

Founded in 1957 at Oyster Bay, Long Island as a State University College to prepare secondary school teachers of mathematics and science, the young school moved in 1962 to its present location on Suffolk County's north shore.

Since then, Stony Brook has grown to encompass 98 buildings on 1000 acres. The faculty has grown from about 175 to 1000, the student body from 1000 to 16,300, and the annual budget from about \$3 million to \$120 million.

The University serves the complex, growing Long Island region through research into area problems; through cooperative programs with governmental agencies at the Federal, State and local levels; through response to the extraordinary demand for higher education opportunity from the region; and as one of Long Island's largest employers. Stony Brook strives to develop programs of the highest quality in areas of great public need, including health sciences, engineering and applied sciences, public policy, marine and environmental sciences and the arts.

Location

Stony Brook is located about 60 miles east of Manhattan on the wooded north shore of Long Island, convenient to New York City's cultural life and Suffolk County's tranquil, recreational countryside and seashores. Brookhaven National Laboratory and the Cold Spring Harbor Laboratory are not far away. Located in the restored village of Stony Brook at the geographical center of Long Island, the campus is some 60 miles west of Montauk Point. It is within minutes of New York State's richest farmland and clam beds, its spectacular Atlantic beaches, the craggy coastline and cliffs of Long Island's north shore and its picturesque village greens and gracious country homes. Long Island's hundreds of miles of magnificent coastline attract many swimming, boating and fishing enthusiasts from around the world.

Campus

Stony Brook's bustling academic community is situated within a thousand acres of fields and woodland. Bicycle paths, an apple orchard, park benches, a duck pond and spacious plazas complement modern laboratories and classroom buildings.

Surrounding the Frank Melville, Jr. Memorial Library at the center of the campus (see map, p. 188) are the major academic buildings for arts and sciences and engineering, the Van de Graaff nuclear accelerator, the Administration Building, Lecture Center, Laboratory-Office Building, Educational Communications Center, Computing Center, Stony Brook Union, Gymnasium, a parking garage, and other service and activities buildings. Stony Brook's Fine Arts Center, located between the Library and Administration Building, provides superb performing arts facilities and houses the departments of Theatre Arts, Music and Art. A spacious outdoor plaza in which concerts may be held connects the Library, Stony Brook Union and Fine Arts Center in the middle of the campus. The Social and Behavioral Sciences Building houses many academic departments as well as the Center for Continuing Education.

Encircling the academic buildings are six residential quadrangles with living space for about 1000 students each. In addition, a 240-bed apartment complex opened in 1980. The quads are the basic social units for on-campus students, providing residence halls, dining rooms and a diversity of student-sponsored enterprises and social facilities. About half of the undergraduate student body lives on campus.

South of the Main Campus is the 26-acre Ashley Schiff nature preserve. Beyond these woods and linked to the Main Campus by a shuttle bus service is the South Campus, where 11 functionally adaptable single story buildings provide flexible space for emerging University programs.

The Health Sciences Center, east of Nicolls Road, includes Long Island's tallest building. The 540-bed University Hospital admitted its first patients early in 1980. Preliminary authority has been granted for construction of the permanent facility for the School of Dental Medicine. A 1000-car parking structure for the Health Sciences complex is located adjacent to the Teaching-Research Building, and a 450-car outdoor parking facility is adjacent to the Hospital.

Students

Stony Brook's current enrollment is about 16,300 (11,500 undergraduates and 4800 graduate students, including about 2000 part-time graduate students enrolled in continuing education programs). Approximately 64% of Stony Brook's undergraduates come from Nassau and Suffolk counties, 24% are from New York City and 94% are from New York State. Foreign students from some 69 countries represent about 5% of the total student body. At any one time more than 100 Stony Brook students are studying abroad in approved exchange programs in such diverse countries as Canada, Denmark, Colombia, People's Republic of China, and Poland.

Typical attrition and graduation rates for first-time, full-time Stony Brook students are as follows:

Statistics for 1,871 Students Who Entered Stony Brook Fall 1974

Attrition Rates	
during 1st year	15%
during 2nd year	14%
during 3rd year	8%
during 4th year	4%
during 5th year	3%
Persisting Students in 6th year	2%
Graduation Rates	
through 4th year	45%
5th year	9%

One cannot generalize about students' experiences at Stony Brook. The wide range of undergraduate programs means that some will be highly selective and competitive while others are far less so, although the University aims at high standards in all its programs. Its record in placing graduates in the nation's best graduate and professional programs indicates the campus's successes in making high quality programs available to a broad and diverse student body.

Academic Programs

The broad range and high quality of programs at Stony Brook give undergraduates opportunities to pursue both traditional and innovative curricula. Students are encouraged to sample widely, or to delve deeply into one field, guided by nationally famous scholars. The undergraduate curriculum benefits from the special resources that a comprehensive university center can provide. The calibre of faculty, strong in pure and applied research and in the creative arts, results in excellent teaching and in program offerings at the forefront of rapidly changing areas of knowledge.

Undergraduates at Stony Brook may take courses in any of the subject areas in the following Courses of Study list. Information on each subject is available on the page indicated. Subjects students can major in are listed with the HEGIS code number and the degree. (Note: Students who enroll in programs not registered or otherwise approved may jeopardize their eligibility for certain student aid awards. All courses described in this *Bulletin* are approved.)

The *College of Arts and Sciences* offers departmental and interdepartmental or interdisciplinary majors, programs leading to provisional certification in secondary education, and a variety of minor programs. Minors are not required and do not in themselves lead to a degree. An interdisciplinary or interdepartmental major allows a student to explore a broad study area from the perspective of several disciplines. In some cases the program's own courses examine an intellectual program from the point of view of several disciplines. In other cases the major allows students to choose courses from several departments. Within any major in the College, a student may undertake independent study projects. This option allows the student, in consultation with appropriate faculty members, to develop an individual course of academic investigation and study. Through this option, also, qualified upper division students may participate in the research projects of faculty members. Several departments offer internships through which the knowledge gained in classroom study is applied to the world of work.

Courses of Study

Africana Studies (Interdisciplinary Major), 2211, B.A. (see also Minors)	46	Engineering Chemistry (Interdisciplinary major), 1999, B.S.	79,168
Allied Health Professions (see also Health Sciences Center Bulletin)	178	Engineering Science, 0901, B.E.	169
Anatomical Sciences (see Health Sciences Center)	179	*English, 1501, B.A. (see also Minors)	80
Anthropology, 2202, B.A. (see also Minors)	48	Federated Learning Communities	85
Applied Mathematics and Statistics, 1799, B.S.	158	Foreign Language Teacher Preparation Program	87
Art (Department of)	51	*French Language and Literature, 1102, B.A. (see also Minors)	87
Art History and Criticism, 1003, B.A. (see also Minors)	53	Geological Oceanography (see Earth and Space Sciences)	72
Asian Studies (Minor)	141	Geology (see Earth and Space Sciences; see also Minors)	72
Astronomy/Planetary Sciences (see Earth and Space Sciences)	72	*Germanic and Slavic Languages and Literatures, 1103, B.A. (see also Minors)	92
Astrophysics (see Earth and Space Sciences or Physics)	128	Greek (see Classics and Classical Languages)	68
Atmospheric Sciences (see Earth and Space Sciences)	72	Hebrew (see Judaic Studies)	107
Basic Health Sciences	179	Hispanic Bilingual-Bicultural Studies (Minor)	97
Biochemistry, 0414, B.S.	56	*Hispanic Languages and Literature, 1105, B.A.	96
*Biological Sciences, 0401, B.S.	56	History, 2205, B.A. (see also Minors)	99
Biophysics (see Health Sciences Center)	180	Humanities (Interdisciplinary Major), 4903, B.A.	104
Cardiorespiratory Sciences (see also Health Sciences Center Bulletin)	179	Interdisciplinary Courses	151
Certification (see Teacher Preparation)	44	*Italian, 1104, B.A. (see also Minors)	87
Chemistry, 1905, B.A., B.S.	64	Journalism (Minor)	82
Chinese (Complementary to degree major)	67	Judaic Studies Program (Complementary to degree major)	107
Classical Civilization (Minor)	68	Latin (see Classics and Classical Languages)	68
Community and Preventive Medicine (see Health Sciences Center)	181	Liberal Arts (Interdisciplinary Major), 4901, B.A.	108
Comparative Literature (Interdisciplinary Major), 1503, B.A. (see also Minors)	69	Linguistics (Interdisciplinary Major), 1505, B.A. (see also Minors)	108
Computer Engineering (Major Concentration)	162	Marine Sciences (see Biological Sciences, Earth and Space Sciences)	56,71
Computer Science, 0701, B.S.	160	Materials Science and Engineering	171
*Earth and Space Sciences, 1999 B.A., B.S.	71	*Mathematics, 1701, B.S. (see also Minors)	110
East European Languages (see Germanic and Slavic Languages and Literatures)	92	Mechanical Engineering, 0910, B.E.	173
Economics, 2204, B.A.	76	Medical Technology (see Health Sciences Center)	179
Electrical Engineering, 0909, B.E.	163	Microbiology (see Health Sciences Center)	180
Energy Technology (Major Concentration)	167	Minors	
Engineering and Applied Sciences, College of, B.S., B.E. (Applied Mathematics and Statistics, Computer Science, Electrical Engineering, Materials Science and Engineering, Mechanical Engineering, Technology and Society)	155	Africana Studies	46
		Anthropology	48
		Art History	52

Asian Studies	141	Political Science, 2207, B.A.	130
Business	64	Portuguese (see Hispanic Languages and Literature)	98
Child Care and Family Studies	142	Psychology, 2001, B.A.	134
Classical Civilization	68	Religious Studies (Interdisciplinary Major), 1510, B.A., (see also Minors)	138
Comparative Literature	70	*Russian, 1106, B.A. (see Germanic and Slavic Languages and Literatures, see also Minors)	93
English	82	Scandinavian Languages and Literatures (see Germanic and Slavic Languages and Literatures)	95
Federated Learning Communities	85	Slavic (see Germanic and Slavic Languages and Literatures)	95
French	90	Social Research, Methods of (Minor)	146
Geology	73	*Social Sciences (Interdisciplinary Major), 2201, B.A.	141
German	93	Social Studies (Secondary Teacher Certification Program)	144
Hispanic Bilingual-Bicultural Studies	97	Social Welfare (see also Health Sciences Center Bulletin)	178
History	100	Sociology, 2208, B.A.	144
Hunger, Health, and Poverty in International Perspectives (see Federated Learning Communities)	85	Spanish, B.A. (see Hispanic Languages and Literatures; see also Minors)	97
Italian	90	Studio Art, 1002, B.A. (see also Minors)	54
Journalism	82	Swedish (see Germanic and Slavic Languages and Literatures)	95
Linguistics	109	Teacher Preparation and Certification in	
Mathematics	112	Biology	60
Methods of Social Research	146	Earth Science	73
Philosophy	121	English	81
Photography	53	Foreign Languages	87
Religious Studies	139	French	90
Russian	93	German	94
Social and Ethical Issues in the Life Sciences (see Federated Learning Communities)	85	Italian	90
Spanish	97	Russian	94
Studio Art	52	Spanish	97
Technology and Society	177	Mathematics	115
Technology, Values and Society (see Federated Learning Communities)	85	Physics	128
Women's Studies	142	Social Studies	144
Music, 1005, B.A.	116	Technology and Society (Minor)	176
Nursing (see also Health Sciences Center Bulletin)	178	Theatre Arts, 1007, B.A.	148
Pathology (see Health Sciences Center)	180	Urban and Policy Sciences, W. Averell Harriman College for	153
Pharmacological Sciences (see Health Sciences Center)	180	Women's Studies (Minor)	142
Philosophy, 1509, B.A. (see also Minors)	120	Yiddish Language and Literature (see Germanic Languages and Literatures)	95
Photography (Minor)	53		
Physical Education (Complementary to degree major) ...	124		
Physical Therapy (see Health Sciences Center)	179		
Physician's Assistant Education, Program for (see Health Sciences Center)	179		
*Physics, 1902, B.S. (see also Earth and Space Sciences, Astrophysics)	126		
Physics of Materials (see Physics or Materials Science and Engineering)	128		
Physiology (see Basic Health Sciences, School of)	180		
Polish (see Germanic and Slavic Languages and Literatures)	95		

*Teacher Preparation courses offered.

The *College of Engineering and Applied Sciences* has gained a wide reputation for its innovative programs emphasizing the intensive relationship between technology and people, programs which define engineering as the intelligent use of science for the benefit of people. It provides students with opportunities to work with industry in a wide variety of engineering fields. Three approved major programs in engineering give the student enough latitude to plan programs within traditional engineering disciplines or in new interdisciplinary fields. The curriculum is much more flexible than at many other schools of engineering and applied sciences. The engineering degree programs place a strong emphasis on individual design and research projects in the junior and senior years, when students are encouraged to work closely with members of the faculty on projects of interest to them. Programs in the applied science area emphasize applications of analytical techniques to a wide variety of technical and societal problems.

The *W. Averell Harriman College for Urban and Policy Sciences* provides comprehensive education and research for the public sector, offering programs to prepare governmental service professionals with the capability for combining highly technical expertise with broad analysis of policy. Named for one of New York's most distinguished public servants, the College trains students for careers primarily as analysts, planners, and managers. The curriculum and degree requirements are described in the *Graduate Bulletin*. Although the College's main program is at the graduate level, it also offers an accelerated curriculum in which a student who has completed 60 credits and demonstrated aptitude for quantitative analysis and an interest in public service can earn the B.A. and M.S. degrees in three years (a total of five undergraduate/graduate years).

The *Health Sciences Center* with its five schools and its new 540-bed teaching and research hospital is the fastest growing unit of the University. Undergraduate degree programs are offered in the Schools of Allied Health Professions, Nursing, and Social Welfare. Many health sciences courses are open to upper division students from the Main Campus.

The *Center for Continuing Education* offers the opportunity to attend school part-time either to complete an undergraduate degree or to study at the graduate level. Its programs are designed to make it easier for people who work during the day to continue their education, and for this reason most of the classes in these programs are offered in the late afternoon and evening. One of the programs is the Undergraduate Evening Program which makes it possible for students who have completed 57 or more college credits to earn a bachelor's degree. At the graduate level, the Center offers an interdisciplinary Master of Arts in Liberal Studies degree. Students seeking the degree are required to complete a 30-credit program of study and two masters essays usually chosen from among those used to satisfy graduate course requirements.

The *Graduate School* offers advanced degree programs in many fields leading to the master's and doctorate degrees. Stony Brook's advanced graduate programs have constantly received exceptionally high ratings from external evaluation agencies and many are internationally recognized.

The following degrees are offered at Stony Brook: Bachelor of Arts, B.A.; Bachelor of Engineering, B.E.; Bachelor of Science, B.S.; Master of Arts, M.A.; Master of Arts in Liberal Studies, M.A./L.S.; Master of Music, M.Mus.; Master of Science, M.S.; Master of Social Welfare, M.S.W.; Doctor of Dental Surgery, D.D.S.; Doctor of Medicine, M.D.; Doctor of Philosophy, Ph.D.; Doctor of Musical Arts, D.M.A.; and Doctor of Arts in foreign languages, D.A.

As part of the State University of New York, the University at Stony Brook is accredited by the Middle States Association of Colleges and Secondary Schools. The College of Engineering is accredited by the Accreditation Board for Engineering and Technology, Inc. The Department of Chemistry is accredited by the American Chemical Society.

Academic journals emanating from the University include: *Anthropology, Archives of Sexual Behavior, Art Criticism, Biological Psychiatry, Bulletin of Research in the Humanities, Evolution, Gradiva, Heat Transfer—Japanese Research, Journal of Applied Behavior Analysis, Journal of College Science Teaching, Journal of Educational Technology Systems, Marine Biology Letters, Mental Retardation and Developmental Disabilities, The Physics Teacher, Previews of Heat and Mass Transfer, Quarterly Review of Biology, Symbolic Interaction, and Transplantation Proceedings.*

Faculty and Research

The vast majority of Stony Brook's 1000 faculty members hold doctoral degrees and 90% or more are engaged in active research leading to publication, much of it supported by external grants and contracts. The Middle States Association had high praise for Stony Brook's faculty in its latest campus reaccreditation report, noting that "several departments rank among the top in the country and most are of a very high level of quality as measured in terms of professional reputation and scholarly activities." The faculty-student ratio is about one faculty member for every 16 students.

Among the faculty with whom undergraduates study are Distinguished Teaching Professors John Truxal in engineering and Elof Carlson in biological sciences, and several recipients of the State University Chancellor's Award for Excellence in Teaching. In recent years undergraduate courses have been taught by such eminent faculty as Einstein Professor C.N. Yang, the Nobel Laureate in physics; Distinguished Professor Lewis Coser and Justus Buchler in sociology and philosophy respectively; Pulitzer Prize winning poet Louis Simpson in English; National Book Award winner Charles Rosen in music; best-selling author Thomas Flanagan (*The Year of the French*); and art critic Lawrence Alloway.

The Stony Brook faculty includes ten members of the American Academy of Arts and Sciences, seven members of the National Academy of Sciences, and one member of the National Academy of Engineering. More than 300 scholars from 40 countries research and teach at Stony Brook for various periods of time throughout the year.

Autistic children, cancer, lasers, moon rocks, recombinant DNA, the psychology of political attitudes and behavior, the social history of American slavery, and urban problems are but a few of hundreds of research subjects currently under examination by faculty and students at Stony Brook. This past year Stony Brook faculty attracted some \$25 million from the federal government and private foundations and individuals to support research. Over 500 sponsored projects are actively being pursued, including scientific studies, training programs, public service projects, educational activities and library support.

University Libraries

The Stony Brook campus is endowed with a number of libraries established to meet the information needs of students and faculty. The Frank Melville, Jr. Memorial Library, the main library building, provides both an intellectual and physical focal point for the campus and is among the largest academic libraries in the nation. Within the architecturally distinctive Melville building are collections serving the social sciences, humanities, fine arts, and music. These collections are particularly strong in English, Western European and Latin American literature, as well as in modern Western history and Latin American history. Special departments in the library provide ready access to current fiction and non-fiction, current periodicals, government documents, maps, microforms and legal matters. Other facilities of note are a music listening center, a student lounge and a variety of individualized study carrels. The full range of library services, including open stack privileges and data base searches, are available to all students.

Five branch science libraries are located in departmental buildings—biology, chemistry, earth and space sciences, engineering and mathematics/physics. There is also a Health Sciences Library in the Health Sciences Center. Collectively, the University Libraries contain over 1,250,000 bound volumes and 1,600,000 publications in microformat.

Other resources in the main library building include the William Butler Yeats Archives, the Poetry Center, and the Institute for Advanced Studies of World Religions (see Special Centers and Institutes, p. 10).

Library Hours: During the academic year, the library is generally open Monday through Thursday, 8:30 a.m. to 12 midnight; Friday, 8:30 a.m. to 10 p.m.; Saturday, 10 a.m. to 6 p.m.; and Sunday, 2 p.m. to 12 midnight. During intersession and other vacation periods, hours are generally 8:30 a.m. to 5 p.m., Monday through Friday, and closed weekends. The library is usually closed on major holidays.

Note: Library hours are subject to change from year to year, and even within the year, depending on constraints imposed by budgetary limitations. Students are urged to check the posted hours of operation at the various branch libraries, as well as at the main library.

Computing Center

Stony Brook's Computing Center, located at the west side of the Engineering Quadrangle, is a major centralized facility to service the computing needs of instruction, research and administration. By supporting both local and remote batch access and a large network of interactive terminals, the Computing Center makes extensive computing capabilities available to the campus community.

The central computer complex consists of a UNIVAC 1100/82A system with four million characters of main memory, two billion characters of on-line disk storage and a peripheral complement of tape drives, printers and card processing equipment. More than 180 remote devices are located on the campus and are connected via a communications network. A tape library of more than 6,000 magnetic tapes provides for storage of users' programs and data in machine accessible form.

The Computing Center operates three shifts each day, five days a week, plus one shift on Saturday. There are usually unattended operations (no operators present) for the remainder of the weekend. The Center is open for authorized student access each weekday from 8:30 a.m. to 11:30 p.m. and from 9 a.m. to 4 p.m. on Saturdays.

Gymnasium

The gymnasium building, which includes a swimming pool, large and small gyms, squash and handball courts, exercise and universal gym rooms, and a dance studio, is open seven days a week from 8 a.m. to midnight except on the eve of a major holiday, when it closes at 4 p.m. The gymnasium is also closed on major holidays.

Other physical education facilities include tennis courts, a quarter-mile track and separate fields for baseball, softball, soccer and intramural football.

Most facilities may be used for recreational purposes when they are not scheduled for classes, intramural or intercollegiate events, or special events. Current schedules of recreation hours may be obtained in the Physical Education Office. Hours are subject to change depending on availability of staff.

Stony Brook Union

The Stony Brook Union is the campus center for social, recreational and cultural activities at Stony Brook. It was designed to provide space for activities which enhance the academic environment. It is open to all students, faculty, staff, and community.

The Union is a place to relax, to gather with friends. It is a place to view a film, hear a concert, or watch television. Individuals may take a craft or photography course, browse through the Barnes and Noble Bookstore, buy records at discount prices, get a haircut, bowl, play billiards, eat a quick snack or enjoy a leisurely meal.

The Union has space for many kinds of events. There are ten meeting and conference rooms, an auditorium which seats 365 persons and a ballroom that can accommodate 600. The art gallery displays the works of campus and community artists, and is open weekdays for browsing.

The Union has hosted China Weekend, Caribbean Week, Caricature Week, Handicapped Awareness and Career Development Symposiums, as well as 'Superdance '80' for the benefit of the Muscular Dystrophy Association. Activities fairs and poster and art print sales are offered every semester.

The University Information Center, located in the Union lobby, is a campus-wide resource center. Campus directory information, campus maps, bus and train schedules, and concert, film and other events information are available. The Information Center's phone number is 246-3636. Coming soon will be 'Info-Line,' a taped, campus telephone information system.

The Office of Student Activities offers professional programming assistance to campus clubs and services. The Activities Calendar Office publishes a calendar of campus events each semester. Monthly updates are published during the last week of every month and are delivered throughout the campus. Copy deadline for the calendar is the 15th of the month preceding publication.

The Faculty-Student Association (FSA) operates many Union services—check cashing, SCOOP Records, food services, the meal plan office—and several eating places in the Union: Lackmann Cafeteria, the Knosh Deli, the Cookie Clown Snack Bar, Dale's Ice Cream Parlor, and the End of the Bridge Restaurant and Cocktail Lounge.

The Rainy Night House, a student-run cafe, serves specialty teas, beer, brownies and other pastries. Often campus talent is booked to entertain patrons.

The Union Craft Center offers workshops in ceramics, blacksmithing, Chinese cooking, photography, silk-screening, leatherwork and many other crafts. The non-credit classes are taught by professional and student staff, and are open to all. Fees are nominal. For information call 246-3657.

The Union provides headquarters for many student groups such as Polity (the undergraduate student government), Women's Center, Gay Student Union, ENACT (Environmental Action) and NYPIRG (a consumer interest group).

Hours: During the fall and spring semesters, the Union is open Monday through Thursday, 8 a.m. to 1 a.m.; Friday, 8 a.m. to 2 a.m.; Saturday, 10 a.m. to 2 a.m.; and Sunday, 10 a.m. to 1 a.m.

During recesses or intercession it is open Monday through Friday, 8 a.m. to 5 p.m. and is closed Saturday and Sunday.

Summer session hours are Monday through Friday, 8 a.m. to 8 p.m.; and Saturday and Sunday, 10 a.m. to 5 p.m. The Union is closed New Year's Day, Easter Sunday, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas Day.

Note: Union hours are subject to change from year to year and even within the year. For building hours information, call 246-3636.

Special Centers and Institutes

The *Center for Contemporary Arts and Letters* develops campus art and letters holdings in print and electronic media; and sponsors visits by practitioners and critics of the arts; the *Center for Industrial Cooperation* links the research resources of the University to the needs of Long Island industry, especially in areas of high technology; the *Center for Photographic Images of Medicine and Health Care* in the School of Medicine collects, catalogs and disseminates slide duplicates of historical photographs relating to medicine and health care, develops curriculum materials based on photographic images and promotes research; the *Economic Research Bureau*, in cooperation with other University units and community agencies, conducts research in policy problems in health economics, public finance and regional economics; the *Educational Communications Center* helps develop more effective teaching methods through the use of media and other technical aids; the *Educational Products Information Exchange Institute* is a non-profit consumer agency for educational materials and equipment, chartered by the Board of Regents of the State of New York; Stony Brook's branch of *Empire State College*, the State University of New York's non-traditional learning arm, offers study towards associate and bachelor's degrees without formal class attendance; the *Institute for Advanced Studies of World Religions*, a privately endowed foundation, assists the study and teaching of world religions, particularly Asian systems, through its library containing over 50,500 volumes, 590 periodical titles, and over 21,000 rare manuscripts in microfilm, informational services (including bibliographic reports on research in progress worldwide), translation program, book publication program, research program, and international relations.

The *Institute for Energy Research* explores new areas of energy policy and related research and regularly conducts energy management training programs for energy experts from around the world; the *Institute for International Studies*, drawing on University and community resources, encourages research and sponsors seminars and conferences on problems of international concern; the *Institute for Theoretical Physics* has a faculty of 13 and has guest scientists and visitors numbering about 100 every year, working in various aspects of elementary particle theory and nuclear theory; the *Institute for Urban Sciences Research*, the research arm of the W. Averell Harriman College for Urban and Policy Sciences, organizes and carries out research projects and programs on public policy problems and issues; the privately endowed *Institute of American Studies* conducts a summer graduate program for outstanding high school social sciences teachers; the non-profit

International Art of Jazz, Inc. provides concerts, workshops and an arts-in-education program for elementary, secondary and college students throughout New York State, utilizing the art form in non-traditional ways as a medium of communications for intercultural awareness and understanding; the *Laboratory for Behavioral Research* houses experimental, computer-controlled laboratories for the study and analysis of political judgment; the *Laboratory for Energy Technology* considers the technical, economic, and societal measures of excellence and acceptability of energy systems in terms of available energy technology options and examines the efficiency, conservation and environmental aspects of renewable and other energy technologies against these general measures of excellence and acceptability; the *Laboratory for Planetary Atmospheres Research* comprises an interdisciplinary program in atmospheric science between the College of Engineering and Applied Sciences and the Department of Earth and Space Sciences; the *Long Island Regional Advisory Council on Higher Education* is a consortium of colleges and universities on Long Island dedicated to improved educational effectiveness through inter-institutional cooperation.

The *Long Island Research Institute*, which is funded by the New York State Office of Mental Health, works closely with the Department of Psychiatry and Behavioral Sciences in mental health and behavioral sciences research; the *Marine Sciences Research Center* conducts research cruises, performs studies in oceans, bays, harbors and lakes, and manages the Flax Pond Laboratory, a 146-acre tidal salt marsh research facility near the campus; the *Museum Computer Network*, now headquartered on campus, works to help many of the world's major museums and other institutions make their collections and related information more accessible by computerizing museum files and archives; the *Museum of Long Island Natural Sciences*, which houses permanent and special temporary exhibits and has the largest collection of natural history objects on Long Island, is engaged in research and provides programs in Long Island's geological and ecological developments for both adults and schoolchildren; the *National Coordinating Center for Curriculum Development* develops and implements curriculum materials aimed at increasing the number of minority engineers; members of the *Nuclear Structure Laboratory* conduct nuclear physics research on an FN tandem Van de Graaff accelerator and are currently developing the first University-based superconducting LINAC booster in the world to expand research capability in heavy ion research; the *Poetry Center* maintains a collection of poetry as well as video and audio cassette recordings of poets reading from their own works, and sponsors readings by established and younger poets, and lectures and symposia on the relationships of the humanities to the other disciplines.

The *Research Group for Human Development and Educational Policy* studies the academic and non-academic functioning of students, faculty, and administrators at Stony Brook and other institutions nationwide and participates in the implementation of its recommendations; the *Research Foundation* administers grants and contract funds supporting sponsored research, training and related programs carried out by, or supervised by, University faculty; the *Science and Mathematics Teaching Center* assists Long Island math and science teachers in curriculum planning and the development of special resource materials; the *Stony Brook Foundation, Inc.*, a not-for-profit corporation formed to encourage and accept gifts and endowments in support of University programs, as well as scholarship and loan programs for needy students, also seeks support for University programs which cannot otherwise be supported by the State budget; the *Stony Brook Radiation Laboratory* is an organized research unit in which members work primarily on a variety of problems on the frontiers of nuclear physics and elementary particle physics; *Taproot Workshops, Inc.*, a non-profit, county-wide organization supported by

grants from the New York State Council on the Arts and the Suffolk County Legislature, teaches creative writing to elderly people in congregate centers and nursing homes; the *William Butler Yeats Archives* has available for research purposes a comprehensive microfilm collection of Yeats' manuscript materials.

Campus Activities

A wide variety of lectures, seminars, concerts, exhibits, theatrical performances, movies and sporting events are scheduled regularly during the academic year. Some recent well-known speakers at Stony Brook have included comedian-activist Dick Gregory, author-historian Barbara Tuchman, sportsman Jim Bouton, Nobel physicist Rosalyn Yalow, playwright-musician Elizabeth Swados, composer John Cage, Indian spiritual leader Sri Chinmoy, environmentalist Barry Commoner, actor James Whitmore and Watergate personality G. Gordon Liddy.

Art galleries in the Fine Arts Center, in the Library, and in the Stony Brook Union offer regularly changing exhibitions of works by on- and off-campus artists. The Museum of Long Island Natural Sciences, located in the Earth and Space Sciences Building, houses a continuous showing of dioramas depicting natural Long Island scenes, as well as special temporary exhibits. An average of five films are shown weekly on campus, including vintage and current productions; usually admission is free for students. The campus enjoys an average of one classical music concert per day, including student recitals and performances by faculty and visiting artists.

The Fine Arts Center sponsors several subscription series of concerts, theatre and dance. In its first three seasons, it has brought internationally acclaimed performers to Long Island, including Rudolph Serkin, the Bartók Quartet, Isaac Stern, Andre Watts, Itzhak Perlman, the Jose Limon Dance Company, and the Alvin Ailey Repertory Ensemble. Recent campus theatrical productions included "The Belle of Amherst" starring Julie Harris as Emily Dickinson; and performances by the Warsaw Mime and the National Theatre of the Deaf.

Popular student-sponsored concerts recently on campus have included performances by Jerry Garcia, the Allman Brothers, Richie Havens, Carly Simon, Chuck Mangione, George Benson, The Ramones, Frank Zappa, and Jimmy Cliff.

Musically inclined students find creative outlets for their abilities in the University Band, University Orchestra, University Chorus, and Stony Brook Chamber Singers. Theatrically-minded students are encouraged to participate in open auditions for campus theatre productions.

Polity, the undergraduate student organization, and its related groups, particularly the Student Activities Board, sponsor many campus activities. Polity presently funds more than 100 student interest clubs and organizations which in many cases complement students' academic work. Varied student interests are represented by groups as diverse as the Pre-Med Society, Stony Brook Karate Club, Black Students United, Jazz Club, French Club, Sailing Club, Fencing Club, Geological Society, and Science Fiction Forum. Groups of 25 students or more interested in forming such organizations are eligible for Polity funding.

Stony Brook fields varsity teams in 16 intercollegiate sports competing through the National Collegiate Athletic Association (NCAA), the Eastern Collegiate Athletic Association (ECAC) and

the Association for Intercollegiate Athletics for Women. In 1980, the men's varsity soccer team captured the co-championship of the ECAC Division III New York-New Jersey area finishing with a 9-4-3 record. The football club qualified for the 1980 National Collegiate Football Association playoffs with a 6-1-1 mark and the number four ranking in the country. The men's basketball team made it to the NCAA Division III playoffs for the fourth consecutive season and guard Mel Walker and forward Rich Malave were named to the ECAC All-East team.

The campus student newspaper, *Statesman*, is published three times weekly during the academic year with a circulation of 10,000 on campus and in the local community. Other student publications include *Stony Brook Press*, an alternate student newspaper; *Black World*, a newspaper focusing primarily on news of interest to the black community on campus; *The Shining Star*, a newspaper for the Jewish campus community; *The Hapten*, a newspaper issued by the medical students; *Fortnight*, a feature magazine; *Soundings*, a literary magazine; *Specula*, the campus yearbook; and *Stony Brook Engineer*, a magazine published by the engineering students. WUSB-FM (90.1), the University radio station, programs a wide variety of music, sports, and talk shows for the campus and Long Island community.

Campus ministries serve student religious concerns through the Interfaith Center, offering regularly scheduled Jewish, Catholic, and Protestant services and activities which are open to all. Religious and personal counseling services for students of these and other denominations also are provided through the Interfaith Center. The Catholic ministry offers a Newman Club for students, and religious and social services and activities in a Catholic "parish" atmosphere for the campus community. United Ministries in Higher Education on Long Island, the ministry of six Protestant denominations, conducts a project-oriented ministry which seeks to promote a creative, reciprocal interaction among campus, church, and community-at-large in the service of human needs from the perspective of the communities of faith it represents. The B'nai B'rith Hillel Foundation offers religious, social, and cultural services as well as personal counseling for students and faculty. It is the umbrella organization for all the Jewish activities at Stony Brook.

The International Student Organization meets student interests in various cultural traditions, as do other groups including the Asian Student Association, India Association, African Students Association, Latin American Student Organization, and Caribbean Association.

Community Ties

Over 350 concerts, lectures, films, theatre productions, art exhibits and sports events on campus are open to the public each semester.

With more than 6000 people on the overall campus payroll, Stony Brook is one of Long Island's largest employers. Recent studies indicate that the University generates over \$300 million annually in direct and indirect economic impact on Long Island.

In many ways, the University works with surrounding communities to provide services and to help solve area problems. The Computing Center assists numerous colleges, research centers and governmental agencies. Student teachers serve in local secondary schools, and numerous educational projects involve close University-school cooperation. The Point of Woods School at the University provides opportunities for hyperactive elementary schoolchildren to become productive students. The recently opened 540-bed University Hospital offers sophisticated medical, surgical, psychiatric and emergency facilities. In addition, the University offers community residents a number of other health care services, such as those provided by the Dental Care Center, Psychological Center, Sex Therapy Clinic, Sudden Infant Death Syndrome Information and Counseling Center, and Laboratory for Arthritis and Related Diseases. The Marine Sciences Research Center, the Statewide center for

marine research, undertakes projects on a wide variety of marine related subjects ranging from regional erosion and pollution problems to management of the fishing industry. The W. Averell Harriman College for Urban and Policy Sciences works with governmental agencies at all levels to help solve problems in fields such as energy, federal government budgeting, efficiency and organization, sanitation, waste disposal, zoning and transportation. The Economic Research Bureau, in cooperation with other University units and community agencies, conducts research in policy problems in health economics, public finance and regional economics. Several hundred Stony Brook students annually participate in community volunteer programs in tutoring, recreation, health care and other areas. The Association for Community-University Cooperation works to develop positive relationships between the University and the community through an annual series of "town-gown" programs and events.

Student Service Information

Health Service

The University Health Service, located in the Infirmary, concerns itself with student health needs. It is available to faculty and staff on an emergency basis only. The hours of operation of the Health Service are Monday through Friday, 8 a.m. to 10 p.m.; Saturday and Sunday, 9 a.m. to 5 p.m.

A physician is present at the Health Service from 10 a.m. to 5 p.m. on weekdays and from 3 to 5 p.m. on weekends with nurses present at all hours of operation. A physician is on call when the Health Service is open with no physician in attendance. During the weekdays there are scheduled hours for various specialty clinics including gynecology, dermatology, allergy, urology, surgery, orthopedics, and podiatry. For further information or help, call the University Health Service at 246-2273 (6-CARE).

Student Affairs

The Office of Student Affairs, located in the Administration Building, is responsible for admissions, financial aids, and records services; and for the support and direction of the Office of Residence Life, the University Counseling Center, Career Development, Special Programs, and the Stony Brook Union. The Office also serves as a student referral and information center for campus and community resources.

Residence Life

Residence life at Stony Brook is an integral part of students' educational experience, offering opportunities for social, intellectual, interpersonal, and intercultural development. Governance and activities vary, but within each residential college students are encouraged to become involved in all aspects of residential living. Students take part in college legislatures, in student-run businesses, and in campus-wide committees and task forces concerned with life in the residence halls. The professional staff, student staff, and residents establish regulations and customs by which each building functions within the larger University. This emphasis on individual responsibility is intended to promote personal growth and a positive experience for those students who live on campus.

The residential colleges, each housing from 200 to 400 students, are arranged in complexes called quadrangles, which accommodate approximately 1000 students each. Every quadrangle, although an integral part of the entire residential community, has its own unique atmosphere. All colleges house men and women with varying academic interests from all four classes. Both new and returning students have an opportunity to request assignment to specific residence halls, although returning students have the higher priority for such choices.

Each building has public lounges, study areas, laundry rooms, and recreational facilities. Some residential quadrangles have dining halls in operation. Students may choose to participate in one of several meal plans or they may pay a Cooking Fee and prepare their own meals.

A full-time Residence Hall Director (RHD) lives in each building. RHD's are staff members of the Office of Residence Life. The RHD is assisted by a staff of Resident Assistants and Managerial Assistants, part-time student staff members on each corridor or wing. The staff combines building management with a strong emphasis on enhancing individual and group life within the buildings through community development, programs, advising, and counseling.

Unmarried new students under the age of 21 are usually required to live in the residence halls when there is space available.

Stage XVI, the University's new apartment complex, is designed to house graduate, married and health sciences students. Single parents with children are also eligible to apply for accommodations in the complex. The apartments have one, two or three bedrooms, a kitchen, livingroom and bathroom. All apartments are furnished. Agreements are made on a 12-month basis. The cost varies depending on the size of the apartment and the number of occupants.

Information regarding the above Residence Life programs and/or procedures for applying for housing can be obtained by writing to the Residence Life Office or calling (516) 246-7006, 7007.

Off-Campus Housing Service

An off-campus housing service is available to assist students in finding off-campus living arrangements. This service, including listings for available facilities and tenant information, can be obtained by visiting the Off-Campus Housing Office.

Commuter College

The Commuter College is expected to move to a new location in the Stony Brook Union during the spring of 1981. Commuters as well as other members of the University community will find a quiet place to study, a comfortable environment in which to relax between classes, a well designed area for lunch or meeting old and new friends. A typing and media room will also be available. The Commuter College will also sponsor campus events such as films, holiday parties and theatre and ski trips. Often special events are offered at reduced rates for commuters. Commuters may well find the Commuter College to be a productive center for information exchange, campus-based social life, the development of study groups, access to student government and organizations and the enrichment of the experience of being an active Stony Brook commuting student.

Counseling Center

The University Counseling Center, located on the second floor of the Infirmary, provides individual, group, family, and marital counseling and psychotherapy for students experiencing psychological difficulties. The Center also offers programs for personal growth and enrichment. For information, please call the Center at 246-2280, 2281, or 2282.

Returning Student Network

Recognizing some of the special concerns of adult students, the Returning Student Network has established various services, such as special orientation sessions and workshops to help adult students cope with the responsibilities of work, family and school. Many key offices on campus have designated special returning student advisors to offer information and assistance to older students.

Career Development Office

The Career Development Office assists all students and alumni with career planning and acts as a resource for information on full-time permanent employment. Individual and group consultation with students is emphasized while periodic critical self-examination assists students in relating academic expertise to aspirations for future professional involvement and advancement.

An on-campus recruitment program permits interested seniors and graduate students to meet with prospective employers and graduate school representatives, and a credentials service is provided to support students in their application for jobs or advanced study. These records are maintained permanently.

Students are encouraged to participate in the Student Volunteer Service Program (VITAL), in which experience in specific career areas is received by working with agencies and institutions seeking student volunteers.

Group discussions are held to assist students and alumni in writing resumes and to develop individual systems for applying for employment. As part of the Career Development Office's Out-Reach Program, visits are made by the career counselors to residence halls and campus departments in order to provide a broad exposure to career-related information.

The Career Development Resource Library has information pertaining to employment opportunities in business, government, social service, and education. Relevant materials are available on career planning, teaching certification, health careers, graduate and professional school admissions testing, graduate school and financial aid information and recruitment options.

Other services offered include information and applications for examinations required by various graduate and professional programs (i.e., the GRE, LSAT, GMAT, DAT, NTE, Actuarial Exam, MCAT, TOEFL, OAT, AHPAT and Pharmacy Test), an annual career information conference and a library of taped descriptions of various careers by people actually engaged in the careers being discussed.

It is suggested that students visit the Career Development Office and become familiar with the services it provides. The office, located in the Library Building, Room W-0550, is open weekdays from 8:30 a.m. to 5:00 p.m. Its telephone number is (516) 246-7023/4.

Veterans Affairs

The Office of Veterans Affairs provides counseling for veterans and veterans' dependents eligible to receive educational benefits. These students are urged to contact that office concerning their eligibility as soon as possible.

Foreign Student Affairs

The Office of Foreign Student Affairs assists students and faculty from other countries with finances, housing, government regulations (including immigration and tax concerns), cross-cultural differences and other general matters. Questions relating to academics are usually handled by academic advisors within the individual's school or department. The foreign student affairs staff works with community groups and student organizations to provide a varied program of activities during the year, including tours and trips, discussion groups, home hospitality, speaking engagements and other events.

English as a Foreign Language

This program includes diagnosis and testing as well as classes aimed at raising students' ability to understand, speak, read and write standard English to the level of United States college students.

American Living Institute

Stony Brook offers a "Summer Institute for American Living," a program of courses and activities in American language and culture designed to meet the separate and special needs of foreign scholars, their spouses and dependent children. Participants in the Institute attend classes, visit American homes and join excursions to urban, suburban and rural places of cultural and historic interest. Admission is open to all foreign students who have attained a high school education or its equivalent and to dependent spouses and children accompanying them.

Upward Bound

The Office of Upward Bound administers a compensatory education program for high school students from eastern Suffolk County. The purpose of the program, which includes a summer residential component, is to motivate and prepare high school students to go on to some form of post-secondary education.

Campus Judiciary Office

The Campus Judiciary Office administers the University Student Conduct Code, the regulations and procedures for student discipline in non-academic matters.

Office of the Disabled

The Office of the Disabled coordinates services to disabled students and will assist them in application to the University, admission and orientation procedures. (The academic admission requirements and procedures for disabled students are the same as for all other applicants.) The Office will also help in the following areas: housing, meals, medical assistance (coordination with the Director of the University Health Service), recreation, academic needs and progress, special parking permits, facilities, financial aid and transportation.

A small Center for the Disabled, located in the Reserve Room of the Melville Library, emphasizes service to visually and physically disabled students and faculty. The Library also offers extra services such as special study carrels and a paging service in the stacks for disabled students.

It is strongly recommended that after admission, students who are disabled identify themselves prior to the start of classes. These students should call 246-6051. An early start will permit the evaluation of possible problems and will provide time to work out solutions.

Child Care Services

The University has day care services for children ranging in age from two months to five years. There are three on-campus facilities staffed with professionals who are assisted by students enrolled in course work practice. Each of the three centers specializes in a particular age group and curricular approach. The centers are open from 7:30 a.m. to 6 p.m., and fees are charged on a sliding scale.



Admission

(The information in this chapter refers only to undergraduate admission to the Colleges of Arts and Sciences and of Engineering and Applied Sciences. Students who seek admission to the W. Averell Harriman College for Urban and Policy Sciences should contact the College's Director of Education, 305 Old Physics; students beginning the program must have completed at least two years of college. Transfer students and current Stony Brook students who seek admission to any of the undergraduate programs in the Health Sciences Center should contact the Health Sciences Center section in this Bulletin and the separate Health Sciences Center Bulletin. There are no freshman admissions to the baccalaureate programs in the Health Sciences Center; all undergraduate Health Sciences Center programs begin in the junior year.)

Freshmen

A. General Information

A strong, broadly-based academic preparatory program is advised for all applicants to Stony Brook. Such a program will include, at a minimum, three years of mathematics, three years of foreign language, three years of science, and four years of English, including development of the ability to express ideas clearly and logically in writing. Since Stony Brook receives many more applications than it has places available for new students, those applicants presenting the strongest preparation for advanced academic study will be more favorably considered. Favorable consideration will also be given to students whose records, and supporting documents indicate creative talents or other special evidence of potential for benefiting from the educational resources at Stony Brook. Students who intend to enter an engineering, mathematics, or natural or health sciences program are urged to complete four years of high school mathematics and a year each of chemistry and physics. Those who expect to major in a social science should take four years of mathematics.

A high school diploma (academic or college preparatory program), high school equivalency diploma, or an acceptable substitute is required. While the University does not actively seek students who do not expect to complete all requirements for a high school diploma before matriculation at college, such appli-

cants are evaluated and offered admission when admissions criteria are met. They must submit a letter of support from their high school principal along with their application. It is more common, however, for advanced high school students to remain enrolled in high school, where they follow an academic program that includes both high school and approved college courses.

Academic Admission Program

For the majority of students, academic consideration based on the unweighted average earned in an academic program in high school and class rank are paramount. Scores on standardized tests are required and will be taken into consideration when they enhance a student's application. (Students with outstanding high school records and other evidence of academic promise are eligible for the Early Notification and University Scholars Programs. See next column.

Alternative Admission Program

Recognizing that some students who do not meet the normal criteria have acquired academic and intellectual excellence in ways that are not completely reflected in grades and class rank, the University is prepared to admit up to 30 percent of its freshman applicants on the basis of high promise demonstrated by means other than the traditional academic criteria. Alternative categories directly related to the University's curriculum include creative ability in music, theatre, and literary arts, and special academic strength in mathematics, foreign languages, philosophy, and engineering, as assessed by the appropriate academic departments. Applicants interested in being evaluated on the basis of unusual academic strength in one or more areas are urged to sit for the appropriate College Entrance Examination Board achievement tests and to have the scores forwarded to the Stony Brook Undergraduate Admissions Office. Scores on these tests are an important factor in evaluating applications in this category.

Alternative categories that are less directly related to the curriculum but that may strongly influence an individual's past or future academic performance include demonstrated leadership ability and special personal circumstances. In cases where personal situations such as age, cultural background, and family circumstances, among others, are being considered, exceptionally strong motivation will be taken into account. Applicants whose academic records have been adversely affected by a physical handicap may also apply in the 30 percent category.

A supplementary application for the Alternative Admission Program is used to give candidates an opportunity to clarify the strengths and weaknesses of their high school records. Counselor and teacher recommendations and student essays are considered for the depth they add to statistical data. Additional information that might help interpret or clarify an application is welcomed.

B. Application Procedures for New Freshmen

Freshmen are admitted to the University rather than to a particular program. All applicants must submit a completed "Application for Admission to Undergraduate Study" available with in-

struction booklet and return envelope in New York State high school guidance offices or from the Undergraduate Admissions Office, State University of New York at Stony Brook, Stony Brook, New York 11794. All applications are to be sent to the Application Processing Center (APC) in Albany and are then forwarded to Stony Brook.

Candidates for admission in either spring or fall semester are encouraged to file their applications early in the fall. Candidates for alternative admissions will be sent a Supplementary Application, which should be returned to the Undergraduate Admissions Office by the deadline date indicated. It is the student's responsibility to ensure that the supplemental materials are received by the University on or before the specified date, usually within four weeks from the date the Supplementary Application is mailed to the applicant.

C. Notification of Freshman Admission

Applicants for admission in the fall semester will be notified by mail beginning February 15, and notification will continue on a rolling basis (that is, as consideration of applications is completed, decisions will be rendered) as space permits. Decisions on applications for admission in the spring semester will be made, and students notified, on a rolling basis. The earlier the completed application is received in the Undergraduate Admissions Office, the sooner notification will be sent.

D. Early Notification for Freshmen

Students who have achieved exceptionally high grades in academic courses (English, foreign languages, mathematics, sciences, and social studies) are good candidates for the Early Notification and University Scholars Programs. Also, strong candidates will have earned outstanding (SAT or ACT) test scores. Students qualifying for the Early Notification Program will receive notice of admission beginning December 1, and notification will continue through January 15 as applications arrive in Stony Brook's Undergraduate Admissions Office from APC. Applicants who do not receive notification by late January may assume that their applications arrived too late or they did not qualify. In either case they will receive notification from the University along with other applicants soon after the general notification date.

Students notified early will have an opportunity to work with a faculty advisor who is knowledgeable about academic programs in one of the following areas: humanities, social sciences, health sciences, biological sciences, physical sciences, mathematics and applied mathematics, computer sciences, and engineering. The candidate may make early contact with his or her advisor to begin planning an academic program.

Students in this group who are applying for financial aid will be provided with an estimate of their eligibility within one week of the Financial Aid Office's receipt of appropriate documents. They will also receive early consideration for campus-based federal aid programs.

Participating students who request on-campus housing will be guaranteed housing in the quadrangle of their choice, although they will not be exempt from tripling should the number of housing requests require this expedient in the early weeks of the semester.

University Scholars Program

Students selected for the Early Notification Program are eligible for consideration by the Selection Committee to receive a \$500 University Scholarship upon enrolling at Stony Brook and each year thereafter for a total of \$2,000, providing academic achievement is maintained at the level described at the time of the initial award. The 25 University Scholarship winners and 25 alternates will be notified by mid-January, and must advise the University of their acceptance of the Scholarship by the date

announced in the notification letter. These scholarships are made possible through a special fund provided by a bequest of Cecil L. and Claire D. Hall.

Further information about the Early Notification and University Scholars Programs is available from the Undergraduate Admissions Office.

E. Deferred Enrollment

Stony Brook permits a limited number of admitted freshmen to defer enrollment for a semester or a year. The University expects such students to use this opportunity to travel, work, perform service, or otherwise enrich their life experience through activities other than of formal academic endeavor within the United States. Applicants granted deferred enrollment who subsequently seek to transfer credit earned at institutions within the United States during the year of their absence void the University's responsibility to reserve a place for them at the time agreed upon for their enrollment. Their status then changes to that of transfer students and they must file new applications in competition with all other transfer applicants. Completion of course work in institutions of higher learning outside the United States, while acceptable in the spirit of this policy, would be considered more valuable when used as a supplement to non-classroom activities.

Since it is the student's responsibility to return to the University at the beginning of the semester following completion of the term of deferred enrollment, the University's obligation to reserve a place terminates at that time. A student would then have to file a new application for subsequent consideration.

Instructions for applying for deferred enrollment are mailed with the offer of admission. Applications must be received in the Undergraduate Admissions Office by May 1. Decisions will be rendered by June 1 to all who requested consideration. Students offered admission after May 1 may be considered for deferred enrollment should any spaces still be available.

Transfer Students

A. General Information

Stony Brook encourages application by transfer students and urges them to acquaint themselves prior to transfer with the University's requirements for admission, as well as the requirements for their intended majors. Transfer students who have planned their first two years of study with some knowledge of the probable expectations of their future transfer college are able to make a smoother transition than those unprepared. For the College of Arts and Sciences, graduation requirements appear on pp. 42 to 43 and for the College of Engineering and Applied Sciences, on pp. 156 to 157. Requirements for individual majors appear in the alphabetical listings in the chapter devoted to each of the colleges. While, in most cases, credits taken previously will transfer to Stony Brook for distribution requirements, not all transferred courses may be accepted by a department toward fulfillment of major requirements. (See Transfer Credit Policies, p. 17.)

B. Application Procedures for Transfers

Any student who has been registered previously (summer and part-time study included) at an educational institution since graduating from high school must apply as a transfer student. If no grades were earned, a statement of attendance and honorable dismissal is required. A grade point average of 2.5 (A=4.0) is usually the lowest base considered for transfer. In addition to completing the application, transfer students must submit an official transcript from each post-secondary institution attended. High school transcripts should be forwarded to the Undergraduate Admissions Office, as the Arts and Sciences mathematics and foreign language proficiency requirements may be satisfied by either third-year high school Regents Examinations scores (75 or more) or College Entrance Examination Board Achievement Test scores (525 language, 550 mathematics).

Applicants for the spring semester should file an application by October 15. Applicants for the fall semester are urged to file their applications by February 1.

C. Notification of Transfer Admission

All applications for fall received by the Applications Processing Center in Albany by February 1 will receive first priority in consideration for admission. Letters of notification will be mailed to applicants beginning February 15. Applications received after February 1 will be reviewed as they are received (on a rolling basis) and notification sent, should any space still be available.

All offers of admission are conditional, pending receipt of official records showing successful completion of academic work in progress. A significant drop in grades will necessitate a review of the application and may result in withdrawal of the offer of admission. When an admitted transfer student's index for the semester immediately preceding registration falls below 2.5 (A=4), the student is advised to contact an admissions counselor as soon as possible to help resolve potential difficulties.

In all cases it is the student's responsibility to see that a final college transcript is sent to the Undergraduate Admissions Office. Community college applicants who expect to be degree recipients (A.A. or A.S.) must present evidence of receipt of the degree prior to enrollment. Also, ALL transfer students must present a final transcript to the Stony Brook Admissions Office PRIOR to final registration. Requirements for an authorization to register and completion of registration (including a medical report and payment of necessary deposits) are explained with the offer of admission.

D. Two-Year College Graduates

The University is committed to offering admission to qualified graduates of university-parallel programs, i.e., A.A. and A.S. degree recipients from community and agricultural and technical colleges within the State University of New York. Such students will be given preference, although not necessarily in the program of their choice, if the number of applicants necessitates establishing priorities.

In order to prepare for a smooth transition to Stony Brook after completing the associate's degree, two-year college students should choose their courses with some knowledge of the requirements of the bachelor's level program they plan to complete after transfer. Associate degree candidates who wish to plan their studies as the first half of a continuous four-year program should discuss this with their academic advisors. To assist in this planning Stony Brook routinely prepares tables of course equivalents for the three two-year colleges on Long Island. Jointly prepared advisory materials are also available for many Stony Brook majors. Advisory information to assist students at other State University two-year colleges in advance planning will be available upon request by fall 1982. Graduates of career-oriented programs (A.A.S. and A.O.S.) will be considered for admission on an individual basis and in competition with other transfer applicants.

To facilitate students' transfers from community colleges to Stony Brook and to maximize the University's service to these applicants, Stony Brook strongly encourages two-year college matriculants to file applications in the fall of their sophomore year for the following fall semester. Such early application will make possible early decisions, enabling more transfer students to participate in Orientation and advance registration and expand consideration for financial aid resources. The University is prepared, therefore, to render decisions to two-year college matriculants on the basis of two semesters of full-time work at the two-year college, since its offer of admission is conditional on the student's final transcript showing award of the A.A. or A.S. degree. (Applicants for admission to the spring semester are reminded that applications are not available until September

and should be received by the Applications Processing Center in Albany by October 15. Applications accepted for consideration after October 15 will be reviewed on a space-available basis).

E. Transfer Credit Policies

1. All credits earned at previously attended accredited institutions are accepted for transfer and will be applied toward the total required for graduation.

2. Students will be classified according to the following schedule of semester hours accepted for credit: freshman, 0-23; sophomore, 24-56; junior, 57-84; senior, 85 or more.

3. Courses satisfactorily completed in the intended major or needed to fulfill the 39 upper-division-credits requirement are evaluated by the appropriate academic department for specific applicability. No transfer course with a grade lower than C may be counted among the 39 upper division credits. Forms for requesting the evaluation of specific courses for major or upper division credit are distributed during Orientation and are available at the Undergraduate Admissions Office and in the Undergraduate Students Office of the College of Engineering and Applied Sciences. Any applicant who has completed college-level study at an institution outside of the United States must request an evaluation of each course.

4. Credits earned at community and agricultural and technical colleges will usually be considered lower division credit with the exception of two-semester courses of organic chemistry with laboratories, and a few other courses recommended by an academic department and approved by the College of Arts and Sciences, and certain engineering courses determined by the College of Engineering and Applied Sciences.

5. Transfer credit will be entered on the official University transcript with the understanding that neither previous grades nor cumulative averages will be shown. Students wishing additional information should consult an admissions counselor.

Pre-Enrollment Deposit and Refund Policy

Each new student is required to pay an advance tuition deposit of \$50 and an additional \$75 deposit when housing is requested. Fall deposits, which are applied against charges incurred by the student in the first semester, are due either May 1 or 30 days after admission is offered, whichever is later, except for freshmen accepted under the Early Notification Program, whose deposits are due early in February (exact date will be announced in the letter of notification). Housing deposits are refundable until July 1; tuition deposits paid before April 1 are refundable until May 1. Spring deposits are due 30 days after admission is offered. Requests for refunds should be sent to Student Accounts, State University of New York at Stony Brook, Stony Brook, New York 11794, to be received by the University not later than the due date. To insure timeliness and receipt of the deposit refund request, the University suggests letters be sent certified mail, receipt requested.

Visiting the Campus

University Information Sessions, which provide a brief summary of Stony Brook's academic offerings and detailed information about admissions, financial aid, and campus housing, are held on Saturdays and Sundays from early November to early December and from late January to mid-March. Knowledgeable student guides conduct tours of the campus. On selected days, faculty members present more comprehensive descriptions of undergraduate academic programs in their areas. At "A Day In Our World," the final program in this series, admitted students and their families are invited to meet faculty and staff members.

For those who are unable to attend a University Information Session but wish to visit the University and meet with Stony Brook students, tours of the campus leave from the Undergraduate Admissions Office every Wednesday and Friday at 3 p.m. and every Saturday and Sunday at 11 a.m. to 3 p.m. during the

academic year (except during Thanksgiving, winter, and spring recesses). The student tour leaders have proven very effective in presenting Stony Brook to visitors and in responding to questions.

Although an interview is not required unless requested by the Undergraduate Admissions Office, candidates may request interviews for purposes of information or clarification. Since Stony Brook looks for indications that applicants will benefit from its programs, information from interviews that reveals ability may be used in the decision-making process. Discussions with admissions counselors tend to be more useful after the Undergraduate Admissions Office has received the completed application.

Advancement on Individual Merit (AIM): An Educational Opportunity Program

As the Educational Opportunity Program at Stony Brook, the AIM Program has as its specific goal providing access to the University for scholastically talented New York State residents who have been economically and educationally disadvantaged and who would not otherwise be able to enroll at Stony Brook. The AIM Program is designed to promote the individual academic growth of each student and offers a variety of services to meet academic, financial, and personal needs of participating students.

By providing five years of support services, the AIM Program offers the student a chance to ease into Stony Brook's rigorous academic atmosphere by taking a light academic load in the freshman year and increasing the number of courses as he or she moves successfully toward the baccalaureate degree. Upon acceptance into the program, each AIM student is assigned to a professional counselor who gives academic advice and encourages adjustment to the University. AIM freshmen are required to take two courses, AIM 101 Techniques of Reading and AIM 103 Achievement Motivation. Tutorial assistance, continuous monitoring of the student's academic progress, social and career counseling, and legal and financial advising are some of the services offered by the AIM Program. AIM also joins with various student organizations to sponsor cultural events that supplement more formal educational activities and introduce AIM students to the various cultural heritages represented in the program. For students with sufficient financial need, the AIM Program provides a stipend to help meet the expense of attending college. The amount of money granted varies with a student's individual circumstances and income level.

Freshman applicants who meet one of the following academic criteria will be considered for acceptance into the AIM Program:

1. High school average below 88 (B).
2. SAT verbal and mathematics scores of less than 450 and 400 respectively, regardless of high school average.
3. Attendance at a vocational high school or enrollment in a vocational or general program in a comprehensive high school.

In most cases, students whose families are in the following financial circumstances are eligible:

Number of members in household (including head of household)	Gross annual family income in preceding calendar year
1	\$6,448
2	7,849
3	9,250
4	11,250
5	13,750
6	16,000
7	18,000
8	19,750
9 or more	21,500 plus \$1,750 for each family member in excess of 9

In the event that a household is supported by more than one worker or when one worker is the sole support of a one-parent family, the allowable family income may be increased by \$1,500.

Transfer students will be considered on an individual basis, but must be able to document their economic and educational disadvantage according to the appropriate State guidelines. Information regarding financial eligibility is available in the instruction booklet that accompanies each SUNY application.

Students who think they might qualify for AIM should contact their school guidance office, the AIM office (516) 246-4016, or the Undergraduate Admissions Office for detailed application and eligibility information. Applicants are urged to file their applications by January 5. Decisions on applications will be mailed beginning February 15 for the following fall semester.

Part-Time Matriculation

Students who, for a variety of reasons, are unable to pursue their degrees full time may wish to apply for study towards a baccalaureate degree in the University's Part-Time Matriculation Program. Of special concern to the University are students working full time, Stony Brook students unable to continue as full-time students, and homemakers whose duties prohibit full-time attendance. The program, however, is open to anyone who meets the general criteria for admission and for whom the University has a place. Students with extensive daytime commitments who have completed the equivalent of two years of college work and are ready to enroll in upper division courses should consider the University Evening Program, described below.

Students interested in part-time matriculation who have never matriculated at Stony Brook must follow application procedures described elsewhere in this chapter for transfer students. Former Stony Brook students and those currently attending must contact the Undergraduate Admissions Office for additional information and instructions. Continuing matriculated students who desire to change their status from full-time to part-time, or from part-time to full-time, must consult an admissions counselor and file an application available in the Undergraduate Admissions Office not later than the final day of late registration. (See Full-Time/Part-Time Status Change, p. 33.)

Part-time matriculants may enroll for up to 11 credits per semester and are subject to all academic rules and regulations appropriate to that status.

Undergraduate Evening Program

An evening program offering classes after 6 p.m. is available to part-time matriculated students. Individuals with appropriate prerequisites may work towards a baccalaureate degree in psychology, sociology, political science, English, history, philosophy, art history, social sciences, or liberal arts.

The University will consider applications for this program only from students who have earned a minimum of 57 transferable credits. As with other transfer students, a grade point average of 2.5 (A=4) is usually the lowest base considered for admission.

Disabled Students

The academic admission procedures for disabled students are the same as for all other applicants. After admission, it is advisable that students with a disability identify themselves to the Office for the Disabled (246-6051), since early discussion of their special needs will allow time to work out solutions.

Foreign Students

The University admits a limited number of undergraduate students from foreign countries each year. Applicants may contact the Undergraduate Admissions Office directly for appropriate application materials and information, as these differ from forms filed by United States citizens and permanent residents. Completed applications must be returned to the Stony Brook campus rather than mailed to the Processing Center in Albany.

Original certified transcripts, records, certificates, etc. of secondary school and college courses and grades (in English

translation and with an explanation of rank in class and the marking system) must accompany the application. Secondary school records must reflect academic achievement equivalent to a cumulative index of 85 (B) on the grading scale conversion to the American system. A 2.5 index is required of foreign students who wish to transfer from other colleges in the United States. A minimum of one full year of study in a parallel program reflecting an index of 2.5 or higher is required of transfer applicants whose secondary school achievement fell below the standard required for freshman admission.

All persons whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL) and achieve a minimum score of 550, or to demonstrate English proficiency by one of the following methods: Michigan Test score of 80 or higher; ALI/GU Test score of 85 or higher; SAT Verbal score of 350 or higher; graduation from an American high school after two years of study; proof of having taken and passed two post-secondary level English courses (not including remedial courses) at an American institution; proof of attendance at an Intensive English Language Institute for a course of at least 225 hours.

It is also necessary to complete a University Financial Affidavit, which indicates that the applicant has sufficient funding to pay for all educational and personal expenses while in the United States. The amount required for documentation may vary from year to year. Contact the Undergraduate Admissions Office for full details.

Since qualified students are admitted to the limited spaces on a first-come first-served basis, early application completion is critical. Applicants should keep in mind the following deadlines for completed applications: for those currently living outside the United States, fall semester deadline is July 2, spring semester is December 1; for those currently attending schools within the United States, fall deadline is July 15 and spring deadline is December 15. THESE DEADLINES ARE RELEVANT ONLY IF SPACES REMAIN UNTIL DEADLINE DATES. ALL SPACES MAY BE FILLED PRIOR TO DEADLINES.

It is assumed that all foreign students require on-campus housing unless documented evidence of alternate living arrangements is filed with the application.

Advanced Standing By Examination

Stony Brook will accept up to 30 credits by examination in partial fulfillment of the bachelor's degree. Included in this total may be credit based upon standardized external examinations such as AP, CLEP, CPE, and Stony Brook's own Challenge Program. (See below for details on these programs.) Not more than four credits in each area of distribution requirements may be satisfied by examination. Credit by examination does not count as part of the semester credit required for good academic standing, nor may it be used to fulfill the Stony Brook residence requirement. (See p. 42 for College of Arts and Sciences or p. 156 for College of Engineering and Applied Sciences.)

Credit requested for forms of examinations or programs (e.g., military) not specifically mentioned below must be substantiated by the appropriate documentation. Requests for reviews of students' qualifications must be submitted in writing to the Undergraduate Admissions Office.

Advanced Placement Credit

Advanced placement credit may be extended to freshman students who have completed advanced placement courses in secondary school and who have taken the appropriate CEEB advanced placement examination. Students must request that their test scores be forwarded to Stony Brook. While each academic department determines the minimum test score required for semester hour credit in a particular subject, three general

elective credits are guaranteed with a score of 3. These credits may be applied toward the appropriate distribution requirement (arts and humanities, natural sciences and mathematics, or social and behavioral sciences) subject to the limitation on using credits-by-examination to satisfy each distribution area.

College Level Examination Programs

The University will award credit for the CLEP (College Level Examination Program) subject examinations and the CPE's (College Proficiency Examinations). The scores received must be equivalent to a grade of C. Credit will not be given for the CLEP General Examinations.

Challenge Program for Advanced Credit

The University's Challenge Program permits undergraduates to earn advanced placement and semester hour credit by taking examinations in place of regular courses. (For further information about the Challenge Program see p. 36.)

Non-Degree Study

Non-matriculated study is available at Stony Brook for individuals who are not ready to study for a degree, who are not interested in studying for a degree, or who do not meet general academic criteria for matriculated admission. Non-matriculated students cannot be graduated from the University in this status; however, courses and grades earned may be applied toward a degree program at Stony Brook and used to fulfill the University's residence requirement should a student subsequently matriculate. As with matriculated students, a permanent record is kept by the University's Office of Records.

Non-matriculated students pay the same tuition and other fees as matriculated students, but they are not eligible to receive most kinds of financial aid. Students from other institutions who plan to study at Stony Brook under the Visiting Student Program described below, however, should see a financial aid counselor on their home campus about continuing to receive financial aid.

Non-matriculated students who wish to apply for matriculation may get the appropriate forms in the Undergraduate Admissions Office.

Part-Time Non-Matriculated Study

Part-time non-matriculated (PTNM) study benefits high school students who, with the approval of their high school principal or guidance counselor, enroll in University courses while continuing their studies in high school; baccalaureate degree holders who wish to take additional undergraduate courses for career development or to prepare for application to law, medical, or other professional schools, or for self-enrichment; students attending a nearby college who wish to take a course or two a semester at Stony Brook; and students who are seeking to make a change in their lives or to resume educational studies abandoned years earlier.

In most instances, completion of a PTNM application, available *only* in the Undergraduate Admissions Office, is all that is necessary for admission to this status. There are, however, two important exceptions:

1. Students who have been placed on probation or suspension during the semester immediately preceding application to PTNM status at Stony Brook generally are not eligible for admission. Students who believe their probation or suspension at their previous institution resulted from extenuating or unusual circumstances are advised to consult an admissions counselor.

2. Students who were graduated from high school within the year preceding application are not eligible for PTNM study.

Students accepted into this program are admitted for one semester at a time only and may take up to 11 credits of work.

PTNM students may not advance register for more than 11 credits without authorization from the Undergraduate Admissions Office.

PTNM students choose from among regularly scheduled classes and register as space permits. PTNM students are not eligible for financial aid and their requests for housing will be considered only after the needs of matriculated and full-time non-matriculated students have been met.

PTNM students' academic performance will be reviewed at the conclusion of each semester by the Undergraduate Admissions Office. Students earning less than a 2.00 (C) grade point average will not be permitted to continue. Those earning less than a 2.00 (C) grade point average who believe there were extenuating circumstances contributing to their poor performance should consult an admissions counselor.

Generally, students who did not initially qualify for matriculation and who wish to do so must successfully complete either 18 credits at Stony Brook as part-time non-matriculated students with a cumulative grade point average of at least 2.5 (C+), or 15 credits with a cumulative grade point average of 3.0 (B) or better.

Visiting Student (Full-Time Non-Matriculated) Status

The Full-Time Non-Matriculated (non-degree) Visiting Student Program allows students to explore possibilities of academic life in a new setting. The greatest number of FTNM students are visiting students from other institutions studying at Stony Brook on a full-time basis through a cooperative statewide program. Other students who may benefit from this status include those whose family, financial, business, or other responsibilities interrupted their educations. (For further information about the Visiting Student Program, see p. 36.)

Full-time non-matriculated students follow the same guidelines as PTNM students (see above) regarding continuation. FTNM students must earn a 2.5 grade point average in that status in order to be admitted as transfer students to a degree program.

Orientation/Academic Advising Program

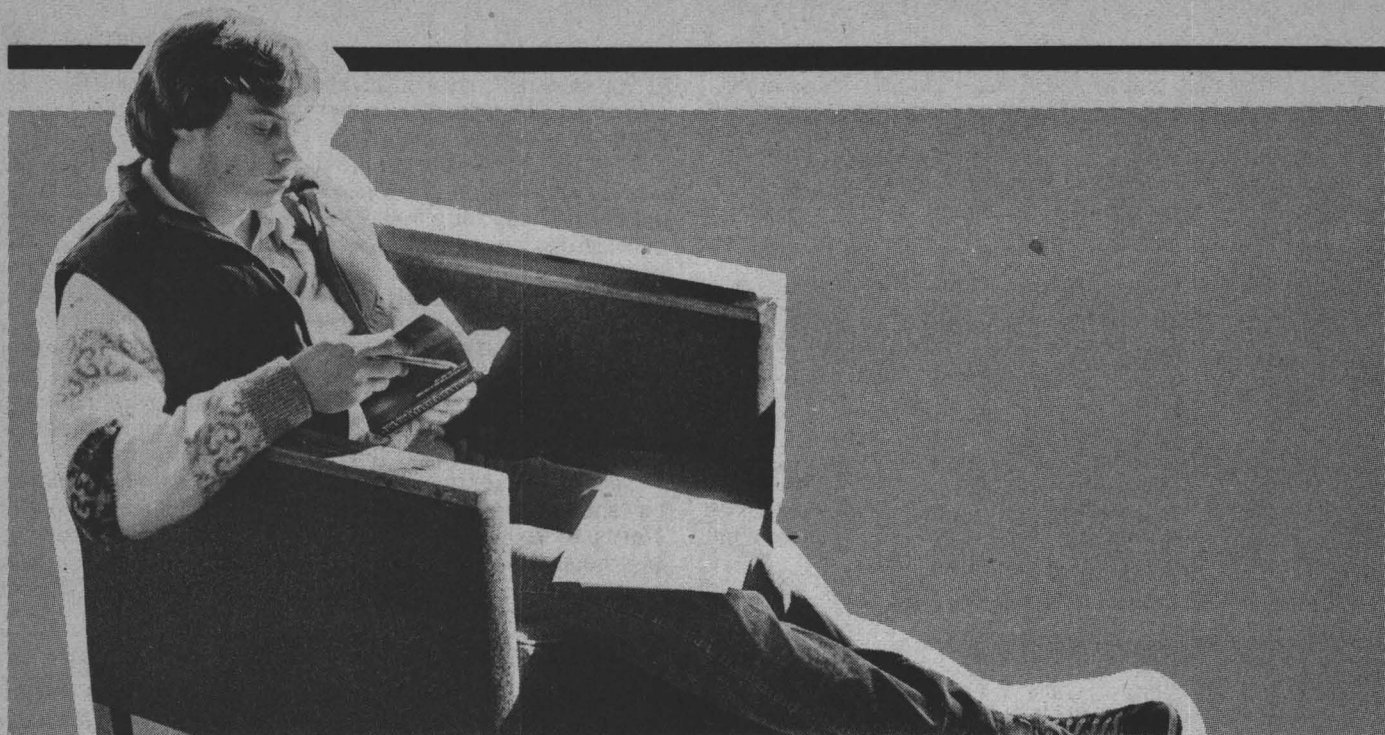
Each semester, prior to the start of classes, new students are expected to attend a one-, two- or three-day orientation session during which they have the opportunity to meet faculty members who advise them about academic programs and potential careers, learn about campus life from student leaders, and register for classes. Experience has shown that students who participate in Orientation adjust more readily to life and study at Stony Brook.

Separate freshman and transfer student orientation programs are conducted during June, July, and August for fall entrants and in January for spring entrants. The English Proficiency Examination, which is mandatory for Arts and Sciences students, and the Mathematics Diagnostic Test are offered and results, available during the Summer Orientation Program, are used for careful preparation of individualized academic programs.

Detailed information concerning the content, costs, and dates of Orientation is usually sent at the time of, or subsequent to, the offer of admission. Students unable to attend the Summer Orientation Program are urged to attend the one-day alternative program offered each semester. At the one-day session students register for the courses they will take that semester.

Withdrawal, Readmission and Leave of Absence

Information concerning withdrawal, readmission and leave of absence from the University is presented on p. 40.



Financial Information

Registration is not complete until all tuition, fees, and charges, which are due and payable prior to the first day of classes, have been paid or properly deferred. Failure to satisfy this financial obligation will prevent students from receiving academic credit, transcripts, diplomas, and certifications, as well as from being permitted to register for future semesters. Nonpayment by pre-registered students, however, does not constitute official withdrawal, which must be done through the Office of Records/Registrar. The date of official withdrawal determines eligibility for any refunds in accordance with the schedule found on page 22 under Refund of Tuition. **ALL FEES AND CHARGES ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.**

Charge or Fee	First Semester	Second Semester	Year
<i>Tuition</i>			
<i>Undergraduates (12 or more credits)</i>			
N.Y. State resident	\$525.00	\$525.00	\$1050.00
Non-resident	875.00	875.00	1750.00
<i>Graduates (12 or more credits)</i>			
N.Y. State resident	850.00	850.00	1700.00
Non-resident	1092.50	1092.50	2185.00
<i>Professionals (Medicine and Dental Medicine)</i>			
N.Y. State resident	2150.00	2150.00	4300.00
Non-resident	3150.00	3150.00	6300.00
<i>Part-time Undergraduates (Less than 12 credits)</i>			
<i>(Charge per semester credit hour)</i>			
N.Y. State resident	35.00	35.00	
Non-resident	58.50	58.50	
<i>Part-time Graduates (Less than 12 credits)</i>			
<i>(Charge per semester credit hour)</i>			
N.Y. State resident	71.00	71.00	
Non-resident	91.50	91.50	
<i>College Fee</i>			
Full-time student (12 credits or more)	12.50	12.50	25.00
Part-time student (Per credit hour up to 11 credits)85	.85	

	First Semester	Second Semester	Year
Housing			
Double Occupancy	550.00	550.00	1100.00
Meal Plan	To be announced		
Cooking Fee (On-campus resident not on Meal Plan)	55.00	55.00	110.00
¹Student Activity Fee			
Undergraduate full-time	45.00	35.00	80.00
Lost Identification Card ..	3.00		
Student Health Insurance	To be Announced		
²Orientation (Optional)			
Freshman.....	3 days	64.00	
	2 days	46.00	
Transfer Students	1 day	15.00	
Returned Check Fee.....	5.00		
Late Registration Fee	20.00		
Late Payment Fee	20.00		
³Advance Tuition Deposit (Freshmen and transfers only)			
	50.00		
³Advance Housing Deposit			
	75.00		
Transcript Fee (One free per degree)	2.00 each		

¹This fee set by Polity (Undergraduate Student Government).

²Includes orientation fees and charges for room and board.

³Applies toward first semester charges.

Summer Session

Tuition

Undergraduates

N.Y. State residents	\$35.00 per cr. hr.
Non-resident.....	58.50 per cr. hr.

Graduate and CED Students

N.Y. State resident	71.00 per cr. hr.
Non-resident.....	91.50 per cr. hr.

Physical Education Courses..... Charged at the appropriate rate for one cr. hr.

Fees

Room, double occupancy.....	35.00 per week
College Fee85 per cr. hr.
Student Activity Fee.....	Determined by status
Late Registration Fee.....	20.00

For further information please see the *Summer Session Bulletin*.

Payment of Fees and Charges

All fees and charges for a given academic session must be paid in full or properly deferred prior to the first day of classes. All checks must be payable to "SUNY at Stony Brook." Post-dated checks are not accepted.

Students making payment on or after the first day of classes or during the late registration period, or preregistered students making payment after pre-billing due date, shall be required to

pay a late registration fee of \$20.00. This fee may not be waived and is non-deferable. The late registration period ends at the close of the second week of classes.

Deferment

Students receiving awards provided by the State of New York, managed by the University, or payable to the University, may utilize deferment equal to the amount of the award. Documented proof of the award and the amount must be presented at time of payment to apply the deferment to the account (only current awards are deferable). Students should refer to pp. 23 to 31 for suggested filing dates to insure receipt of appropriate documentation in time to submit for deferment of payment.

Deferment may be granted to students for the following types of awards.

1. *Regents College Scholarships and Tuition Assistance Program*: All New York State residents are encouraged to file for Tuition Assistance Program (TAP) Awards. Incoming students and students who have not received their application form by June 11 should immediately obtain the application form from the Financial Aid Office. (Students should apply for all TAP Awards at the earliest possible date, preferably no later than June 10, if they expect to receive award certification from TAP prior to the beginning of classes in the fall. Students are reminded that failure to file an application in a timely manner can preclude their receiving award credit or deferment).

When paying bills students should present a notarized Power of Attorney card and award certification to the Bursar's Office to be eligible for an award credit.

2. *National Direct Student Loan, SEOG*: Students who have filed applications prior to the specified deadlines and who qualify for these awards will receive award letters from the Financial Aid Office by the end of May. Acceptance of these awards must be returned to the Financial Aid Office promptly. Deferment will be granted upon presentation of the award letter to the Bursar's Office.

3. *Basic Educational Opportunity Grant*: Students will receive an award notice (Student Eligibility Report) from the federal government. This notice must be submitted to the Financial Aid Office for approval and processing. The approved student copy of the Student Eligibility Report must be submitted to the Bursar's Office to complete deferment.

4. *Veterans' Education Benefits*: Students who are eligible for veterans' benefits should obtain an application from the Office of Veterans Affairs. Incoming students who are veterans are advised to contact that office concerning veterans' benefits as soon as possible.

The 1972 G.I. Bill amendments provide for advance payment of up to two months of G.I. benefits to be available for the veterans upon registration, but in no case earlier than 30 days prior to the beginning of the enrollment period. The advance payment check will be mailed directly to the University and held there for the veteran. Veterans will be notified directly by the Veterans Administration.

Deferment based upon veterans' benefits may be obtained by submitting to the Bursar's Office a copy of the Deferment Form prepared and signed by the Stony Brook Office of Veterans Affairs. Veterans whose educational benefits are paid directly to the University should present an Eligibility Award Certificate from the Veterans Administration to the Bursar's Office.

5. *Office of Vocational Rehabilitation*: Deferment based upon Office of Vocational Rehabilitation benefits may be obtained by presentation of an award letter or a voucher indicating the amount of the award and period covered from the Office of Vocational Rehabilitation. All such letters and vouchers must be accompanied by a Tuition Assistance Program Award Certificate, if applicable.

6. *Private, Public, or Industrial Scholarships, Grants, Internships and Loans* (including Foreign Student Government Scholarships and Vocational Rehabilitation Grants): All students who can present notification of awards payable to the University or

jointly payable to the University and the student in the above categories are eligible for a deferment equal to the amount of the award. In cases where the award is payable to the University and the student, the student will be required to complete a notarized Power of Attorney form to be presented at the Bursar's Office in order to receive deferment.

7. *New York Higher Education Services Corporation Loan (NYHESC)*: After filing the required loan forms the student will receive the Notice of Loan Guarantee (HE 1300) from Albany. This form must be submitted to the Bursar's Office to complete the deferment.

8. *Hardship Deferments*: Students experiencing severe financial hardship based on extraordinary personal circumstances may request deferment on financial charges for only tuition, room and board. Such requests should be made in the Student Accounts Office (second floor, Administration Building) before registration. Full documentation will be required. Failure to submit an application for awards or financial assistance for which a student is eligible will not be accepted as a basis for a hardship deferment.

Refund Policy

All requests for refunds must be submitted in writing to the Office of Student Accounts, State University of New York at Stony Brook, Stony Brook New York 11794.

Refund of Pre-Enrollment Tuition Deposits

Each new student is required to pay an advance tuition deposit of \$50. Deposits for the fall semester are due on May 1, or 30 days after admission is offered, whichever is later, and are applied against charges incurred by the student in the first semester. Requests for refunds will be granted under the following conditions:

1. If a student is admitted prior to April 1, the written request for refund must be received in the Undergraduate Admissions Office by May 1. Those students admitted after April 1 must submit the written request for refund to the Office of Student Accounts within 30 days of date of admission.

2. If a student has enrolled in another SUNY school he or she must provide satisfactory proof of such enrollment to the Office of Student Accounts.

Refund of Housing Deposits

Each student is required to pay a \$75 advance room deposit when requesting a future room assignment; this deposit will be applied to the housing charges of the first semester. Refunds of the \$75 housing deposit will be made if the student applies in writing for the refund before July 1.

Refund of Tuition

Students who withdraw from the University and part-time students who decrease their academic load shall be liable for payment of tuition in accordance with the following schedule:

Liability During	Semester	Special Session
First week	0	0
Second week	30%	70%
Third week	50%	100%
Fourth week	70%	
Fifth week	100%	

The first day of class session as published by the University shall be considered the first day of the semester, quarter, or other term; and Saturday of the week in which this first class session occurs shall be deemed the end of the first week for refund purposes. (Due to the fact that campus offices are not open for business on Saturday, cancellations and withdrawals must be effected during the Monday through Friday office working hours.)

A student who does not attend any class sessions after Saturday of the first week and who notifies the University of any intent to cancel registration on or before the second Saturday following the first day of classes shall be deemed to have cancelled registration during the first week.

Certification of the effective date of withdrawal must be made by the Office of Records/Registrar. A withdrawal card available at the Registrar's Office must be completed and returned to that office on the date of withdrawal. To expedite a refund the Student Accounts copy of the withdrawal card should be submitted with the refund request.

No money shall be refunded for tuition unless application for refund is made within one year after the end of the term for which the tuition requested to be refunded was paid to the State University.

Exception

There shall be no tuition or fee liability established for a student who withdraws to enter military service prior to the end of an academic term for those courses in which he or she does not receive academic credit. Acceptable proof must be submitted.

Refund of Room Fee

Once a student has registered and occupied a room no refund will be granted for room payments for that quarter.

Refund of Meal Plan Fee

Meal Plan refund requests must be made in writing to the Faculty Student Association, Stony Brook Union, State University of New York at Stony Brook, Stony Brook New York 11794.

Refund of Student Activity Fee

As determined by Polity and the CED Student Government, full refunds will be granted if the student withdraws within the first two weeks of classes. No refunds will be granted for withdrawals after the second week of classes.

Refund of Cooking Fee

Cooking fee may be refundable if the student has enrolled in the Meal Plan. The amount of such refund is to be determined by University policy in effect at the time.

Refund of College Fee, Late Registration Fee, and Lost ID Card Fee

These fees are not refundable.

Refunds Caused by Overpayment or Processing Errors

Refunds of amounts paid will be made when a student overpays University fees or when the student pays fees which are erroneous.

Other Expenses

Food

The University, through a food service contractor, provides several meal plan options. Meals are served at three dining halls located in the residential areas. The options currently include a Five Meal, a Ten Meal, a Fifteen Meal and a Nineteen Meal Plan, offered for 16 weeks. For 1980-81 costs ranged from \$440 for the minimal plan to \$558 for the maximal plan (per semester). Similar plans will be offered in coming years but prices cannot now be predicted. It is expected, however, that future price

ranges will not vary greatly from those now in effect, barring unforeseeable inflationary effects.

The residence dining halls also offer meals on a cash basis at prices, depending on the meal and the selection, currently ranging from about \$2.50 to \$6 per meal. Dining halls are open daily but hours of operation vary from year to year. The student is urged to consult dining hall staff for hours applicable during his or her residency.

In addition to the dining halls, the food service contractor operates a restaurant and several cafeterias. The End of the Bridge restaurant in the Stony Brook Union is open for lunch 11:30 a.m. to 2:30 p.m., Monday to Friday; prices range from \$2.50 to \$5.50 per meal. The Union Cafeteria is open Monday to Thursday from 8 a.m. to 9 p.m.; on Friday from 8 a.m. to 5:30 p.m.; and on weekends from 10 a.m. to 7:30 p.m. Prices range from \$1.50 to \$3.50 per meal.

There are other eating establishments on campus, some student operated, that offer everything from snacks to complete meals. Prices are generally comparable to those given above. Hours of operation vary from place to place and it is best to inquire at orientation or after arriving on campus.

Resident students who do not sign up for a meal plan are required to pay a cooking fee of \$55 per semester. Students who elect to do this may expect to spend between \$25 and \$35 a week for food.

The area immediately around the campus has several eating places, of differing quality and degree of accessibility. Most are reasonably priced.

Books and Supplies

The average estimated expense is \$300 for nine months (September-May). This figure is included in the basic student aid budget.

Miscellaneous Expenses

The average estimated personal expense is \$500 for nine months. This figure is used for the basic student aid budget.

Travel Expenses

The average estimated expense is \$200 for nine months on campus for a student residing in a dorm. The average estimated expense is \$1100 for nine months for a student residing with parents and commuting to the campus. These amounts are also used for the basic student aid budget.

Off-Campus Housing

The Off-Campus Housing Office provides information concerning rentals of rooms, apartments, and houses within a 15-mile radius of the University. All landlords listing property with the University must sign a statement assuring non-discriminatory practices; listings do not become available until such assurance is received. The Off-Campus Housing Office and the University may not become parties to landlord-tenant disputes.

The common price per month for a furnished room is \$125-\$190. Kitchen privileges are sometimes included in this price. Rooms available in houses rented by other students are also listed. That is, arrangements can sometimes be made to share a complete house for \$100-180 per month plus a percentage of the utilities cost.

Apartment listings cover those available in standard apartment building complexes and those available in private homes. The usual rental rate of a studio apartment (one large room,

bathroom, closets, kitchenette) in a house is approximately \$200-\$250 per month. A studio apartment in one of the apartment facilities is usually \$225-\$280. Apartments in housing complexes usually provide more space and privacy. A conventional one-bedroom apartment, including living room, dining room, kitchenette, bathroom, and closet space, usually ranges in price from \$300-\$360 per month. Utility costs, except electricity, are often included in the price.

There are also listings for house rentals in the area. These rentals range from \$250-\$550 per month, not including utilities. The price depends on the number of rooms in the house and the distance from the campus.

Financial Aids

The Financial Aid Office administers several federal and state programs which provide funds to assist "needy" students in pursuing their academic goals. These programs are the National Direct Student Loan (NDSL), Supplemental Educational Opportunity Grant (SEOG), College Work Study Program (CWSP), Educational Opportunity Program (EOP), and some private scholarships. The office also manages the Basic Educational Opportunity Grant (BEOG), Guaranteed Student Loan program (GSL), and New York Higher Education Services Corporation programs (NYHESC). These programs are described below together with other state and federal assistance for which prospective students might qualify while attending Stony Brook.

The basic application for programs administered by the Financial Aid Office is the Student's Financial Aid Form (FAF). These forms and the Stony Brook Institutional Financial Aid applications are available from the Financial Aid Office. The application period for new and continuing students begins February 1 and closes April 1 of each year. The application forms required for certain of these programs are briefly described after the individual program listings (see p. 121).

For information on scholarships, see Awards and Honors, p. 38).

"Emancipated" or "Independent" Student Status

The University adheres to current federal guidelines for validating status of a student as independent or emancipated for financial aid purposes. These guidelines currently require that:

1. The student has not resided with parents for more than a total of six weeks in the prior year and six weeks in the current year, and will not exceed such residence with parents during the coming year.
2. The student has not been claimed as a dependent on any income tax return filed by the parents for the prior year, or for the current year, and will not be so claimed for the next year.
3. The student has not received more than \$1000 annually in gifts or aid from parents in the prior year, not in the current year, and does not anticipate such receipt in the next year.

Students are cautioned that these guidelines are subject to change and that the University will adopt any new standards as soon as they are promulgated.

STATE PROGRAMS 1981-82:

Note: Where any question of eligibility exists, the student or prospective student should consult the Financial Aid Office.

Tuition Assistance Program (TAP)*Application Procedures*

Applicants must apply annually to the New York State Higher Education Services Corporation (HESC), Tower Building, Empire State Plaza, Albany, NY 12255. The application deadline for the 1979-80 academic year was March 31, 1980. TAP application forms were mailed, beginning in April 1979, to all: (1) students who received a TAP grant or Regents Scholarship award in 1978-79; (2) high school seniors who applied for a 1979-80 Regents Scholarship; and (3) approved postsecondary institutions and high schools in New York State; and (4) central admissions applicants of the State University of New York. Any student or prospective student can obtain a TAP application from any high school guidance office, or financial aid office.

Before submitting the application, the applicant should review it with the high school counselor or college financial aid officer, especially if there have been questions relating to completion of the application.

The Higher Education Services Corporation determines the applicant's eligibility and mails an award certificate directly to the applicant indicating the amount of the grant. The applicant presents the Institutional Copy of the certificate at the time of payment of tuition. (See "Deferment," p. 21.)

Selection of Recipients and Allocation of Awards

Tuition Assistance Program is an entitlement program. There is neither a qualifying examination nor a limited number of awards. The applicant must: (1) be a New York State resident and a U.S. citizen, or a permanent resident alien, paroled refugee, or conditional admittant to the United States; (2) be enrolled full time and matriculated at an approved New York State postsecondary institution and program; (3) have, if dependent, a family net taxable income below \$20,001, or if independent and single with no tax dependents, a net taxable income below \$5,667; and (4) be charged a tuition of at least \$200 per year. All income data are subject to verification by the New York State Department of Taxation and Finance.

The current definition of independent status is as follows.*

1. 35 years of age or older on July 1, 1979; or
2. 22 years of age or older on July 1, 1979 and not:
 - a. resident in any house, apartment, or building owned or leased by parents for more than 2 consecutive weeks in calendar years 1978, 1979, 1980;
 - b. claimed as a dependent by parents on their Federal or State income tax returns for 1978, 1979, 1980;
 - c. recipient of gifts, loans, or other financial assistance in excess of \$600 from parents in calendar years 1978, 1979, 1980; or
3. under 22 years of age on July 1, 1978 and meeting all other requirements of 2. above, and in addition able to meet at least *one* of the following requirements:
 - a. both parents deceased, disabled, or incompetent, or
 - b. receiving public assistance other than Aid to Dependent Children (ADC) or food stamps, or
 - c. ward of a court, or
 - d. unable to ascertain parents' whereabouts, or
 - e. unable, due to an adverse family situation, to submit information on parents' income, or
 - f. married on or before December 31 of the year preceding the academic year for which application is made.

Undergraduate students may generally receive TAP awards for four years of study. Students enrolled in approved five-year programs, or in a State-sponsored opportunity program, may receive undergraduate awards for five years. Graduate students may receive awards for four years. No student (including opportunity students) may receive awards for more than a total of eight years of undergraduate and graduate study.

*Independent status under the state definition does not necessarily insure independent status for federal aid programs. See "Emancipated" or "Independent Student Status," above.

Example Awards for the Tuition Assistance Program (TAP) as of October 1, 1979

Income (Net Taxable Balance)	UNDERGRADUATE				GRADUATE Awards for all Annual Tuition Greater Than \$600	
	Schedule C (Dependent or Married) Annual Tuition		Schedule E (Independent and Single) Annual Tuition		Schedule B Dependent or Married	Schedule D Independent and Single
	\$925	\$1,800*	\$925	\$1,800*		
\$0- 1,000	\$925	\$1,800	\$925	\$1,800	\$600	\$600
2,000	925	1,800	625	1,500	600	350
3,000	910	1,795	325	1,200	534	100
4,000	850	1,725	200	900	467	100
5,000	790	1,665	200	600	400	100
6,000	720	1,595	-0-	-0-	334	-0-
7,000	650	1,525	-0-	-0-	267	-0-
8,000	580	1,455	-0-	-0-	200	-0-
9,000	500	1,375	-0-	-0-	134	-0-
10,000	420	1,295	-0-	-0-	100	-0-
11,000	340	1,215	-0-	-0-	100	-0-
12,000	240	1,115	-0-	-0-	100	-0-
13,000	200	1,015	-0-	-0-	100	-0-
14,000	200	915	-0-	-0-	100	-0-
15,000	200	795	-0-	-0-	100	-0-
16,000	200	675	-0-	-0-	100	-0-
17,000	200	555	-0-	-0-	100	-0-
18,000	200	415	-0-	-0-	100	-0-
19,000	200	275	-0-	-0-	100	-0-
20,000	200	200	-0-	-0-	100	-0-
OVER \$20,000	-0-	-0-	-0-	-0-	-0-	-0-

*These maximum \$1,800 awards apply only to those first receiving TAP during or after the 1977-78 academic year. all others are eligible for a maximum award of \$1,500.

NOTE: TAP awards are reduced by \$200 per year for Schedule C and Schedule E students who have received four or more payments.

Award Schedule

The amount of the TAP award is scaled according to level of study, tuition charge, and net taxable income.** Four award schedules are in effect, as shown in the following table. These awards are examples, and are based on the payment schedules as of October 1, 1979.

Regents College Scholarships

Application Procedures

Information and application forms are available in the fall from any New York State high school. Prospective applicants in their final year of high school should file their applications with the high school principal by November 1.

Selection of Recipients and Allocation of Awards

Scholarships are awarded competitively for full-time postsecondary study in New York State in: (1) approved degree, certificate, or diploma programs offered by colleges or other degree-granting institutions; (2) hospital school programs leading to licensure or certification; and (3) two-year program in registered business schools not authorized to grant degrees.

The competitive basis of the award is the score on the Scholastic Aptitude Test (SAT) of the College Board or the American College Testing (ACT) Program Assessment. The registration fee for the tests is currently \$10 for the SAT (in New York City, \$11) and \$10.50 for the ACT. Fee waivers are available from each testing agency for economically disadvantaged applicants. The examinations may be taken as many times as desired by the applicant prior to November 1 of the final year of high school study.

A total of 27,000 scholarships will be awarded for 1980-81, of which 25,000 scholarships are allocated by county of legal residence, based upon the number of high school graduates in each county the previous year. Additional scholarships are allocated to insure that each approved high school receives at least one scholarship for each 40 graduates the previous year. Beginning with the 1980 competition, these awards, if declined or revoked, are no longer reawardable.

The applicant must: (1) have been a legal resident of New York State for at least one year immediately preceding the first term for which the application for an award is made; (2) either graduate from high school by the end of the school year in which the examination was taken or be accepted as a full-time matriculated student at a college or other approved school located in New York State by September of that year; and (3) not previously have competed for a Regents Scholarship. Requirements two and three may be waived for reasons satisfactory to the Commissioner of Education.

Award Schedule

The award is \$250 per year, for up to five years, depending on the normal length of the program in which the recipient is enrolled. To receive payment, the scholarshipholder must annually file a Student Payment Application with the New York State Higher Education Services Corporation.

**The income measure is the family's (or independent student's) net taxable income from the preceding tax year plus certain non-taxable income, and (for dependent students) support from divorced or separated parents. This income is further adjusted to reflect other family members enrolled full time in postsecondary study.

Regents Awards for Children of Deceased or Disabled Veterans

Application Procedures

A special application, obtainable from the high school principal or counselor, must be filed with the New York State Higher Education Services Corporation (HESC), Albany, NY 12255. Documentary evidence to establish eligibility is required with the application. Any high school counselor can provide assistance with this.

Selection of Recipients and Allocation of Awards

The applicant must be: (1) the child of a veteran who died, or who has a current disability of 50 percent or more, or who had such disability at the time of death, resulting from U.S. military service during one of the following periods:

April 16, 1917-November 11, 1918

December 7, 1941-December 31, 1946

June 25, 1950-July 27, 1953

October 1, 1961-March 29, 1973

and; (2) a legal resident of New York State. Legal residence in New York State on the part of the parent is also required: at the time of entry into military service, or, if the parent died as the result of military service, at the time of death.

Regents awards to children of deceased or disabled veterans are independent of family income or tuition charge, and are in addition to such other grants or awards to which the applicant may be entitled.

Award Schedule

The amount of the award is \$450 per year, for up to five years, depending on the normal length of the program of study, of full-time study in a college or in a hospital nursing school in New York State.

State Aid to Native Americans

Application Procedures

Application forms may be obtained from the Native American Education Unit, New York State Education Department, Albany, NY 12230. The completed application form should be forwarded by the applicant to the Native American Education Unit along with the following materials: (1) official transcript of high school record or photostat of General Equivalency Diploma; (2) letter(s) or recommendation from one or more leaders in the community attesting to personality and character; (3) personal letter, setting forth clearly and in detail educational plans and desires; (4) signatures of the parents of minor applicants, approving education plans; (5) official tribal certification form; and (6) copy of acceptance letter from college attending.

Selection of Recipients and Allocation of Awards

The applicant must be: (1) a member of one of the Native American tribes within New York State and a resident of New York State; (2) have graduated from an approved high school, or have earned a General Equivalency Diploma, or be enrolled in a program in an approved postsecondary institution leading to degree-credit status and the General Equivalency Diploma; and (3) enrolled in an approved postsecondary institution in New York State.

State Aid to Native Americans is an entitlement program. There is neither a qualifying examination nor a limited number of awards.

Award Schedule

The award is \$1,100 per year for a maximum of four years of full-time study (five years, where a fifth year is required for completion of degree requirements), a minimum of 12 credit hours per semester. Students registered for less than this number will be funded at approximately \$46 per credit hour. Remedial programs are not fundable.

Responsibilities of Recipients

Students are responsible for notifying the Native American Education Unit in writing of any change in student status or program or institutional enrollment. Students must also submit semester grades, at the end of each semester, showing satisfactory progress toward completion of degree or certification requirements.

Guaranteed Student Loan Program

Application Procedures

The student should obtain a loan application from a participating New York State lending institution (bank, credit union, etc.) in his or her area of permanent residence. The completed application is presented to the financial aid officer at the postsecondary institution being attended. The application is then routed to the lending institution and the Higher Education Services Corporation.

A counseling session or an interview, or both, may be required. When the loan is approved, a promissory note is signed by the student. For the school year beginning in the fall, funds may not be disbursed earlier than August 1.

Selection of Recipients and Allocation of Awards

To be eligible for a guaranteed loan a student must be: (1) a U.S. citizen or permanent resident alien; and (2) enrolled in or admitted as a matriculated, at least half-time, student at an approved college, university, or other postsecondary institution in any of the United States or in a foreign country.

Loan Schedule

An undergraduate may borrow up to \$2,500 per class year, up to a total of \$7,500.

A graduate student may borrow up to \$5,000 per class year, up to a combined total of \$15,000 including any loans for undergraduate study.

A student enrolled in a vocational school approved by the U.S. Office of Education may borrow up to \$2,500 per school year. A student enrolled in a vocational school not approved by the U.S. Office of Education may borrow up to \$1,500 per school year provided that the vocational school has been approved by the Regents of The University of the State of New York and the school has made a loan agreement with the New York State Higher Education Services Corporation.

Students enrolled in programs of medicine, dentistry, veterinary medicine, podiatry, optometry, and pharmacy may receive a State-guaranteed loan of up to \$7,500 annually, for a total of \$30,000. An annual insurance premium of one-half percent of the loan amount is payable in full at the time the check is issued. This information is shown in the following table.

Every student is eligible for a full interest subsidy during the time he or she is in school, and for a following nine-month grace period.

Maximum Amounts a Student May Borrow Through Guaranteed Student Loans

Level and Type of Program	Annual Amount	Aggregate
Undergraduate	\$2,500	\$12,500
Graduate and Professional	5,000	25,000*
Selected Health Professional	7,500	30,000**
Vocational, USOE Approved	2,500	7,500
Vocational, NYSED Approved	1,500	7,500

*Including undergraduate loans

**Including Guaranteed Student Loan

Responsibilities of Recipients

A student may borrow at a relatively low interest rate (currently 7 percent; 9 percent for new borrowers) with no repayment as long as he or she remains enrolled at least half-time, and for six months after he or she ceases to be at least a half-time student. Payment of principal may be deferred for up to three years for certain categories of borrowers including Public Health Service officers, the temporarily disabled, those on internships required before entering a profession, and full-time Peace Corps or Vista or similar national program volunteers.

If a student applies for an additional loan, application must be made to the original lending institution.

Four months after ceasing to be at least a half-time student, the borrower must make formal arrangements with the lending institution to begin repayment. The following regulations apply:

1. Depending on the amount of the loan, the minimum monthly payment will be \$30 plus interest. Under unusual and extenuating circumstances the lender, on request, may permit reduced payments.
2. The maximum repayment period is 10 years.
3. The maximum period of a loan from date of the original note may not exceed 15 years, excluding authorized deferments of payments.
4. Repayment in whole or part may be made at any time without penalty.

Educational Opportunity Program (EOP)

Application Procedures

Application is by means of a standard application form on which the applicant identifies the two- or four-year college of the State University of New York at which enrolled or applying for admission. Application forms are available from the EOP office at the institution.

Selection of Recipients and Allocation of Awards

An applicant must be: (1) a New York State resident; and (2) academically disadvantaged according to definitions promulgated by the State University; and (3) economically disadvantaged according to guidelines approved by the Board of Regents and the Director of the Budget. Selection of eligible applicants is conducted by the SUNY unit or the EOP on campus, or both.

Award Schedule

The amount of financial assistance and other support provided to EOP participants is dependent on need as determined by the SUNY unit and the program, within the State guidelines. The maximum EOP award is currently \$2,200 in student financial assistance for an academic year.

Work Incentive Program (WIN)

Application Procedures

Federal law mandates that recipients of Aid to Dependent Children (ADC) be screened for participation in WIN. Those not considered exempt are required to participate. Exempt recip-

ients of ADC may volunteer for WIN if they so choose. These are the only persons who are eligible for WIN. Application is through the New York State Department of Social Services, which determines eligibility for ADC.

Selection of Recipients and Allocation of Awards

As part of achievement of the primary goal of the WIN program to place eligible applicants in permanent unsubsidized employment, applicants may be registered with the New York State Department of Labor for institutional training. Training must be related to jobs which are, or are likely to become, available in the WIN project area. WIN registrants may be placed in training programs which do not exceed one year, e.g., to be considered for the program, a registrant wishing to complete a bachelor's degree must have completed three years toward this goal and be enrolled in a vocationally oriented curriculum.

Award Schedule

Tuition and books are paid for by WIN. Registrants are paid \$3 per day for training-related expenses, plus an incentive allowance of up to \$30 a month which is not included in ADC assistance payment computations. Child care costs may also be paid.

Responsibilities of Recipients

Each participant in the institutional training component of the WIN program has the responsibility of attending training, doing the best he or she can to complete training and to obtain regular unsubsidized employment.

Vocational Rehabilitation

Application Procedures

Handicapped persons may obtain a list of local Office of Vocational Rehabilitation (OVR) offices from: Office of Vocational Rehabilitation, New York State Education Department, Albany, NY 12230.

Selection of Recipients and Allocation of Awards

Any disabled person, with a substantial employment handicap, who can become employable within a reasonable period of time may be eligible. OVR serves those having any physical, emotional, or mental disability except blindness.

The legally blind are served by the Commission for the Blind and Visually Handicapped, State Department of Social Services, 40 North Pearl Street, Albany, NY 12243.

Eligible applicants may receive counseling, medical examinations and other evaluation services, physical restoration services, and instruction and training including that given at institutions of postsecondary education.

Clients are asked to share the expense, based upon State standards, of some of the services provided, such as college or university expenses to enable the client to attain his or her vocational objective.

Tuition Deduction, and the Parents' and Students' Savings Plan (PASS) Deduction

New York State resident parents (and others who pay the postsecondary education tuition of dependent, full-time students) may take a deduction for part of this tuition payment for State and City income tax purposes. The amount allowable as a deduction is the lesser of one-half of the tuition paid (less Tuition Assistance Program awards) or \$1,000. The institution of postsecondary education must be located in New York State. Resi-

dent parents may also deduct amounts equivalent to payments into a qualified higher education fund. In both cases deductions are from Federal adjusted gross income.

For further information parents should contact:

New York State Department of Taxation and Finance
Taxpayer Services Division
Building 9
State Campus
Albany, NY 12227

FEDERAL PROGRAMS: 1981-82

Basic Educational Opportunity Grants (BEOG)

Application Procedures

Applications and other materials are available through financial aid offices at approved postsecondary institutions. Students may also apply for BEOG by filing a Financial Aid Form (FAF) or a Family Financial Statement (FFS).

The completed application should be submitted for processing according to the directions included on it. A calculated Student Eligibility Index will be sent to the applicant based on the information in the application. The amount of the applicant's award is determined by the financial aid officer at the postsecondary institution attended and is based on the Student Eligibility Index, enrollment status, and costs. Upon enrollment, funds are paid directly to the applicant or credited to his or her institutional account.

Selection of Recipients and Allocation of Awards

The Basic Educational Opportunity Grant Program is an entitlement program. Eligibility and award amount are based on need rather than academic achievement. The applicant must be enrolled as an undergraduate student, at least on a half-time basis, in an approved postsecondary institution and must need financial assistance to continue his or her education.

Financial need is determined by a formula applied to all applicants. It was developed by the U.S. Office of Education and is reviewed annually by Congress. The student eligibility index is calculated by this formula.

Basic Grant awards are usually paid for up to four years of study. However, a student may receive grants for the period required to complete a first baccalaureate degree. Awards may be used for tuition, fees, books and living expenses.

Copies of the booklets *Determination of Basic Grant Eligibility Index, 1979-80* and *Student Consumer's Guide: Six Federal Financial Aid Programs, 1979-80* may be obtained by writing to BEOG at the following address:

BEOG
P.O.Box 84
Washington, DC 20044

Award Schedule

Currently awards range from \$200 to \$1,800, but may not be more than one-half the total cost of attendance. For academic year 1981-82, the maximum award authorized by the amendments (but for which funds have not yet been appropriated by Congress) is to be \$1,900. The amount of the award will be

affected by costs of attendance and full- or part-time enrollment status. The BEOG award is not duplicative of State awards.

Responsibilities of Recipients

The student must continue to make satisfactory academic progress in the program in which he or she is enrolled. The student must not owe any refunds on Basic Grant or other awards paid, or be in default on repayment of any student loan.

Before receiving payment, the student must sign an affidavit, available from the institutional financial aid office or business office, that all money received will be used for the costs of postsecondary education only.

Award payments made by check must be picked up by the student within a reasonable time. The institution must notify the student of the availability of the award check, and where it is being held.

Supplemental Educational Opportunity Grants (SEOG)

Application Procedures

Application is through the institutional financial aid office, which is responsible for determining who receives a Supplemental Grant, and the amount.

Selection of Recipients and Allocation of Awards

The applicant must be: (1) in exceptional financial need, to the extent that without a Supplemental Grant award his or her education could not be continued; (2) enrolled at least half-time as an undergraduate student in an approved postsecondary institution; and (3) enrolled in an institution which will provide the applicant with additional financial assistance at least equal to the amount of the Supplemental Grant award.

Award Schedule

The award ranges from \$200 to \$1,500. For academic year 1981-82, the maximum award authorized (but not yet appropriated for) is to be \$2,000. Normally an award may be paid for up to four years. However, a student may receive grants for the period required to complete a first baccalaureate degree.

Responsibilities of Recipients

The student must continue to make satisfactory academic progress.

National Direct Student Loan Program (NDSL)

Application Procedures

Application is made through the postsecondary institution financial aid office. Forms, as well as specialized information on loan cancellation provisions for borrowers who go into certain fields of teaching or specified military duty, are available from this source.

Selection of Recipients and Allocation of Awards

Loans are available to students enrolled at least half-time in approved postsecondary institutions.

Award Schedule

Amounts which may be borrowed are: \$3,000 by students who have completed less than two years of a program leading to a bachelor's degree or who are enrolled in a vocational program; \$6,000 by students who have completed two years toward

a bachelor's degree, to include any amount borrowed through an NDSL for the first two years of study; \$12,000 for graduate study, to include any amount borrowed through an NDSL for undergraduate study.

Responsibilities of Recipients

Continued eligibility is dependent on maintenance of satisfactory academic progress. The current interest rate, payable during the repayment period, is three percent on the unpaid principal; four percent for new borrowers in 1981 and thereafter. Repayment begins six months after graduation or leaving school, and may extend over a period of 10 years. Payment may be extended over an additional 10-year period for certain low-income students, and may be deferred for up to three years for certain categories of borrowers including Public Health Service officers, the temporarily disabled, those on internships required before entering a profession, and full-time Peace Corps or Vista or similar national program volunteers.

College Work-Study Program (CWS)

Application Procedures

Application is made through the postsecondary institutional financial aid office. Eligibility is determined and work arrangements made at this point.

Selection of Recipients and Allocation of Awards

The applicant must be enrolled at least half-time in an approved postsecondary institution.

An institution must make employment reasonably available to all eligible students in the institution who are in need of financial aid. In the event that more students are eligible for CWS than there are funds available, preference is given to students who have great financial need and who must earn a part of their educational expenses.

Award Schedule

The postsecondary institution arranges jobs on campus, or off campus, with public or private nonprofit agencies, such as hospitals, for up to 40 hours per week.

Factors considered by the financial aid office in determining whether, and how many hours, the recipient may work under this program are: financial need; class schedule; academic progress; and health status.

Level of salary must be at least 80 percent of the minimum wage; maximum wage is dependent on the nature of the job and applicant's qualifications.

Responsibilities of Recipients

Satisfactory academic progress must be maintained.

Note

Eligibility for SEOG, NDSL, and CWS is determined on the basis of a uniform methodology and by means of the same application form, available from the financial aid office of the postsecondary institution.

Social Security Payments to Children of Deceased or Disabled Parents

Application Procedures

Application may be made at any Social Security Office. Applicant should present the Social Security card, if one has been issued, and provide the following information: name and address of the institution; dates of past attendance; student ID number if any; number of credit hours carried; and full- or part-time status planned for next academic period.

Selection of Recipients and Allocation of Awards

The applicant must be (1) single and between 18 and 22 years of age; (2) financially dependent and have a deceased or disabled or retired parent who worked long enough to qualify for Social Security; and (3) enrolled in a postsecondary institution (including trade and vocational schools) as a full-time undergraduate.

Award Schedule

The amount of Social Security benefits may be affected by earnings from employment or self-employment, if these are greater than \$3,000 per year. Earnings of a parent may also affect size of the applicant's checks, even if the applicant is not employed. Checks can continue until the end of the academic period in which the student becomes 22.

Responsibilities of Recipients

Applicants already receiving benefits will be notified several months before turning 18, by the Social Security Administration, about what must be done upon becoming a full-time postsecondary student so that benefits will continue.

Applicants who become eligible for benefits after reaching 18, by the death, disability, or retirement of a parent, must apply for benefits upon beginning full-time study.

Eligible applicants who apply late may receive back payments for up to 12 months.

U.S. Bureau of Indian Affairs Aid to Native Americans HIGHER EDUCATION ASSISTANCE PROGRAM

Application Procedures

Application forms may be obtained from the Bureau of Indian Affairs Office. An application is necessary for each year of study. An official needs-analysis from the college financial aid office is also required each year.

Each first-time applicant must obtain tribal enrollment certification from the Bureau agency which records enrollment for the tribe.

Selection of Recipients and Allocation of Awards

To be eligible, the applicant must: (1) be at least one-fourth American Indian, Eskimo, or Aleut; (2) be an enrolled member of a tribe, band, or group recognized by the Bureau of Indian Affairs; (3) be enrolled in or accepted for enrollment in an approved college or university, pursuing at least a four-year degree; and (4) have financial need.

Responsibilities of Recipients

For grants to be awarded in successive years, the student must make satisfactory progress toward a degree, and show financial need. Depending on availability of funds, grants may also be made to graduate students and summer session students. Eligible married students may also receive living expenses for dependents.

ADULT VOCATIONAL TRAINING PROGRAM**Application Procedures**

Same as Higher Education Assistance Program directly above.

Selection of Recipients and Allocation of Awards

The Vocational Training Program is for short-term vocational training (up to two years).

To be eligible, the applicant must: (1) be at least one-fourth American Indian, Eskimo, or Aleut; (2) be an enrolled member of a tribe, band, or group recognized by the Bureau of Indian Affairs; (3) reside on a reservation; (4) be enrolled in or accepted for enrollment in an approved training school; and (5) have financial need.

Responsibilities of Recipients

For grants to be awarded the following year, the student must make satisfactory progress toward program completion, and show financial need.

Veterans Administration (VA) Educational Benefits**EDUCATIONAL ASSISTANCE (GI BILL)****Application Procedures**

Application forms, information and assistance in applying for benefits are available at all VA offices.

Selection of Recipients and Allocation of Awards

A veteran must have at least 181 days' continuous active duty service, any part of which occurred after January 31, 1955, and before January 1, 1977. Discharge or release must have been under conditions other than dishonorable (except for service personnel with 181 days or more of continuous active duty).

Also eligible is the individual who contracted with the armed forces and was enlisted in a reserve unit prior to January 1, 1977, and who as a result served on active duty for at least 181 days, any part of which began within 12 months after January 1, 1977.

A veteran with less than 181 days' service may be eligible if he or she was released because of a service-connected disability.

An eligible veteran with 18 continuous months or more of active duty is entitled to receive 45 months of full-time educational benefits or the equivalent in part-time benefits. Persons with less than 18 continuous months of active duty are entitled to 1½ months of full-time benefits (or the part-time equivalent) for each month of active duty served.

Award Schedule

Current monthly benefit rates are shown below:

Status	Dependents			Each additional
	None	1	2	
Full-time	\$311	\$370	\$422	\$26
Three-quarters	233	277	317	19
Half-time	156	185	211	13

Veterans enrolled half-time or more may be entitled to a educational loan, not to exceed \$2,500 in any one year repayable beginning nine months after the veteran ceases to be a student. The granting of educational loans is based on financial need related directly to the cost of education.

POST-VIETNAM ERA VETERANS EDUCATIONAL ASSISTANCE

Application Procedures

Same as Educational Assistant under the GI Bill directly above.

Selection of Recipients and Allocation of Awards

This is a voluntary contributory matching program for persons entering service after December 31, 1976.

Benefits are accumulated by including contributions from the participating service or former service person and a matching fund from the VA at the rate of \$2 for each \$1 contributed by the participant.

The cutoff date is 10 years after the date of last release or discharge from active duty after January 1, 1977. Entitlement is limited to a maximum of 36 months.

Other Federal Student Financial Aid Programs

A large number of special-purpose Federal programs exist of a variety of types: direct aid, scholarship, loans, traineeships. Many are administered through specific institutions of postsecondary education, and for this reason the financial aid office is the single best source of information on the subject.

Most of these dozens of programs would be of interest to relatively small numbers of students and prospective students, by virtue of need, or special interest, or both. Some are available only to graduate or professional students, in certain fields. Some carry with them periods of obligated service.

In order to provide an idea of the broad range of Federal programs which may be available to some students, a *representative* listing follows. The most authoritative, although certainly not the only, reference for additional information on these and many other programs is published annually. It is the *Catalog of Federal Education Assistance Programs*, and is available from:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Each item below is preceded by its program identification number, and followed by the name of the Federal agency which administers the program.

- 13.288 National Health Service Corps Scholarship Program (full scholarships for professional training in medicine, optometry, dentistry, baccalaureate nursing; service required).
NHSC Program, Student Assistance Staff, Bureau of Health Manpower, Health Resources Administration, Public Health Service, Department of Health, Education and Welfare, 9000 Rockville Pike, Bethesda, MD 20014.
- 13.342 Health Professions—Student Loans
Student Assistance Staff, Bureau of Health Manpower, Health Resources Administration, Public Health Service, Department of Health, Education and Welfare, 9000 Rockville Pike, Bethesda, MD 20014.
- 13.363 Nursing Scholarships (for students with exceptional financial need)
Student Assistance Staff, Bureau of Health Manpower, Health Resources Administration, Public Health Service, Department of Health, Education and Welfare, 9000 Rockville Pike, Bethesda, MD 20014.
- 13.364 Nursing Student Loans (for students with exceptional financial need)
Student Assistance Staff, Bureau of Health Manpower, Health Resources Administration, Public Health Service, Department of Health, Education and Welfare, 9000 Rockville Pike, Bethesda, MD 20014.
- 13.441 Fulbright-Hays Training Grants—Doctoral Dissertation Research Abroad
Division of International Education, Office of Education, Department of Health, Education and Welfare, ROB 3, 400 Maryland Ave., SW, Washington, D.C. 20202.
- 13.555 Public Service Education—Institutional Grants and Fellowships (graduate or professional study toward careers in public service)
Bureau of Postsecondary Education, Division of Training and Facilities, Graduate Training Branch, Office of Education, Department of Health, Education and Welfare, 400 Maryland Ave. SW, Washington, D.C. 20202.

- 13.569 Indian Education—Fellowships for Indian Students (support for study toward careers in medicine, law, engineering, other fields)

Office of Indian Education, Office of Education, Department of Health, Education and Welfare, 400 Maryland Ave., SW, Washington, D.C. 20202.

- 13.574 Health Professions Educational Assistance Act Insured Loans

Director, Health Professions Insured Student Loan Program, Bureau of Student Financial Assistance, Department of Health, Education and Welfare, Washington, D.C. 20202.

- 16.504 Law Enforcement Program—Student Financial Aid (grants and loans administered by approved institutions of higher education)

Office of Criminal Justice Education and Training, Law Enforcement Assistance Administration, Department of Justice, Washington, D.C. 20531.

- 47.009 Scientific Personnel Improvement (graduate students, payments made through institution)

Director, Division of Science Manpower Improvement, National Science Foundation, 1800 G St., NW, Washington, D.C. 20550.

- 64.116 Vocational Rehabilitation for Disabled Veterans (WW II and later service to restore employability)

Veterans Administration Central Office, Washington, D.C. 20420.

Reserve Officer Training Program (ROTC); Naval Reserve Officer Training Program (NROTC)

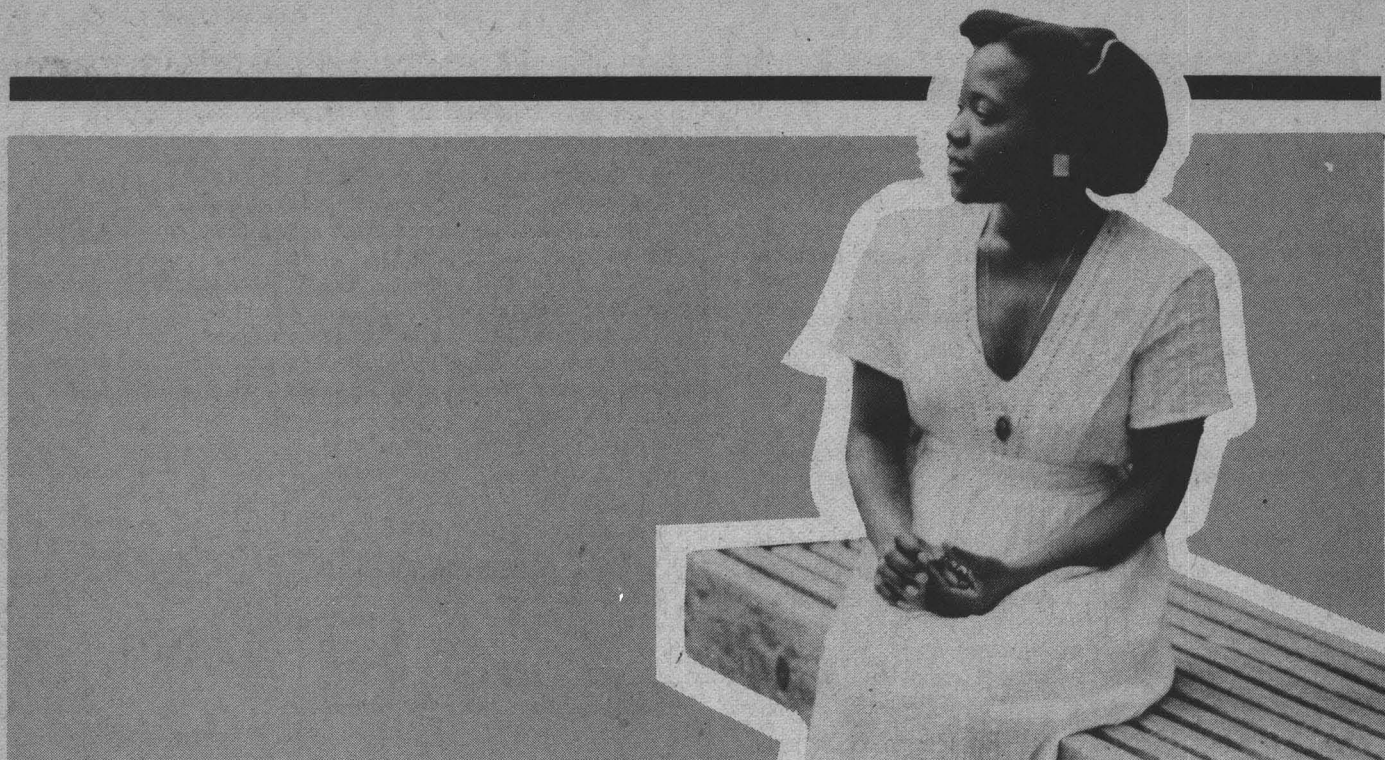
(full four-year scholarships, subsequent military service required)

Army ROTC, Fort Monroe, VA 23651

Air Force ROTC, Advisory Service, Maxwell AFB, AL 36112
NROTC, Navy-Marine Corps Scholarship Program, P.O. Box 5909, Washington, D.C. 20014.

Loans to Parents

Parents of dependent students may now borrow up to \$3,000 per year for each student in college, to a total of \$15,000 at nine percent interest. Repayment must begin within 60 days after receipt of a loan.



General Academic Information

Semester Registration

Completion of registration each semester in accordance with instructions issued by the Registrar (Office of Records) is a prerequisite to class attendance. Although the Registrar will attempt to send individual instructions to every eligible student in advance of each registration period, changes in status and address make it impossible to guarantee that every student will automatically receive these instructions. Eligible students who fail to receive final registration information two weeks before the first day of classes each semester should contact the Office of Records without delay. Registration after the close of the announced final registration period in the academic calendar requires the payment of a late registration fee of \$20. Registration is not permitted after the end of the second week of classes.

With the assistance of an academic advisor each student selects a program of courses; it is the student's responsibility to see that the program conforms with academic regulations and meets degree requirements.

Registration is not complete until all tuition, fees, and charges, which are due and payable prior to the first day of classes, have been paid or properly deferred. Nonpayment by preregistered students, however, does not constitute official withdrawal, which must be done through the Office of Records/Registrar. (See "Withdrawal," p. 40, and "Refund of Tuition," p. 22.)

Change in Course Registration

During the first ten class days a student may, within the regulations, add or drop courses by submitting the appropriate form to the Office of Records/Registrar. No record is made of courses dropped before the end of the tenth class day. After that date, a course may be added only with the approval of the appropriate

Committee on Academic Standing and Appeals (CASA; see next column, "Committees on Academic Standing and Appeals").

From the eleventh class day through the ninth week of classes a student may, within the regulations, withdraw from a course (see below, "Course Load," and p. 35, "Grading System"). After the ninth week, a student may withdraw from a course only by withdrawing from the University by the last day of classes, or, in exceptional circumstances, by the approval of the appropriate "Committee on Academic Standing and Appeals." (See "Academic Calendar," inside back cover.)

First-Week Attendance

A student registered in an undergraduate course who does not attend any classes in that course during the first full week of classes may be deregistered from that course, if there are unregistered students who wish to register, unless prior arrangements to preserve the registration have been made by the student with the instructor. This deregistration authority is limited to the add period at the beginning of each semester. Students are not automatically deregistered in every case, however, and must act themselves to drop a course if they desire to avoid an NR (see "Grading System") in that course.

Course Load

A normal course load for full-time matriculated students is a program totaling 12 to 19 semester hours. Any other program requires approval by the appropriate Committee on Academic Standing and Appeals. Requests for permission to register for more than 19 or fewer than 12 hours should be submitted directly to the appropriate academic standing committee.

Although the University regards full-time matriculated students who have received official permission during a particular semester to carry an underload (fewer than 12 semester hours) as full-time students during said semester, some outside agencies do not. Therefore, before requesting an underload a student should determine the consequences in terms of scholarships and loans. Approval for an underload for a single semester is granted only for emergency situations that could not have been anticipated. Students who have chronic problems that make full-time study inappropriate should consult an admissions counselor about changing to part-time status.

Repeating Courses

Students may register again in a course for which they have already received a grade recorded as D, W, NC, U or F. In such cases each grade is recorded and computed separately except that the credit hours earned in a given course may be counted only once toward the quantitative credit-hour degree requirements (120 semester hours for the B.A. and the B.S., 128 semester hours for the B.E.). Such a course will, however, count as part of the semester credit load. The same guideline applies to courses that have been renumbered and are listed under the new number, followed by the former number in parentheses, in the next *Bulletin* published and, until then, in the Undergraduate Studies Newsletter.

Final Examinations

The academic calendar always provides five days each semester for a final examination period and a short reading period as well. No final examinations may be given in the last week of classes without permission of the Vice Provost for Curriculum and Instruction (for Arts and Sciences courses) or the Dean of Engineering and Applied Sciences (for Engineering and Applied Sciences courses). Such permission may be granted only for compelling academic reasons.

Auditing

Auditing refers to the practice of attending a course for informational instruction only. No credit is granted for such work nor does the University keep any record of the student's participation in the course. The privilege of auditing courses is reserved

for regularly enrolled students and senior citizens only. A student who wishes to audit a course should first obtain the permission of the instructor.

Full-time/Part-time Status Change

Students are not authorized to change their status as either full-time or part-time undergraduates without consulting an admissions counselor. After the tenth day of classes the Undergraduate Admissions Office will consider status changes only upon recommendation of the appropriate academic standing committee. Students wishing to change from full-time to part-time or from part-time to full-time should file the appropriate application in the Undergraduate Admissions Office not later than the final day of late registration. A full-time student who registers for eleven or fewer credits without authorization will be required to pay full-time tuition and will be subject to rules of academic standing for full-time students.

Committees on Academic Standing and Appeals

For College of Arts and Sciences Students

Exceptions to regulations regarding such matters as registration changes, course loads, and academic standing may be made by the Committee on Academic Standing and Appeals of the College of Arts and Sciences, which operates under faculty legislation. Information about academic regulations or CASA policies and advice about individual requests to the Committee may be obtained from the Undergraduate Studies Office.

For College of Engineering and Applied Sciences Students

Petitions for exceptions to regulations regarding such matters as registration changes, course loads, and academic standing are considered by the Committee on Academic Standing and Appeals of the College of Engineering and Applied Sciences, which also deals with academic dishonesty and academic grievances (see below). Information about academic regulations and advice about individual requests to the Committee may be obtained from the Undergraduate Student Office, Engineering 127.

Academic Advising

The Undergraduate Studies Office, located in the Frank Melville, Jr. Memorial Library Building, has overall responsibility for the academic advising of all new students until such time as they officially select a major. The Undergraduate Student Office of the College of Engineering and Applied Sciences provides specialized advising for students interested in its professional programs. Designated faculty from each academic department and program are also available to advise students.

Prior to their first registration at the University all new students are expected to participate in an orientation program during which, in addition to taking the English composition proficiency examination and diagnostic tests in mathematics and some sciences, they receive academic information and advice from

faculty, professional staff, and student orientation leaders. Students who have not yet selected a major are expected to consult advisors in the Undergraduate Studies Office and in the departments for assistance in planning their academic programs. Students who have selected a major department are expected to seek assistance in academic planning from that department.

Stony Brook students interested in preparing for undergraduate or graduate health professions should stop in the Undergraduate Studies Office for a "Basic Information" pamphlet, which details academic and other information helpful for preparation and application to undergraduate and graduate health professional schools.

Class Status

As used in academic regulations and degree requirements, class designations are based on the following schedule of credits earned: freshman, 0-23; sophomore, 24-56; junior, 57-84; senior, 85 or more.

University Graduation Requirements

All candidates for any of the bachelor's degrees conferred must satisfy all University graduation requirements, as well as the College and departmental requirements for the specific degree. University requirements for overall credit hours, grade point average, residence, and upper division credits are listed along with College requirements on p. 42 for College of Arts and Sciences students and on p. 156 for College of Engineering and Applied Sciences students. Students in the W. Averell Harriman College for Urban and Policy Sciences, who choose their majors in one of the other main campus colleges, graduate under the requirements of the College in which the major is located.

Grading System

Except for year-long courses (indicated by hyphenated, consecutive numbers), a final grade is assigned each semester for every course or independent study project for which a student is registered after the second week of classes.

A student who withdraws from a course after the tenth day of the semester is assigned a grade of W, indicating withdrawal.

Unless a student receives a Withdrawal grade, a temporary report of Registered (described below), or a report of Incomplete or No Record in a course, he or she is assigned one of the following grades:

- A (indicates superior work)
- A-
- B+
- B (indicates good work)
- B-
- C+
- C (indicates satisfactory work)
- C-
- D+
- D (indicates minimum passing work)
- F (indicates failing work)
- S (indicates satisfactory work)
- U (indicates unsatisfactory work)

Instructors of year-long courses for which the final grade is assigned only after completion of two semesters submit a report of R (Registered) at the end of the first semester. A final grade for the combined semesters' work is recorded at the end of the second term.

At his or her discretion, an instructor or supervisor may assign the temporary report of I (Incomplete), which indicates the student's inability to complete all course requirements because of circumstances beyond his or her control. The instructor will set a date for completion no later than November 1 for courses in the preceding spring semester or summer session and no later than March 15 for courses in the preceding fall semester. An Incomplete does not count toward the earned semester credits required to remain in good academic standing. (See "Academic Standing.") In unusual circumstances, an instructor may extend the completion date beyond these limits by written notification to the Registrar. Any extension should normally be limited to the last day of classes of the semester following that in which the course was taken. Longer extensions must be approved by the Vice Provost for Curriculum and Instruction or the Dean of the College of Engineering and Applied Sciences. If the final grade is not reported by the applicable or extended deadline date, the grade F is assigned.

An instructor may submit a temporary report of NR (No Record) only for students who have never, to the instructor's knowledge, participated in the course in any way. An NR report is not to be interpreted as a grade but only as a temporary indication of a state of affairs which requires prompt resolution, leading either to removal of the course from a student's program (whenever it turns out to have appeared as a result of an error in recording the registration information submitted by the student), or to the assignment of a grade. If a final grade is not reported by the deadline date appearing in the academic calendar, the grade of F or NC, as appropriate, will be recorded.

Grades, except I (Incomplete), appearing on a student's academic record may not be changed after one calendar year from the start of the term in which the grade was incurred. Exceptions may be made if the instructor is on leave in the term following the one in which the grade is assigned or if the student is on leave because of illness in that term.

Grades appearing on a student's academic record at the time of his or her graduation cannot be changed to any other grade subsequent to the graduation date. No student will be permitted to graduate with an I or NR on his or her academic record. Degree candidates wishing to make up incomplete work must file an application to postpone their graduation until the end of the following term. The deadlines for such applications are the same as the deadlines for initial degree applications as stated in the academic calendar.

Pass/No Credit Academic Record Option

With the possible exception of courses in the major program, a student may elect to have the final grade in any course recorded on the official academic record either as P (Pass) if the reported grade is A, B, C, or D or as NC (No Credit) if the reported grade is F. The following provisions reflect the intent of this option, which is to permit exploration of less familiar areas of study without weakening standards of evaluation or masking a record of poor performance.

A. Election of the P/NC option is limited to the first nine weeks of each semester. After the specified date as shown in the academic calendar, no changes either to or from the P/NC option may be made.

B. The Office of Records/Registrar does not communicate to the instructor in a course the names of students who elected the P/NC option.

C. The requirements for a major program may make the P/NC option unavailable in a course used to meet requirements for that major. Specific information may be obtained from the department or other agency which supervises the program.

A student who intends to enter a professional or graduate school program may be advised not to elect the P/NC option in certain courses or fields of study. The appropriate advisor should be consulted.

Satisfactory/Unsatisfactory Grading

The Curriculum Committees of the College of Arts and Sciences and of the College of Engineering and Applied Sciences have the authority to approve the offering of certain courses on a Satisfactory/Unsatisfactory grading basis, where finer grading distinctions are impractical. The only grades given in such courses will be S and U. The grading policy for each course is to be announced in the description of the course in the *Undergraduate Bulletin*. For the purposes of determining academic standing, the S/U grade shall be equivalent to P/NC. Students may not elect to take such a course for P/NC.

Grade Point Average

For the purpose of determining the grade point average specified in degree requirements, grades are assigned point values as follows:

A = 4.00	B+ = 3.33	C+ = 2.33	D+ = 1.33	F = 0.00
A- = 3.67	B = 3.00	C = 2.00	D = 1.00	
	B- = 2.67	C- = 1.67		

Other grades do not enter into the grade point average, nor do course credits transferred from other institutions. For a collection of courses with quantitative grade values as shown above, the grade point average is found by multiplying the number of credit hours for each course by the point value of the grade assigned, adding the results, and then dividing by the sum of the credit hours for all of the courses.

Semester Grade Reports

Grade reports, which are advisory, are prepared as quickly as possible after the conclusion of each semester. Credit for repeated courses is included in the cumulative credits shown, even though not all such credits may ultimately count toward the degree. Consistent with the University's efforts to encourage mature and responsible behavior in all aspects of a student's development, it is felt appropriate to place upon the student the responsibility for communicating information regarding academic programs and progress to parents. Accordingly, grade reports are addressed to the student at the end of each semester.

Transcripts

Students who desire transcripts of their academic record at Stony Brook, either for their own use or for forwarding to some other institution or agency, are asked to submit their request in writing to the Office of Records/Registrar at least two weeks before the transcript is needed except at the end-of-semester peak period when additional time should be allowed. The charge for transcripts is \$2 per copy. Payment should be made directly to the Bursar's Office and the receipt submitted to the Office of Records along with the transcript request. Partial transcripts of a student's record are not issued. Transcripts are sent only if the student's financial record is clear.

Selection of Major, Change of Major, Addition of a Second Major

Freshmen in the College of Arts and Sciences usually enter the University under the General University Program (GEN) and wait to select a major officially until after they have had an opportunity to test various academic interests by taking college-level courses in those fields. They may, however, declare a

major as early as the Advance Registration period for their second semester. Freshmen who indicated an interest in engineering on their application material are usually listed as being ESG (Engineering Science), ESE (Electrical Engineering) or ESC (Mechanical Engineering) majors from the beginning, but still are encouraged to explore various academic fields. It is strongly recommended that other freshmen who are interested in the programs of the College of Engineering and Applied Sciences declare their major during their first year. All students are expected to declare no later than the end of the second semester of their sophomore year or before attaining upper division status. Failure to do so may result in a delay in meeting graduation requirements. The Change/Selection-of-Major form available from the Office of Records/Registrar is used to officially designate a major.

In order to change officially from one academic major program to another, students should discuss the change with advisors in both programs and secure their signatures on a Change/Selection-of-Major form available from and returned to the Office of Records/Registrar.

Students who wish to add a second major (double major) in the College of Arts and Sciences must obtain the approval of the Undergraduate Studies Office. Those who want a second major in the College of Engineering and Applied Sciences must obtain the approval of the College's Undergraduate Student Office.

Students who wish to enter one of the upper division programs in the Health Sciences Center must apply for admission to that program during the fall semester and be formally accepted in the spring of their sophomore year. Admission to any of the Health Sciences Center programs is *not* accomplished through the change-of-majors mechanism.

Selection of Minor

Students wishing to elect a minor do so by signing up with the faculty coordinator of the minor. It is important for students to consult this coordinator periodically, for it is only through the coordinator, after completion of all requirements, that participation in the minor is reported to the Office of Records/Registrar and recorded on the transcript.

Two Baccalaureate Degrees

Under certain circumstances major programs pursued in two of the three basic academic units offering baccalaureate degrees can result in the awarding of two bachelor's degrees to the same student.

Bachelor of Engineering and Bachelor of Arts or of Sciences

Qualified students whose special interests and career plans make such study appropriate may be granted permission to earn two degrees at the undergraduate level by planning a program which leads to a Bachelor of Engineering degree and a Bachelor of Arts or a Bachelor of Science degree offered by the College of Arts and Sciences. Written approval to undertake this curriculum must be obtained from the Engineering Undergraduate Student Office and the Undergraduate Studies Office subject to review and final authorization by the Provost. In addition to meeting all University graduation requirements and distribution and proficiency requirements of both Colleges, the candidate for two degrees must earn a total of 144 credits and must fulfill the requirements of the Bachelor of Engineering degree and the requirements of either a Bachelor of Arts or a Bachelor of Science degree.

Health Sciences and Arts and Sciences

Students at Stony Brook may simultaneously earn baccalaureate degrees from both the College of Arts and Sciences and the Health Sciences Center if they have been admitted formally to each unit and fulfilled the criteria and requirements outlined below. Written approval to undertake this curriculum must be obtained from the dean of the Health Sciences school in which the student is enrolled and from the Undergraduate Studies Office subject to review and final authorization by the Provost. The double degree may include either a Bachelor of Arts or a Bachelor of Science degree from the College of Arts and Sciences and a Bachelor of Science degree from the Health Sciences Center.

The second baccalaureate degree will be given only when (1) a concentration in the second field has been completed in a time span greater than required for one degree, i.e., normally five years of full-time study; and (2) a candidate has competencies in two essentially different areas of specialization, i.e., in a Health Sciences Center program and a College of Arts and Sciences major.

To earn credit towards a second degree a student must fulfill the following requirements: (1) minimum total credits, 144; (2) minimum liberal arts credits, 90; (3) the distribution and proficiency requirements of the College of Arts and Sciences (the completion of which also satisfies the general University requirements of the Health Sciences Center); (4) minimum Stony Brook liberal arts credits, 36, of which at least 15 must be in upper division courses; (5) minimum Health Sciences Center credits as determined by the department and school of the selected major; and (6) minimum quality point average and minimum unduplicated course work as required for each degree.

Only double degrees, not double majors, may be earned by students studying jointly in the Schools of Nursing or Social Welfare and the College of Arts and Sciences. Students in the School of Allied Health Professions may earn either a double degree or a double major. For a double major, all current guidelines and regulations apply except that the distribution requirements are those currently in effect for Health Sciences Center programs.

Baccalaureate Credit Options*Challenge Program for Advanced Credit**

The University's Challenge Program permits undergraduates to earn advanced placement and credit by taking examinations in place of regular courses. Each department determines the courses for which it will offer Challenge examinations. No student may take a Challenge examination in a course that is a prerequisite for a course already passed. Although a student may earn up to a total of 30 credits by examination, including both Challenge and approved external examinations, credit may be accumulated through the Challenge Program alone in no more than five courses. Challenge credit may not be used to fulfill the residence requirement of 36 credits earned at Stony Brook after the 57th credit has been completed, nor does it count as part of the semester credit required for good academic standing. Written guidelines describing in detail the procedures and regulations governing Challenge credit are available in the Undergraduate Studies Office.

*See also p. 18, "Advanced Standing by Examination."

*Study at Other Institutions***

Subject to certain limitations and conditions, course credit earned at other institutions either before or after matriculation at Stony Brook may be applied to meet Stony Brook degree requirements. Courses taken at colleges offering only two-year (lower division) programs are presumed to be lower division courses, except for a few that have previously been designated as upper division courses by a Stony Brook department with the approval of the College's curriculum committee. Upper division credit for courses transferred from four-year colleges will be granted only on a course evaluation basis and only on the written approval of the undergraduate director of a department that might offer such a course. Only courses for which a grade of C or better is recorded will be granted upper division credit.

Once a student has matriculated, prior approval normally will be required before he or she may take an upper division course for credit at another institution. This is handled by the Undergraduate Admissions Office, which should be consulted by currently enrolled Stony Brook students before work is undertaken at any other institution.

Summer Study Elsewhere

To insure that projected courses will be fully acceptable for transfer credit, a student planning to take summer courses elsewhere should discuss plans in advance with both the academic advisor and the Stony Brook Undergraduate Admissions Office, where he or she can obtain assistance in filling out a form listing the intended courses and their Stony Brook equivalents. After the Undergraduate Admissions Office receives an official transcript indicating that the student has completed the courses with a passing grade, appropriate transfer credit will be granted.

Visiting Student Program

A state-wide program enables interested Stony Brook students to study for a semester or a year at one of more than 50 participating colleges and universities in New York State. The Visiting Student Program is approved by the State Education Department and full transferability of Regents Scholarships and Scholar Incentive Awards is assured. The unique purpose of the program is to allow students to explore possibilities of academic life in a variety of settings ranging from small and possibly specialized institutions to large academic communities such as Stony Brook.

To qualify for the program a student must have the advance approval of his or her academic advisor or department chairman and an official statement from the Office of Records/Registrar that he or she is in good academic standing; the student must also accept full responsibility for tuition, fees, and any similar charges in effect at the host school. Both a "Withdrawal from the University" form and a "Readmission/Leave of Absence" application must be completed prior to leaving Stony Brook.

Application forms and additional information about the Visiting Student Program may be obtained at the Undergraduate Admissions Office; however, some campuses require the completion of supplementary forms that must be secured directly from their admissions offices. Admission on each campus is usually on a competitive, space-available basis.

Stony Brook students may also explore the possibility of attending colleges outside New York State as visiting students. Advance approval of courses and a leave of absence are required to insure readmission to Stony Brook at the end of one or two semesters.

**See also p. 17, "Transfer Credit Policies."

Foreign Study

Qualified students may spend a summer, a semester, or a full academic year as participants in a foreign study program sponsored by the State University of New York. Foreign study offers alternative social and cultural perspectives on studies in the humanities and social sciences and supplements offerings of the University in area studies; many programs provide an opportunity to gain proficiency in the use of a foreign language. Students may select from among a variety of programs available in most countries in Western Europe, the Soviet Union, the Middle and Far East, Canada, the Caribbean, and Latin America.

Participating in a semester- or year-long foreign study program requires advance planning. Quite often there are academic prerequisites to foreign study programs. Because the courses available through the programs are more limited than the selections offered on campus at Stony Brook, students who hope to participate in foreign study should project a plan of study that will allow them to complete University, College, and major requirements within an acceptable number of semesters. Interested students should seek information and advice about foreign study in the International Programs Office.

Academic Standing

*This information applies to all students in the College of Arts and Sciences and Engineering and Applied Sciences.**

Minimal acceptable academic progress is measured in terms of the rate at which course credit is earned and, for upper division students, in terms of the semester grade point average as well. The number of credit hours earned in a semester is the total number of credit hours assigned to courses with recorded grades of A, B, C, D, S, or P. A student who has not been dismissed under criterion A, B, or E, below, is considered to be in good academic standing. Any student dismissed for academic reasons may apply to the appropriate Committee on Academic Standing and Appeals for termination of that dismissal and, if approved, apply for readmission after a minimum of one semester's absence from the State University of New York at Stony Brook. (See "Leave of Absence and Readmission," p. 40.)

Full-Time Students

All full-time students are expected to earn at least 12 credits each semester. Academic standing is determined by credits earned. Incomplete (I) reports or Failure (F), Unsatisfactory (U), or No Credit (NC) grades do *not* count as earned credits. Academic progress will be reviewed at the end of each semester, and students will be placed on notice or dismissed according to the following provisions:

A. A freshman (any student who has earned fewer than 24 credits) must earn a minimum of nine credits in a semester. Failure to do so will place that student ON NOTICE. In the student's next semester the student, if still a freshman, must earn a minimum of nine credits. Failure to meet this requirement will result in DISMISSAL.

*New State Education Department rules issued in fall 1980 require that some changes in Stony Brook's academic standing regulations be in place by September 1981. As the *Bulletin* went to press, the University was in the process of formulating these revisions. The new academic standing regulations will be distributed prior to fall 1981, and will be reprinted in the Undergraduate Studies Newsletter each semester.

B. A student beyond the freshman year (any student who has earned 24 or more credits) must earn a minimum of 12 credits each semester. Failure to do so will place that student ON NOTICE. In the student's next semester the student must complete a minimum of 12 credits. Failure to meet this requirement will result in DISMISSAL.

C. An upper division student (one who has earned 57 or more credits) is subject to the requirements of paragraph B, and in addition must achieve a minimum grade point average of 2.00 each semester. Failure to do so will place that student ON NOTICE.

D. A student who is ON NOTICE solely because Incomplete (I) reports have resulted in too few earned credits or an insufficient grade point average will have the NOTICE rescinded if he or she meets the minimum requirements by completing the courses before the published deadline for doing so. A student who has been DISMISSED because of Incompletes must complete sufficient credits (and G.P.A., where applicable) by the date specified in the dismissal letter in order to have the dismissal rescinded.

E. Any student eligible for a THIRD NOTICE will be DISMISSED.

Part-Time Matriculated Students

A part-time matriculated student (registered for 11 or fewer credits in any semester) must successfully complete two-thirds of the total number of credits attempted in that semester. In addition, an upper division part-time matriculated student must achieve a grade point average of 2.00 each semester. Students who fail to meet either of these requirements will be placed ON NOTICE. Students who fail to meet either of the requirements in the next semester will be DISMISSED. Any student eligible for a THIRD NOTICE will be DISMISSED.

Academic Dishonesty

Intellectual honesty is the cornerstone of all academic and scholarly work. Therefore the University views any form of academic dishonesty as a serious matter. The Academic Judiciary Subcommittee for the College of Arts and Sciences and the Committee on Academic Standing and Appeals of the College of Engineering and Applied Sciences are responsible for enforcing the guidelines for dealing with academic dishonesty in each College and for the consideration of individual cases, either initially or on appeal. Detailed procedures for hearings and other functions of these committees are available in the Undergraduate Studies Office and in Engineering 127.

Academic Grievances

The Academic Judiciary Subcommittee for the College of Arts and Sciences considers complaints of arbitrary, capricious, malicious, or otherwise improper actions related to grading and other evaluations; assignments, examinations, and other requirements for credit; or any other academic matters. While such grievances are most often brought by students against instructors, the Subcommittee will consider grievances involving any member of the College of Arts and Sciences community. The Subcommittee, however, cannot intervene in matters covered by the procedures set forth in the Policies of the Board of Trustees, the Rules for the Maintenance of Public Order, or the collective bargaining agreement between the State and United University Professions (the faculty-staff union).

The Subcommittee considers only charges of clearly improper academic practices; it will not intervene in disagreements about an instructor's intellectual judgment. Grievances

should be brought to the Subcommittee only after other avenues of redress (e.g., discussion with the instructor or department chairman) have been pursued without success. Grievances should be put in writing, including names, dates, and other pertinent details, and should be submitted to the Subcommittee at the Undergraduate Studies Office within two months after the beginning of the semester following the alleged impropriety. Further information about academic grievance procedures may be obtained from that office.

College of Engineering and Applied Sciences students seeking information on procedures should consult the Engineering Undergraduate Student Office.

Awards and Honors

The University pays tribute to its outstanding students through the conferring of awards, election to honorary societies, granting of departmental and University honors, and selection for the Dean's List of each basic academic unit. The following University awards are presented each year:

Ward Melville Valedictory Award

In honor of its first Chairman, the Council of the State University of New York at Stony Brook annually presents through the Stony Brook Foundation the University's most distinguished undergraduate honor, the Ward Melville Valedictory Award, to the graduating senior who has attained the highest academic average during four years at Stony Brook.

William J. Sullivan Award

The William J. Sullivan Award is presented annually by the Council of the State University of New York at Stony Brook through the Stony Brook Foundation in honor of Justice William J. Sullivan, retired Chairman of the Council. The Sullivan Award is the most prestigious service award the University can present to a graduating senior. It represents the University's recognition of particularly outstanding service contributions to the development of academic and student life on the campus.

H. Lee Dennison Award

The H. Lee Dennison Award, named in honor of Suffolk County's first chief executive, is presented by the Council of the State University of New York at Stony Brook through the Stony Brook Foundation to the graduating senior who entered Stony Brook as a transfer student, completed at least 60 credits of letter grade work at Stony Brook, and attained the most outstanding academic record at Stony Brook in that work.

The Distinguished Community Service Award

The Distinguished Community Service Award is presented annually by the Stony Brook Foundation to a graduating senior in recognition of particularly outstanding contributions to public service in the Long Island region. This award is sponsored through a grant from the Suffolk County Federal Savings and Loan Association.

United University Professions Award

The State University of New York at Stony Brook presents the United University Professions Award to that member of the graduating class who has most displayed an unselfish concern for the promotion and protection of human rights and values.

Elizabeth D. Couey Award

The State University of New York at Stony Brook presents the Stony Brook Union - Elizabeth D. Couey Award annually in memory of the first Coordinator of Student Activities. This award is presented to the graduating senior who exemplifies those qualities which made Elizabeth D. Couey unique and the most human of beings: to listen with understanding, to guide without boundaries, to give and take with love, and to grow with the passing of each day.

President's Art Acquisition Prize

The President's Art Acquisition Prize is awarded annually to one or more senior art majors whose works, in the judgment of the studio art faculty, demonstrate originality, imagination, and mastery of craft. The art works selected become part of the University's permanent collection and are displayed in University offices.

Junior Class Award

The Junior Class Award is presented annually by the University Association of the State University of New York at Stony Brook to two outstanding juniors in recognition of academic excellence and personal contributions to the University community.

The Health Sciences Undergraduate Award

The Health Sciences Undergraduate Award is presented annually by the University Association of the State University of New York at Stony Brook to a junior in the Health Sciences Center for academic excellence and outstanding, non-academic service activities on campus and in the community.

Faculty-Student Association Campus Life Award

The Faculty-Student Association awards a scholarship in recognition of outstanding contributions to the quality of campus life. Awards are given to students in good academic standing who have created or revitalized programs or projects that meet evident needs of the campus community, serve a large number of people, and have the potential to continue in future years.

The Elisabeth Luce Moore Fellowship

The Elisabeth Luce Moore Fellowship in International and Religious Studies is presented annually by the Stony Brook Foundation to a deserving Stony Brook student who demonstrates outstanding academic potential and gives promise of contributions of unusual stature to the fostering of international understanding and/or to the appreciation of religious values.

The George B. Costigan Scholarship

The George B. Costigan Scholarship is presented annually by the Council of the State University of New York at Stony Brook through the Stony Brook Foundation in honor of George B. Costigan, retired chairman of the Council. This scholarship is presented to a junior or senior at the State University of New York at Stony Brook who is a graduate of one of the two-year colleges on Long Island and who has best used his enrollment at that college to mature in character, awareness, and learning—in fulfillment of the University's motto, "To Learn—To Search—To Serve."

GEICO Achievement Award

The GEICO Achievement Award is presented annually by the Government Employees Insurance Company to an outstanding sophomore or junior majoring in an insurance-related field.

The Martin Buskin Scholarship

The Martin Buskin Scholarship is presented annually by the Stony Brook Foundation to the Stony Brook student who most exemplifies the qualities of journalistic integrity, scholarship, and deep concern for education.

The Sylvia Green and Rosalind Polinsky Scholarship

The Sylvia Green and Rosalind Polinsky Scholarship is presented annually by the Stony Brook Foundation to an undergraduate student in the College of Arts and Sciences who has demonstrated academic excellence and financial need.

The Mortimer Kreuter Scholarship

The Mortimer Kreuter Scholarship is awarded each year by a Fund committee to a mature person who needs financial assistance in order to return to or continue his or her undergraduate or graduate education.

Richard B. Moore Scholarship

The Richard B. Moore Scholarship, established by the Stony Brook Foundation to honor the memory of the distinguished civil rights activist and historian, provides annual recognition for a Stony Brook student of Afro-American or African heritage with outstanding academic potential.

The Society of American Military Engineers Award

The Society of American Military Engineers Award is presented annually by the New York City Post to an engineering student who has demonstrated by scholastic performance a potential for further engineering study and practice and who may be in financial need.

University Scholarships

The Stony Brook Foundation presents these awards to students beginning their freshman year at Stony Brook whose high school transcripts show superior academic achievement. The scholarships are made possible through a special fund provided by a bequest of Cecil L. and Claire D. Hall.

Departmental Awards

Department awards include: *Chemistry*—CRC Freshman Award, Emerson Award to Outstanding Junior, American Institute of Chemists' Senior Award. *Earth and Space Sciences*—Myron Fuller Award for the outstanding major emphasizing geology and Sherman Raftenberg Award for the outstanding major emphasizing astronomy. *French*—French Cultural Institute Awards to outstanding graduating majors. *History*—Staudenraus Award. *Italian*—Dante Medal to the best graduating major, Italian Cultural Institute prizes to the best student of Italian on each level. *Physics*—the John S. Toll Prize to the outstanding graduating physics major. *Sociology*—Outstanding Scholarship Award and Outstanding Service Award to graduating majors. In addition, the Stony Brook Foundation presents awards at commencement to undergraduate students demonstrating high academic achievement as determined by their departments.

Honorary Societies

Besides the annual awards listed above, induction into an honorary society acknowledges the student's outstanding academic performance.

Sigma Beta is Stony Brook's freshman honor society. Membership is based upon the attainment of a 3.5 grade point average in the first semester of the freshman year, using the same criteria as for the Dean's List, below.

Phi Beta Kappa is a national honorary society devoted to the promotion of scholarly attainment in liberal arts and sciences. Election to Phi Beta Kappa is based not only on high grades but also on breadth, balance, and proportion in the candidates' programs.

Sigma Xi is a national honorary society for achievement in pure or applied scientific research. Any student associated with the State University of New York at Stony Brook who has through initial research achievements shown a marked aptitude for research which is expected in due course to lead to the fulfillment of the requirements for full membership may be nominated and elected as an Associate Member of Sigma Xi.

Tau Beta Pi is the national honorary engineering society devoted to honoring students for academic excellence and for service to the engineering profession. Engineering juniors and seniors who have demonstrated these qualities are invited to join Stony Brook's Omicron Chapter of Tau Beta Pi.

Various disciplines have their own honorary societies. Those with chapters at Stony Brook include *Sigma Gamma Epsilon* (Earth Science), *Omicron Delta Epsilon* (Economics), *Eta Kappa Nu* (Electrical Engineering), *Phi Alpha Theta* (History), *Phi Sigma Tau* (Philosophy), *Sigma Pi Sigma* (Physics), *Pi Sigma Alpha* (Political Science), *Phi Sigma Iota* (Romance Languages), and *Alpha Kappa Delta* (Sociology).

Dean's List

At the end of each semester the dean of each academic unit compiles a Dean's List of undergraduate students who constitute approximately the top 20 percent of their class, provided each student has completed that semester at least 12 credits for letter grade (including S) and has no I's, U's, NR's, NC's, or F's. P grades are not counted as letter grades for this purpose. The grade point average cut-offs for the College of Arts and Sciences are: seniors, 3.6; juniors, 3.5; sophomores, 3.4; and freshmen, 3.3. For the College of Engineering and Applied Sciences the cut-offs are: seniors, 3.4; juniors, 3.3; sophomores, 3.2; and freshmen, 3.1. The cut-offs are recalculated every two years to reflect changes in grading patterns.

University Honors

The criteria for University honors include: (1) completion of at least 60 credits at Stony Brook; and (2) letter grades assigned to at least 80 percent of the student's work. Students in the 98th

percentile or higher shall receive highest honors; those in the 93rd-97.9th percentile shall receive high honors; and those in the 85th-92.9th percentile shall receive honors. Attainment of University honors is indicated on the student's diploma and permanent academic record. The grade point average cut-off points are recomputed each year. In 1980 they were 3.87, 3.68, and 3.50 for Engineering and Applied Sciences students, and 3.86, 3.66, and 3.46 for Arts and Sciences students.

Departmental Honors Programs

While selection of students for all the above awards and honors is based primarily upon University records and recommendation and not upon application, students must declare their intention to seek departmental honors and must carry out prescribed academic activities to earn this distinction. The honors programs of those departments offering them are described in the alphabetical listing of the College of Arts and Sciences. For those students who qualify, this fact is indicated on their diploma and on their permanent academic record.

Application for Graduation

In order to become a candidate for graduation, a student must file an "Application for Graduation" form with the Office of Records/Registrar. The deadline for such application is the end of the third week of the candidate's final semester. Prospective August graduates must apply by the end of the second week of Summer Session. No changes of grades can be made on a student's academic record after the degree has been awarded.

Withdrawal from the University

Official withdrawal will be recorded when a "Withdrawal From the University" form, available from the Office of Records/Registrar, has been submitted to the Registrar. The date on which the form is filed, not the date of last class attendance, is considered the official date of withdrawal. Non-attendance or notification to the student's instructors does not constitute formal withdrawal.

Students who submit withdrawal forms after the first ten class days but not later than the final day of classes in a semester will be assigned a withdrawal (W) for each course. A withdrawal after the last day of classes is effective at the end of the semester; final grades will be assigned and the withdrawal will not preclude academic dismissal.

Leave of Absence and Readmission

Students who indicate at the time of official withdrawal that they may wish to return to Stony Brook will be approved routinely for return to the University during the three semesters following withdrawal if: (1) withdrawal occurs prior to October 31 in the fall and March 15 in the spring semester; (2) the student has not withdrawn previously; (3) the student has never been dismissed; and (4) the student has no disciplinary action pending. In addition, Advancement on Individual Merit (Educational Opportunity Program) students must obtain clearance for readmission from the A.I.M. Office, and foreign students must obtain a visa clearance from the Foreign Student Office. The Leave of Absence may be cancelled for a student who attends another college while on leave from Stony Brook and who fails to maintain a C average in that institution. A student in that situation should consult an admissions counselor at the earliest opportunity.

A student who withdraws from the University after October 31 in the fall and after March 15 in the spring semester and who otherwise meets the above conditions will be approved routinely to return after one full semester has elapsed. Students with documented extenuating circumstances, e.g., health problems, may petition the Undergraduate Admissions Office to return in the subsequent semester. Those who have been dismissed from the University must allow at least one semester to elapse before applying for readmission and must have had the period of dismissal terminated by the appropriate University official or committee before a decision can be reached on the application for readmission.

Students who withdraw under circumstances different from those described above will be advised of their status by the Undergraduate Admissions Office and provided with instructions for seeking readmission.

An applicant who is denied readmission may appeal to the Admissions Committee. An applicant whose account with the Business Office is delinquent may be readmitted but will not be authorized to register until the account has been cleared.

Equivalent Opportunity/Religious Absences

Some students may be unable to attend classes on certain days because of religious beliefs. Section 224-a of the Education Law provides that:

1. No person shall be expelled from or be refused admission as a student to an institution of higher education for the reason that he is unable, because of his religious beliefs, to attend classes or to participate in any examination, study, or work requirements on a particular day or days.

2. Any student in an institution of higher education who is unable, because of his religious beliefs, to attend classes on a particular day or days shall, because of such absence on the particular day or days, be excused from any examination or any study or work requirements.*

*Students shall be excused from the examination or study or work requirement only on the particular day or days they are unable to attend classes because of religious beliefs. See provision #3.

3. It shall be the responsibility of the faculty and of the administrative officials of each institution of higher education to make available to each student who is absent from school, because of his religious beliefs, an equivalent opportunity to make up any examination, study, or work requirements which he may have missed because of such absence on any particular day or days. No fees of any kind shall be charged by the institution for making available to the said student such equivalent opportunity.

4. If classes, examinations, study, or work requirements are held on Friday after four o'clock post meridian or on Saturday, similar or makeup classes, examinations, study, or work requirements shall be made available on other days, where it is possible and practicable to do so. No special fees shall be charged to the student for these classes, examinations, study, or work requirements held on other days.

5. In effectuating the provisions of this section, it shall be the duty of the faculty and of the administrative officials of each institution of higher education to exercise the fullest measure of good faith. No adverse or prejudicial effects shall result to any student because of his availing himself of the provisions of this section.

6. Any student who is aggrieved by the alleged failure of any faculty or administrative officials to comply in good faith with the provisions of this section shall be entitled to maintain an action or proceeding in the supreme court of the county in which such institution of higher education is located for the enforcement of his rights under this section.

7. As used in this section, the term "institution of higher education" shall mean schools under the control of the Board of Trustees of the State University of New York or of the Board of Higher Education of the City of New York or any community college.

Research Involving Human Subjects

All experiments conducted by Stony Brook personnel in which human subjects are involved are required to be reviewed and approved by the campus Committee on Research Involving Human Subjects. Since undergraduates are often asked to act as subjects, they should be aware that it is the right of any subject to know if such an experiment has received such approval and that State University policy forbids individual campuses to require the participation of students as subjects in human research. In almost every instance an informed consent form is required of the subject. This form serves to outline the risks, if any, to the subject and describes the subject's participation. Inquiries about such experiments should be directed to the Executive Secretary of the Committee on Research Involving Human Subjects (246-7935).

Student Educational Records

The Family Educational Rights and Privacy Act permits current or former students to inspect and review their educational records. Students are also accorded the right to a hearing in order to question the contents of their educational records. Written consent of students may be required before personally identi-

able information about them will be released from their educational records as provided by law.

Specific guidelines and procedures are contained in PR-106, "Compliance with Family Rights and Privacy Act," contained in the Administrative Organization, Policies, and Procedures Manual of the University. A copy of this manual is available in the Reference Room of the Melville Library.


After administrative remedies available at the University have been exhausted, inquiries or complaints may be filed with the Family Education Rights and Privacy Act Office, Department of Education, Room 4511, Switzer Building, Washington, D.C. 20202.

Student Directory

It is the policy of the State University at Stony Brook to publish a Student Directory including student name, home address, telephone number, major, and level. If a student does not wish to be listed in the Directory, or in the case of a minor student, if a parent does not wish such listing, he or she will be required to so indicate at the time of registration by filing SUSB Form #503-B.

Changes in Regulations and Course Offerings

The courses of study, academic regulations, semester listings, and other information contained in this *Bulletin* are subject to the restrictions of the timetable and date of publication of the *Bulletin*. The University, therefore, reserves the right to change academic regulations or to cancel any course for whatever reason it may deem appropriate. New courses, revised courses and requirements, new and revised majors and minors, and changes in academic regulations are reported in the Undergraduate Studies Newsletter, issued at each Advance Registration period.



College of Arts and Sciences

Degree Requirements

All candidates for the Bachelor of Arts or Bachelor of Science degree must satisfy all University graduation requirements, College proficiency and distribution requirements, and the requirements of a major.

University Graduation Requirements

Credit Hour Requirement

At least 120 credit hours of passing work must have been completed for the Bachelor of Arts and Bachelor of Science degrees except in certain areas of study where additional credits may be required.

Note: Restrictions on the number of credits that may be earned in independent study, activity-related courses, courses for undergraduate teaching assistants, C.E.D. courses, and repeated courses are stated in "Course Credits and Prerequisites," p. 45.

Grade Point Average Requirement

A cumulative grade point average of at least 2.00 is required for all academic work taken at Stony Brook after achieving upper division status. (A student has achieved upper division status at the end of the semester in which the 57th credit was earned.)

Residence Requirement

Beginning with the 58th credit, at least 36 credits must be earned at Stony Brook.

Upper Division Credit Requirement

Each candidate must earn at least 39 credits in upper division courses (numbered 300 and higher).

Note: Some of these credits may be earned through courses transferred from other colleges and individually evaluated at Stony Brook as upper division.

College Proficiency Requirements

A. Proficiency in English Composition

All students must demonstrate competence in the clear and logical expression of ideas in written English. Proficiency in English composition shall be determined by performance on an examination given initially to new freshmen and transfer stu-

dents at or before entrance to the University.

Satisfactory performance on this examination shall satisfy the College's composition requirement. Students who fail to meet this standard initially shall be assigned to an appropriate course (EGC 100 or EGC 101 or EFL 192). They must pass EGC 101 or EFL 192 before first repeating the examination.

Note: Students who fail the proficiency examination a second or subsequent time, and transfer students who took a composition course equivalent to EGC 101 at their previous school but who do not pass the English composition proficiency examination upon entering Stony Brook, are advised to take a course with a writing component before retaking the examination. A list of recommended courses is published each semester in the Undergraduate Studies Newsletter.

B. Proficiency in Mathematics

Students may satisfy the mathematics proficiency requirement in any one of the following ways:

1. Having passed while in high school the New York State Regents examination in Mathematics 11 with a score of at least 75.
2. Having passed the College Entrance Examination Board Achievement Test in Mathematics, Level I or Level II, with a score of at least 550.
3. Passing a special examination at the MSP 102 level. This examination is administered several times during each academic year by the Department of Mathematics.
4. Enrolling in and passing MSP 102 or MSP 106, or obtaining transfer credit for MSP 102 by presenting a grade of C or better in a comparable course taken elsewhere.
5. Enrolling in and passing a mathematics course at the level of MSM 120 or higher, or obtaining transfer credit for such a course by presenting a grade of C or better in a comparable course taken elsewhere, or obtaining Challenge or Advanced Placement credit in calculus.

Students, including transfer students, who are unable to satisfy the mathematics proficiency requirement before or during the first year at Stony Brook must enroll in an appropriate course (MSP 101 or a course that will satisfy proficiency) in the first semester of the second year at Stony Brook, and must satisfy the proficiency requirement before graduation.

C. Proficiency in a Foreign Language

The language requirement is set at one year of introductory college work in a foreign language. It may be satisfied in any one of the following ways:

1. Having passed while in high school the New York State Regents examination in a foreign language with a grade of 75 or higher.
2. Having passed the College Entrance Examination Board Achievement Test in a foreign language with a grade of 525 or higher.
3. Passing a Stony Brook proficiency examination in a foreign language.

Note: Students who wish to fulfill the foreign language proficiency requirement by examination may do so by Challenge Examination for a language course numbered 112, 113, 191, or higher. When the Challenge Examination is used to fulfill the foreign language proficiency requirement, no credit will be awarded unless the student meets all rules and regulations outlined in the "Guidelines for the Stony Brook Challenge Program," which is available in academic departments and the Undergraduate Studies Office.

4. Enrolling in and passing a foreign language course numbered 112, 113, 191, or higher; or obtaining transfer credit for equivalent courses.

Foreign students whose native language is not represented in the University's curriculum have fulfilled the foreign language proficiency requirement if their secondary school and previously attended university transcripts show a total of four years of formal study of their native language and literature.

College Distribution Requirements

Distribution requirements are normally met by attaining a passing grade in appropriate courses. Up to four credits required in each area, however, may be filled by AP, CPE, CLEP, or Challenge credit or other approved credit by examination. No more than eight credits with the same designator (three-letter prefix) may be used to fulfill distribution requirements.

The following categories of courses do not fulfill distribution requirements:

1. Proficiency-level courses: AIM, EFL, EGC, MSP.
2. Federated Learning Communities core courses, program seminars, and independent projects: CUE, FLC, HHP, SEI, TVS. Other excluded designators in this category will be announced as new Federated Learning Communities are developed.
3. Interdisciplinary academic skills courses: INT.
4. Physical Education courses: PEC.
5. Elementary foreign language courses: Numbered 111 through 116.
6. Community service and day care courses: AFS, PSY, and SSI 283.

A. Arts and Humanities

Twelve (12) credits to be chosen from among the offerings in art (ARH and ARS), classics (CLS), comparative literature (CLT), English (EGL—but not EGC), foreign languages (CHI, EEL, FLA, FRN, GER, GRK, HBW, ITL, LAT, POR, PSH, RUS, SGL, SPN, SWE, YDH—but neither courses numbered 111-116 nor LIN 115, 116), humanities interdisciplinary (HUM), music (MUS), philosophy (PHI), religious studies (RLS), theatre arts (THR). In addition, those Incoming Student Seminars designated ISH, Africana studies courses designated AFH, Judaic studies courses designated JDH, and certain Health Sciences Center courses (HMC 300, 331) apply.

B. Natural Sciences and Mathematics

Twelve (12) credits to be chosen from among the offerings in biological sciences (BIO), chemistry (CHE), earth and space sciences (ESS), engineering and applied sciences (ESC, ESE, ESG, ESI, ESM, EST, MSA, MSC), interdisciplinary natural sciences (SCI), mathematics (MSM, MSE—but not MSP), physics (PHY). In addition, those Incoming Student Seminars designated ISN apply.

C. Social and Behavioral Sciences

Twelve (12) credits to be chosen from among the offerings in anthropology (ANT), economics (ECO), history (HIS), interdisciplinary social sciences (SBS and SSI—but not 283), linguistics (LIN—but not 115, 116), political science (POL), psychology (PSY—but not 283), sociology (SOC). In addition, those Incoming Student Seminars designated ISS, Africana studies courses designated AFS (but not 283), and Judaic studies courses designated JDS apply.

Sometimes Independent Study Program and Foreign Study courses (ISP, FSC, FSD, FSF, FSG; FSI, FSJ) may satisfy distribution requirements. These must be evaluated for each student individually.

Degree Programs

Two different degree programs leading to the Bachelor of Arts or Bachelor of Science degree are open to students in the College of Arts and Sciences. (For information about degree programs in

the College of Engineering and Applied Sciences, see that section of this *Bulletin*.) Before selecting a degree program students may consult an advisor in the Undergraduate Studies Office. The two choices of degree programs are:

I. The Departmental Major

This program consists of study concentrated in one of the academic departments of the College of Arts and Sciences and allows the student to explore in some depth the content, methods, and achievements of a given academic discipline. Departmental requirements and course offerings are listed in detail, and in alphabetical order by department, in this chapter of the *Bulletin*. They should be carefully considered and discussed with a member of the department.

II. The Interdisciplinary or Interdepartmental Major

This choice of degree program allows the student to investigate an area of concern which transcends the limits of individual academic departments by combining appropriate courses from two or more disciplines to create an integrated core of study directed toward a special goal. Interdisciplinary programs are described in detail in this chapter of the *Bulletin* under individual headings alphabetically arranged. For further information consult the Undergraduate Studies Office or the director of the program.

Special Programs

I. The Academic Minor

An academic minor is a specified sequence of courses totaling between 18 and 24 credits, including at least nine credits of upper division work, that a student may choose to follow as a way of organizing electives. It does not lead to a degree. Participation in a minor is voluntary and includes not only completing the required sequence but also consulting the minor coordinator initially and as work in the minor proceeds. Although minors are administered by regular departments or interdisciplinary programs, some include subject matter that cuts across several departments, programs, and colleges. Minor requirements are described in detail in this chapter of the *Bulletin* under the department or program administering the minor (except for the business minor, which appears separately in the alphabetical listing). For further information consult the minor coordinator or the Undergraduate Studies Office.

II. Independent Study

Within each of the two degree programs described above, a student may wish to undertake independent study. This may be done either through Directed Readings and Research under departmental auspices or through the Independent Study Program. (See p. 45 for restrictions on total credit for independent study.)

Through procedures established by departments, a student may enroll for up to six credits of directed readings or research in a single department in a single semester. More than six credits are permissible if they are in more than one department.

Interdisciplinary projects and projects entailing more than six credits are carried out under the Independent Study Program. This program is designed to allow the student, in consultation with appropriate faculty members, to develop an individual course of academic investigation and study. The procedure for obtaining approval of an independent study project is as follows: The student prepares a brief written outline of the study project, indicating its scope and purpose and the methods that will be used to conduct it. The student must then obtain from two fac-

ulty members written approval of the project and agreement to supervise it and to recommend appropriate academic credit. The completed proposal—project outline and endorsements—is then submitted by the sponsoring faculty member to the appropriate college committee for review. Guidelines for preparing the proposal are available in the Undergraduate Studies Office. The deadline for submitting proposals is announced early each semester for the following semester. Students whose proposals are approved register for either ISP 487, if their projects entail upper division work for a letter grade, ISP 488 for upper division work culminating in a Satisfactory/Unsatisfactory grade, or ISP 273 for lower division work.

If the student wishes to use the ISP project as part of a departmental or interdisciplinary major, written approval must be secured through departmental channels. Independent study projects may be distributed throughout the undergraduate years, although in most cases students should complete the College proficiency requirements and three-quarters of the distribution requirements before proposing independent study. For further information consult the Undergraduate Studies Office.

III. Internships

The University has instituted an Internship Program for upper division students in the College of Arts and Sciences. An internship is a semester or summer of work for academic credit under the supervision of both University faculty and professional staff at the cooperating agency or organization. Internships may be full- or part-time. Full-time internships require thirty or more hours on the job each week. Three to nine credits may be earned for semester internships, three to six during the summer.

This program allows students to apply theory in practice; to test career intentions; to improve intellectual skills in writing, quantitative analysis, research, and administration; to increase their understanding of social, political, and economic forces; and to acquire work experience that may be useful for seeking employment or for applying to professional school.

The University maintains a registry of available internships that includes placement with government agencies, hospitals and clinics, businesses and industries, and legal and social agencies in New York City, Albany, Washington, D.C., on Long Island, and elsewhere. The cooperating agencies have agreed to give interns responsibilities that involve them in activities central to the agency's purposes. Routine office chores and clerical work are kept to a minimum.

To qualify, a student must have: (1) upper division standing; (2) a better than average academic record; and (3) the skills and prerequisite course work required for the particular internship.

Interested students may obtain information and advice about the Internship Program in the Undergraduate Studies Office.

IV. Teacher Preparation

The University offers programs to prepare students to become teachers in secondary schools. Students who complete Stony Brook's approved sequences are eligible for provisional teacher certification by New York State. They should plan to complete the requirements of either a departmental major or an interdisciplinary major and consult their major (or prospective major) department for assistance as early as the second semester of the freshman year. Teacher preparation programs are offered in the following secondary school subjects: biology, earth science, English, foreign languages (French, German, Italian, Russian, and Spanish), mathematics, physics, and social studies. The University does not offer elementary school teacher training.

Certification is not automatic. Upon successful completion of the program, the student must apply for state certification by completing the necessary application forms available in the Office of Teacher Certification.

V. Incoming Student Seminars

The Incoming Student Seminars are a special group of courses designed for freshman students and are limited to fifteen partici-

pants in each seminar. They afford the new student an opportunity to be introduced to intellectual inquiry in a small group, to meet at least one faculty member on a personal basis, and to improve basic reading, discussion, and writing skills at the outset of his or her college career.

In general, Incoming Student Seminars are in subject matters not duplicated by regular departmental offerings. They are credit courses, usually offering three credits toward the bachelor's degree, and they may be used in partial fulfillment of the appropriate distribution requirement. There are no prerequisites for these courses, and the seminars themselves are not prerequisites to any other courses. A brochure describing the seminars for fall semester is distributed during the summer at freshman orientation.

The instructor of the Incoming Student Seminar is the participating student's academic advisor until such time as he or she declares a major.

VI. Undergraduate Teaching Assistantships

In many departments upper division students who have demonstrated mastery of the subject matter are selected to serve as undergraduate teaching assistants for credit. The undergraduate teaching assistant normally must have completed and excelled in the course being taught and is expected to know more throughout the semester than the students—not simply to know the same material better. Undergraduate teaching assistants enroll in the department's teaching practicum, numbered 475 or 476, designed to broaden their knowledge of the subject matter of the course and to instruct them in techniques of teaching and evaluation. They may not be given credit for independent reading or research for teaching assistance nor may they register in the course in which they are teaching. (Upon discovery of the awarding of such credit—at any time—it will be removed from the student's record.) Limits on credit earned by serving as an undergraduate teaching assistant are described in "Course Credits and Prerequisites" below.

Undergraduate teaching assistants may neither proctor nor prepare mid-term or final examinations, nor may they see the final version of any examination before it is given. They may not grade any written work, although they may be assigned to read and criticize such work. Exceptions to this rule may only be made by special permission of the Vice Provost for Curriculum and Instruction. The assignment of grades remains the responsibility of the faculty member and cannot be delegated to undergraduate teaching assistants. All teaching faculty with both graduate and undergraduate teaching assistants must inform the students in their classes of the status of each teaching assistant.

Course Credit and Prerequisites

1. Only courses stating in the description that they may be repeated may be taken more than once for credit.

2. Certain courses may be taken only with the permission of the instructor or of the department; this is listed as a prerequisite for the course. For courses with specific course prerequisites, "or permission of instructor" is always understood. That is, a student who thinks he or she has acquired the knowledge necessary for the course through means other than taking the listed prerequisites may ask the instructor's permission to take the course. Instructors have the option of deregistering students who have enrolled without proper prerequisites or permission.

3. The general prerequisite for all upper division courses is completion of three courses in the same distribution area (Natural Sciences and Mathematics, Social and Behavioral Sciences, and Arts and Humanities). Specific courses are usually listed as some or all of these prerequisites. Where no spe-

cific courses are listed, the general prerequisite is understood.

4. Students may earn three credits in a department's course for undergraduate teaching assistants numbered 475. They may later enroll in a 476 course in the same department, if available, or in a second 475 course in a different department. No more than six credits out of 120 may be earned through being an undergraduate teaching assistant. (See "Undergraduate Teaching Assistantships" this page.)

5. A total of 30 credits of independent work, including all credits in departmental and Independent Study Program courses, numbered 273, 444-449, and 481-489, may be offered toward the degree requirement of 120 credits. A student may earn up to six credits for independent work in a single department or up to 15 credits in the Independent Study Program in any given semester. (See "Independent Study," p. 44.)

6. Upper division students with superior academic records may, with the permission of the Vice Provost for Research and Graduate Studies, take graduate courses (but not teaching practica, readings, research, or other independent study) for undergraduate credit. Permission should be sought through the instructor and the chairman of the department offering the course. (See item 7 for C.E.D. courses.)

7. Upper division students with superior academic records may enroll in designated courses offered by the Center for Continuing Education (C.E.D.) with the written permission of the director of the Undergraduate Evening Program, C.E.D. instructor, and the Dean of Continuing Education. The list of C.E.D. courses available for undergraduate registration is published each semester in the Undergraduate Studies Newsletter. C.E.D. courses other than those on the designated list may not be used to fulfill the credit hour requirement for graduation.

8. AFS, PSY, and SSI 283 and all 100-level physical education courses have been designated "activity-related" courses. Students are limited to a total of nine credits in activity-related courses out of the 120 credits required for graduation. Of these nine credits no more than four credits may be in 100-level physical education courses.

Fulfillment of Major Requirements

When major requirements are changed, continuing students in the College of Arts and Sciences have the option of fulfilling the new requirements or of fulfilling those specified in the *Undergraduate Bulletin* and Undergraduate Studies Newsletter current at the time they completed 45 credits.

Transfer students who entered Stony Brook with 45 or more transfer credits have the option of fulfilling the new requirements or of fulfilling the requirements specified in the *Undergraduate Bulletin* and Undergraduate Studies Newsletter in effect when they matriculated.

Where course offerings have changed so that the required courses that would apply to particular students are no longer in the curriculum, the department will designate comparable alternatives to enable such students to complete the major in a timely manner.

Undergraduate Numbering System

- 100-199 Introductory courses; appropriate for and generally taken by freshmen.
- 200-299 Intermediate courses; appropriate for and generally taken by sophomores.
- 300-399 Upper division courses; appropriate for and generally taken by juniors and seniors.
- 400-499 Special upper division courses such as seminars, directed readings and research, teaching practica; appropriate for and generally taken by juniors and seniors. Certain 400-level courses for seniors only are so specified.

Courses with hyphenated numbers (e.g., HIS 495-496) are year-long courses. Students are obliged to complete both semesters in order to receive credit for the first semester.

Interdisciplinary Program in Africana Studies

Associate Professor

Leslie H. Owens, Director, Ph.D. University of California, Riverside (Afro-American social history; Black family; civil rights movement; slavery)

Assistant Professors

Ernest F. Dube, Ph.D. Cornell University (Cognitive psychology; cross-cultural analysis)

Amiri Baraka (Playwright; Pan-Africanism; contemporary affairs; literature)

Lecturers

William McAdoo, M.A. University of Michigan (United States urban, social, and institutional history; Afro-American history)

Carolyn Anderson Brown, M.A. Columbia University (African politics; foreign affairs; Caribbean affairs)

The Africana studies program is interdisciplinary in scope and addresses itself to the experiences of persons of African descent throughout the world. It is designed to explore African civilizations and their influences on other parts of the "Black Diaspora." Issues within the black international communities in Africa, the United States, and elsewhere will be examined from both historical and contemporary perspectives. Particular attention will be focused on political concepts, cultural development, legal relations, and social theories.

Requirements for the Major in Africana Studies

The major in Africana studies leads to the Bachelor of Arts degree.

	<i>Credits</i>
1. AFS 101, 102 Themes in the Black Experience	6
2. AFH 206 Great Books of the Black Experience	3
3. AFS 283 Community Service	3
4. Two courses at the 200 level (from AFS 200, 225, 237, 239, 240, or 251). These are to be selected in consultation with a program advisor	6
5. Four upper division courses other than AFH or AFS 447 and 487	12
6. AFH or AFS 447 Directed Readings or AFH or AFS 487 Directed Research to be taken in the junior or senior year	3
7. Nine credits in a related discipline	9
<i>Total</i>	42

Requirements for the Minor in Africana Studies

The minor in Africana studies is intended to reach students interested in exploring aspects of the Black Experience in ways that relate to their own major field of study. It involves a regular sequence of lower and upper division courses to give the student a well balanced analysis of the varied aspects of the black past.

	<i>Credits</i>
1. AFS 101, 102 Themes in the Black Experience	6
2. One course selected from AFS 225, 237, or 239	3
3. One course, numbered 200 or higher, selected in consultation with the minor coordinator	3
4. Three courses selected from upper division courses other than AFH or AFS 447 and 487	9
5. Either AFH or AFS 447 Directed Readings or AFH or AFS 487 Directed Research to be taken in the junior or senior year	3
<i>Total</i>	24

Notes Pertaining to the Major and to AFS Courses

No more than twelve of the thirty-three Africana studies credits may be taken at another institution (exceptions made in the case of planned foreign study). Appropriate choices to satisfy the College distribution requirements in the arts and humanities are indicated by the designator AFH. Appropriate choices to satisfy the College distribution requirements in the social and behavioral sciences are indicated by the designator AFS (except AFS 283).

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

AFS 101, 102 Themes in the Black Experience I, II

An historical survey of the experience of people of African descent. This course will examine the similarities and differences among the lifestyles of black people in Africa, the Caribbean, and America, with particular emphasis on the United States. The first semester will treat themes to 1865. The second semester will treat themes from 1865 to the present. *Fall and spring, 3 credits each semester.*

AFS 200 American Attitudes Towards Race

An historical examination of the growth and development of racism in America. The focus will be on black Americans and their relationships with the American system, its institutions, and culture. References will be made to other ethnic groups in order to give balance to social conditions and attitudes shaping American society. *Fall or spring, 3 credits*

AFH 206 Great Books of the Black Experience (Formerly AFS 206)

An exploration of some of the key writings—from autobiographies to novels, etc.—important to becoming familiar with central lines of thought and interpretation in the larger Black Experience. Focus and readings will vary depending on each semester's emphasis. *Prerequisite: Sophomore standing. Fall, 3 credits*

AFS 225 The African Revolution

An exploration of those events which have been the basis of change in Africa, drawing from social, historical, and political perspectives; the role of Africa in world affairs; the events which have shaped the internal African national movements and liberation struggles, both past and present. *Spring, 3 credits*

AFS 237 Introduction to the Afro-American Experience

An exploration of the facets of the Afro-American Experience both past and present, assessing some of the key events, personalities, and influences that have helped to shape black consciousness and its drive toward freedom. *Fall, 3 credits*

AFS 239 Introduction to the Caribbean Experience

An examination of the economic, social, and political lifestyles evident in the Caribbean region; how a black majority situation has influenced the region as well as the internal politics of select islands. The role of the islands in various phases of black struggle will be investigated. *Spring, 3 credits*

AFS 240 Issues in Caribbean Society

An interdisciplinary series of lectures designed to provide students with a broad topical introduction to fundamental issues in Caribbean societies. Topics selected will include education, government, race and identity, religion, tradition, and cultural continuity.
Prerequisites: AFS 101, 102.
Spring, 3 credits

AFS 251 Education of the Afro-American in America

An analysis of significant research and publications on the education of the Afro-American in America. Emphasis will be placed upon social, economic, political, and psychological factors which have conditioned educational opportunities for Afro-American citizens. Components of the present social crisis in America will be examined.
Prerequisite: Permission of instructor.
Fall, 3 credits

AFS 283 Community Service (Formerly AFS 205)

Through field experience, readings, research, and discussion, students will focus on a social and educational problem relating primarily to the Black Experience. Specific programs may include tutoring in a prison setting, working with children from low-income families, and other projects to be announced. May not be counted toward the distribution requirement in the social and behavioral sciences. Grading in this course shall be Satisfactory/Unsatisfactory only.
Fall or spring, 3 credits

AFS 300 Blacks in the City

An examination of the urban experience of black Americans, with attention paid to the development of inner cities and the social policy that has helped to shape the urban consciousness of blacks in the twentieth century.
Fall, 3 credits

AFS 319 The Politics of Race

An analysis of the role race plays in national policy formulation in the United States. The following topics will be examined: the institutionalization of racism in the American political culture; how blacks perceive political reality; elitism and pluralism; non-violence; patriotism and black nationalism; black politics and black power; the response of government to the demands of blacks; new political forms; future direc-

tions in black-white political relations. AFS 319 is identical with POL 319.

Prerequisites: Three courses in the social sciences.
Spring, 3 credits

AFS 325 The Civil Rights Movement

A detailed study of the movement for civil rights from its origins, examining the establishment of the NAACP, race relations between whites and blacks since 1900, the role of the Supreme Court and the federal government, and the turn to militancy in the 1950's and after. This course is identical with HIS 325.
Fall, 3 credits

AFH 329, 330 Pan-African Literature I, II (Formerly AFS 329, 330)

An examination of the cultural themes of Pan-Africanism and Negritude, drawing on a selection of writers from the U.S., Africa, and the Caribbean. The course will treat the development, diffusion, and significance of these themes. It will involve intensive consideration of selected literary works of African and Afro-American expression.
Prerequisites: Two courses in literature.
Fall and spring, 3 credits each semester

AFH 333 Islam and Africa (Formerly AFS 333)

The historical development of Islam in Africa: examination of its impact on African societies; historical and philosophical viewpoints that highlight the contrast between the indigenous African value systems and those of Islamic belief.
Prerequisite: Permission of instructor.
Fall, 3 credits

AFS 335 Contemporary African Problems

An investigation of the nature of African societies by studying the variety of African political, social, and traditional forms necessary to understanding developments in the nineteenth and twentieth centuries. Emphasis will be upon some of the longstanding problems essential to understanding the diversity of ideas and people in the African scene. AFS 335 is identical with POL 335.
Prerequisites: Two AFS or POL courses.
Fall, 3 credits

AFS 337 The Politics of Africa

A study of nationalism, political thought, and political institutions in Africa. Consideration is given to the quest for unity, the problems of liberation, and the political implications of social change. This course is identical with POL 337.
Prerequisites: Two AFS or POL courses.
Spring, 3 credits

AFS 338 Blacks, Personality Theory, and Politics

An examination of the relationship between politics and personality in the Black Experience, exploring issues in a cross-cultural setting (Africa-U.S.) in an attempt to illuminate the psychological and political activities of peoples of African descent in the western world. Freudian, Marxist, Machiavellian, and Authoritarian Personality theories among others will be applied.
Prerequisite: PSY 102.
Spring, 3 credits

AFH 346 Black Religion (Formerly AFS 346)

A survey of the different forms of religious expression in the Black Diaspora (including such aspects as ritual magic, Obeah, voodoo, astrology, numerology, and other divinatory practices). Also explored will be the function of the religious in black society and its role on the philosophical, psychological, and social planes as it provides a basis for stability in the individual and community.
Fall, 3 credits

AFS 360 Black Social Commentary

A study of black responses to the social order in America. The course will concentrate on the various ways black people have conceptualized and described their condition. Particular attention will be paid to the solutions proposed by black spokespersons during various historical eras.
Prerequisites: Three courses in the social sciences.
Fall, 3 credits

AFS 370 The Black Family

The black family in historical perspective. The nature and structure of that family, the obstacles that it has faced, and its interrelationships with the black community.
Fall, 3 credits

AFS 372 Contemporary Political Thought and the Black Community

A critical analysis of the major architects of black political consciousness and their movements in the context of their distinctive historical development. Emphasis will be upon the intellectual and

ideological ferment of the 1920's (DuBois, Randolph, Garvey, et al.) and the 1960's (King, Muhammad, Malcolm, Karenga, Jones, Fanon, Black Panther Party, etc.).
Prerequisite: Permission of instructor.
Spring, 3 credits

AFS 375 Slavery

The historical experience of blacks in slavery with emphasis on the American South and with comparative references to slave systems as they developed in the Western Hemisphere.
Fall, 3 credits

AFH, AFS 420 Topics in Africana Studies

An examination of a selected topic in the Black Experience to be announced each term. The designator AFH will be assigned to topics in the humanities area; AFS will be assigned to topics in the social sciences area. May be repeated for different topics.
Fall or spring, 3 credits

AFH, AFS 447 Readings in Africana Studies

Individually supervised reading in selected topics in the Black Experience. The designator AFH will be assigned to topics in the humanities area; AFS will be assigned to topics in the social sciences area. May be repeated once.
Prerequisite: Permission of program.
Fall and spring, 1 to 3 credits

AFH, AFS 487 Research in Africana Studies

Individual research projects in the Black Experience carried out under the direct supervision of a faculty member. The designator AFH will be assigned to projects in the humanities area; AFS will be assigned to projects in the social sciences area. May be repeated once, but only three credits will count toward fulfillment of major requirements.
Prerequisite: Permission of program.
Fall and spring, 1 to 3 credits

AFS 490 Legal Process and Social Structure

A critical evaluation of the administration of justice, legal institutions, and legal process in relation to prevailing social structure.
Prerequisite: Permission of instructor.
Spring, 3 credits

Department of Anthropology

Professors

Pedro Carrasco, Chairman, Ph.D. Columbia University (Mesoamerica; social anthropology; culture history)

Louis C. Faron, Ph.D. Columbia University (South America; social anthropology)

Paula Brown Glick, Ph.D. University of London (Oceania; social anthropology)

David Hicks, Ph.D. University of London, D. Phil. University of Oxford (Indonesia; social anthropology)

Edward P. Lanning, Ph.D. University of California, Berkeley (New World; archaeology, culture history)

Associate Professors

W. Arens, Ph.D. University of Virginia (Africa; social anthropology)

Nancy Bonvillain, Ph.D. Columbia University (North American Indians; linguistics; social anthropology)

David Gilmore, Ph.D. University of Pennsylvania (Social anthropology; Mediterranean area)

Theodore R. Kennedy, Ph.D. Princeton University (America; Caribbean area; social anthropology)

June Starr, Ph.D. University of California, Berkeley (Middle East; social anthropology)

Robert F. Stevenson, Ph.D. Columbia University (Africa; social anthropology; culture history)

Phil C. Weigand, Ph.D. University of Southern Illinois (Mesoamerica; archaeology; culture history)

Margaret C. Wheeler, Ph.D. Yale University (North America; physical and social anthropology)

Assistant Professors

Dolores Newton, Ph.D. Harvard University (South America; material culture)

Elizabeth C. Stone, Ph.D. University of Chicago (Old World archaeology; Near-East)

Teaching Assistants

Estimated Number: 25

The undergraduate program introduces the student to the general field of anthropology, its branches, its theories and methods, and its relation to the other social sciences and the humanities. A major or minor concentration also provides an academic background preparatory to a graduate program in anthropology. The curriculum emphasizes the fields of cultural, social, and ecological anthropology. The University Museum operates in conjunction with the Anthropology Department and offers a program of training and research in material culture and museology.

Requirements for the Major in Anthropology

The major in anthropology leads to the Bachelor of Arts degree. The following courses are required and must be taken for a letter grade.

	Credits
A. Study Within the Area of the Major	
1. ANT 102 Introduction to Social and Cultural Anthropology	3
2. ANT 104 Introduction to Archaeology	3
3. ANT 200 Foundations of Social Anthropology	3
4. ANT 230 World Ethnography	3
5. One of the following two courses: ANT 120 Physical Anthropology ANT 363 Language and Culture	3
6. Two ethnographic area courses to be selected from the following: ANT 201, 203, 204, 206, 207, 209, 212, 216, 217, 218, 219, 313, 359	6
7. Two topical courses in society and culture to be selected from the following: ANT 251, 255, 280, 320, 350, 352, 353, 354, 356, 358, 361, 366, 367, 368, 371	6
8. Two 400-level courses. (Note that only 3 credits of ANT 447 Readings in Anthropology may be applied to fulfill this requirement.)	6
Sub-Total	33

B. Related Courses

Credits

Two courses (6 to 8 credits) at the upper division level selected with departmental approval from the following departments: Africana Studies, Economics, History, Linguistics, Political Science, Psychology, Social Sciences, and Sociology. Students should consult departmental advisors about their course of study.

6-8

Total 39-41

Requirements for the Minor in Anthropology

Twenty-four credits in anthropology, 9 credits of which must be in upper division courses, will constitute an anthropology minor. The course requirements follow those of the major program, with two exclusions. The program is:

1. ANT 102
2. ANT 104
3. ANT 200
4. ANT 230
5. Two area courses
6. Two topical courses

Students interested in an anthropology minor should consult with the department to plan an appropriate sequence for their particular needs.

All courses must be taken for a letter grade.

Honors Program in Anthropology

Majors with an excellent academic record and a grade point average of 3.5 or better in anthropology courses may enter the honors program. The student should develop a plan of study with a faculty sponsor, to be approved by the chairman and the

director of undergraduate studies. During the senior year the student will prepare the honors thesis, based upon independent research. The paper will be judged by two faculty members from Anthropology and one from outside the department, who may recommend honors in anthropology. Students wishing to qualify for honors must so declare by the beginning of their final semester. Students recommended for honors must be approved by the full faculty of the department. Course credit for the honors thesis is usually in ANT 447, but in some instances another 400-level course may be appropriate.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

ANT 102 Introduction to Social and Cultural Anthropology

An analysis of the principles of social structure among simpler societies through an examination of various forms of kinship, marriage, family, age group, voluntary associations, and various levels of political, judicial, religious, and economic organization.

Fall and spring, 3 credits

ANT 104 Introduction to Archaeology

An overview of archaeology as a field of study and an outline of humanity's earliest prehistory. Students are introduced to the methods, goals, and concepts used by archaeologists and presented with an outline of human physical and cultural development from the beginnings until 8000 B.C.

Fall, 3 credits

ANT 105 Laboratory in Introductory Archaeology

A supervised laboratory in which students will have an opportunity to study artifact collections and to learn analytic techniques. Each pair of students will be provided with one collection of stone tools and one of pottery, which they will learn to identify, analyze, and interpret.

Prerequisite or corequisite: ANT 104.

Fall and spring, 1 credit

ANT 120 Fundamentals of Physical Anthropology

A consideration of human biological and cultural heritage through the study of: (1) physical characteristics and behavior of selected fossil and living primates; (2) physical and cultural characteristics of the Pleistocene hominids, with the relevant prehistory archaeology; (3) a brief survey of a group of living hunters. Current research on human origins, genetics, evolution, race, and primate and human ethology will be discussed.

Fall and spring, 3 credits

ANT 121 Laboratory in Introductory Physical Anthropology

A supervised laboratory in physical anthropology. Activities include comparative anatomy of the higher primates, measurements in

physical anthropology, and opportunity to study casts of fossil materials.

Prerequisite or corequisite: ANT 120.

Fall and spring, 1 credit

ANT 200 Foundations of Social Anthropology

An examination of the development of theory in social anthropology. Various theoretical approaches will be applied to analyses of ethnographic data and topics of concern to social anthropology. The aim will be to provide anthropology majors with a broad and sophisticated preparation for advanced courses in the department.

Prerequisite: ANT 102.

Fall and spring, 3 credits

ANT 201 Peoples of South America

The course begins with a detailed coverage of problems of cultural and social evolution in South America during pre-Spanish times and continues this descriptive analysis into the colonial and contemporary periods wherever possible. Major or representative types of socio-cultural systems are discussed from a structural-functional point of view. Consideration is given to problems of cultural and social stability and change in the areas of kinship and marriage, politics, economics, religion, law.

Prerequisite: ANT 102.

Fall, 3 credits

ANT 203 North American Indians

The various peoples and cultures of North America will be studied with respect to their political, educational, linguistic, social, and cultural patterns. Selected societies will be studied in depth.

Prerequisite: ANT 102.

Spring, 3 credits

ANT 204 Peoples of Africa

The range and distribution of African populations, languages, and socio-cultural systems are surveyed in both full historic perspective and environmental context. Special attention is paid to the implications of anthropological theory. The general survey is supplemented by intensive analysis of

select socio-cultural systems. The course concludes with an assessment of the problems of emerging African nation-states and of current research problems, programs, and goals in Africa.

Prerequisite: ANT 102.

Fall, 3 credits

ANT 206 Peoples of Asia

A survey of cultures and societies of Asia, with emphasis on the contemporary simpler societies and their integration into the complex civilizations.

Prerequisite: ANT 102.

Spring, 3 credits

ANT 207 Indians of Modern Mexico and Guatemala

The transformation of Indian societies after the Spanish Conquest. Culture and social institutions of the modern Indian: economic organization, village government, religion, etc. The place of the Indian in the social structure of Mexico and Guatemala.

Prerequisite: ANT 102.

Fall, 3 credits

ANT 209 Ancient Civilizations of Mexico and Peru

Ecological adaptation, economic systems, social and political institutions, religion, and intellectual achievements of the Aztecs, Incas, and other peoples of ancient Mexico and Peru.

Prerequisite: ANT 102.

Fall, 3 credits

ANT 212 Peoples of Oceania

The study of the environment and cultures of Pacific Island communities of Melanesia, Micronesia, and Polynesia. Economic, kinship, political, and religious institutions will be considered as they have been and are now changing.

Prerequisite: ANT 102.

Fall, 3 credits

ANT 216 Old World Prehistory

Survey of the major events in the prehistory of the Old World after the end of the Pleistocene (8000 B.C.). Although emphasis will be on the introduction of food-producing societies and the development of civilization, attention will also be given to the non-civilized, Bronze Age manifestations in Europe, Asia, and Africa.

Prerequisite: ANT 104.

Spring, 3 credits

ANT 217 Studies in New World Archaeology

A survey of the archaeological and historical Indian cultures of the New World with an emphasis on the pre-contact period. This will involve an overview of both North and South America.

Prerequisite: ANT 104.

Fall, 3 credits

ANT 218 Peoples and Cultures of the Middle East

An introduction to the diverse ethnic groups, languages, religions, and sociocultural systems of the Middle East. Special attention is given to the ecological and sociocultural adaptations of nomads, villagers, and urbanites. Turkey, Iran, Afghanistan, the Arab states, and Israel will be considered in terms of their culture history and contemporary development.

Prerequisite: ANT 102.

Spring, 3 credits

ANT 219 Caribbean Cultures

The study of the environment, history, and cultural and social institutions characteristic of the Caribbean area. Topics covered will include: pre-contact cultures, colonialism and the institution of slavery, contemporary economic and political organization, community structure, cults, mating patterns and household composition, and pluralism and ethnic diversity.

Prerequisite: ANT 102.

Spring, 3 credits

ANT 230 World Ethnography

Adaptations and cultural development of peoples in different parts of the world, focusing on subsistence activities and their relationship to the development of distinctive social and political forms. Recent changes brought about by intercultural contact will also be discussed. Readings will be on selected peoples throughout the world.

Prerequisite: ANT 102.

Fall, 3 credits

ANT 251 Comparative Religious Systems

A survey of the religious beliefs and practices of primitive peoples with special reference to symbols and value systems. The effects of culture contact on religious behavior and the basic religious beliefs of more complex societies will be discussed.

Prerequisite: ANT 102.

Fall, 3 credits

ANT 255 Material Culture, Technology, and Primitive Art

An introduction to various approaches to the study of material culture in its technological and artistic aspects, using ethnographic and archaeological studies from many different cultures. Emphasis will be on viewing artifacts and their associated technologies within the context of a total culture, and in particular on seeing the relationship between material and nonmaterial forms of culture.

Prerequisite: ANT 102.

Spring, 3 credits

ANT 280 Culture and Ecology

Examination of human adaptations to the wide range of world environments, such as food-gathering, fishing, hunting, farming, and pastoralism. Intensive case studies concerning the selection, use, and allocation of resources by human communities will be presented. Consideration will be given to a variety of theoretical approaches which have focused upon the interaction between environment and cultural behavior.

Prerequisite: ANT 102.
Spring, 3 credits

ANT 313 China: The Social and Cultural Background

The development of Chinese culture from prehistoric times through the present is analyzed from the standpoint of anthropological theories of cultural evolution, diffusion, functionalism, and human ecology. Special attention is directed to critical formative and transitional periods. Distribution of physical types, languages, and ethnicities both within and without the Chinese frontiers is surveyed. Interpretations of Chinese development generated by sister disciplines are discussed from a sympathetic but critical point of view.

Prerequisites: ANT 102 and either ANT 200 or two other courses in the social sciences.
Fall, 3 credits

ANT 320 Primate Behavior and Human Ethology

The comparative study of behavior of ground-dwelling higher primates and other animals unrelated to humans but ecologically similar. A comparative anthropological approach to the genesis and functioning of human social systems.

Prerequisites: ANT 120 and two courses in social or biological sciences.
Spring, 3 credits

ANT 330 Health and Curing: Cross Cultural Perspectives

Disease categories, cultural definitions of disease and illness, as well as folk attitudes towards treatment and cures in various cultures. Special attention is given to the folk healers and their role in curing. The role of women in health care will be given special emphasis.

Prerequisites: ANT 102 and either ANT 200 or two other courses in the social sciences.
Spring, 3 credits

ANT 350 Economic Anthropology

Economic life of primitive peoples and pre-capitalistic civilizations with emphasis on the integration of the economy with technology and with social and political institutions.

Prerequisites: ANT 102 and 200.
Spring, 3 credits

ANT 352 Culture and Personality

Culture as a factor in personality and character formation: anthropological theory and constructs will be considered in relation to such concepts as "self," "personality," and "character." The interrelationships of anthropology with its sister disciplines in the behavioral sciences will also be considered, as well as its importance for cross-cultural studies of socialization, change, and ethno-psychiatry.

Prerequisites: ANT 102 and either ANT 200 or two other courses in the social sciences.
Spring, 3 credits

ANT 353 Political Anthropology

The description and analysis of political institutions in a historical and comparative perspective. Selected examples from different culture areas will be considered in terms of internal structure, political processes, and organizational changes in small bands, tribes, and states. Special attention will be given to the relationship between the political and other institutional features of the societies.

Prerequisites: ANT 102 and either ANT 200 or two other courses in the social sciences.
Fall, 3 credits

ANT 354 Family and Kinship

Family and marriage. Common descent groups. Kindreds. Kinship terminology and kinship behavior. Fictive kinship. The place of kinship in the total social structure. Change and evolution.

Prerequisites: ANT 102 and 200.
Spring, 3 credits.

ANT 355 Anthropology of Law

The study of law processes among preindustrial, industrial, and postindustrial societies. Topics are: local-level law, state and local relations, and comparative perspectives on U.S., European, Islamic, and Hindu law systems.

Prerequisites: ANT 102 and either ANT 200 or two other courses in the social sciences.
Fall or Spring, 3 credits

ANT 356 Anthropology of Complex and Urban Societies

A review of current anthropological research on family and kinship behavior, status and role, personality, social stratification, mobility, assimilation, and political relations in complex and urban societies.

Prerequisites: ANT 102 and either ANT 200 or two other courses in the social sciences.
Spring, 3 credits

ANT 358 Ways to Civilization

A comparative study of processes of cultural evolution from the beginnings of farming to the achievement of civilization in different parts of the world.

Prerequisites: ANT 102, 104, and either 200 or two other courses in the social sciences.
Fall, 3 credits

ANT 359 Archaeology of Mexico and Central America

An introduction to concepts and methods of archaeological research applied to the study of the origins and development of pre-Columbian civilization of Middle America, with emphasis on the reciprocal relations between culture and environment. General trends in the areas of culture history and illustrative regional sequences from the establishment of sedentary farming communities to the eve of the Spanish conquest.

Prerequisites: ANT 104 and 217.
Fall, 3 credits

ANT 361 Peasant Societies and Cultures

The concept of peasantry will be examined from political, religious, and social class angles, as well as from the more traditional economic view. These agricultural peoples, who are essentially pre-literate and preindustrial, are described and analyzed especially in relation to the national societies of which they form a part. Special attention is given to peasant societies in Latin America, Africa, and Asia.

Prerequisites: ANT 102 and 200.
Fall, 3 credits

ANT 363 Language and Culture

The study of linguistic behavior and its interrelationship with other aspects of culture. Topics include sociolinguistics, language acquisition, nonverbal behavior, and linguistic acculturation. This course is identical with LIN 363.

Prerequisites: LIN 101 or ANT 102 and either ANT 200 or two other courses in the social sciences.
Spring, 3 credits

ANT 366 Anthropology Museum Workshop

Advanced workshop and projects in material culture, technology, and primitive art. Students will participate in design and construction of museum exhibits that will entail background study and individual research in this field.

Prerequisite: ANT 255.
Spring, 3 credits

ANT 367 Male and Female in Cross Cultural Perspective

A study of the development and manifestation of sex roles in several different cultures, with an emphasis on the different adaptations of males and females

in economics, politics, religion, and education.

Prerequisites: ANT 102 and either ANT 200 or two other courses in the social sciences.
Spring, 3 credits

ANT 368 Symbolism

An analysis of ritual, oral literature, and other art forms as they operate as modes of symbolic expression in preliterate societies, and an investigation of the structural and functional relationships between these and the social institutions and structures of a selected range of societies.

Prerequisites: ANT 200 and 251.
Fall, 3 credits

ANT 371 Social and Cultural Change

An examination of the forms and processes of change which have been and now are taking place throughout the world, transforming isolated people of simple economy and social organization into participating members of modern states.

Prerequisites: ANT 102 and either ANT 200 or two other courses in the social sciences.
Fall, 3 credits

ANT 401 Development of Anthropological Theory and Method

An evaluation of the central ideas of several schools of anthropology since the latter nineteenth century, with an appraisal of their effect on contemporary anthropological theory and methodology.

Prerequisite: ANT 200.
Fall, 3 credits

ANT 402 Problems in Prehistory

Research and discussion about selected topics in the prehistory of the Old and New Worlds. Specific problem areas will vary each year and will be announced at the beginning of the term.

Prerequisites: ANT 104 and 216 or 217.
Spring, 3 credits

ANT 410 Problems in Ethnology

Research and intensive examination of a selected problem in regional anthropology. The focus will vary each year and can include a broad study of an ethnographic area or a theoretical problem in a given area. Independent research and a paper are required.

Prerequisite: ANT 200.
Fall, 3 credits

ANT 421 Anthropological Field Methods

Methods, problems, and experience in anthropological field techniques. It will focus on field methods in linguistics, archaeology, or cultural anthropology. The specific focus of each year will vary and will be announced at the beginning of the term. May be repeated twice.

Prerequisites: ANT 200 and permission of instructor.
Spring, 3 credits

ANT 447 Readings in Anthropology

Individual advanced readings and research on selected topics in anthropology. Work may be submitted for honors in anthropology. May be repeated twice.
Prerequisites: ANT 200 and permission of department.
Fall and spring, 3 credits

ANT 475 Undergraduate Teaching Practicum

Each student will conduct a regular recitation or tutorial section to supplement a lecture course and will receive regularly scheduled supervision from a faculty member. Responsibilities may include preparing material for discussion and helping students with research papers. Grading in this course shall be Satisfactory/Unsatisfactory only.
Prerequisites: Senior or advanced junior anthropology major and permission of instructor.
Fall and spring, 3 credits

ANT 488 Internship

Participation in local, state, and national public and private agencies and organizations. Students will be required to submit written progress reports and a final written report on their experience to the faculty sponsor and the department. May be repeated up to a limit of 9 credits. Grading in this course shall be Satisfactory/Unsatisfactory only.
Prerequisites: 15 credits of anthropology, permission of instructor, department, and Undergraduate Studies Office.
Fall and spring, 3 to 9 credits

ANT 491, 492 Special Seminar in Anthropology

Discussion of a specific area of current interest in anthropology. Topics will change and will be announced for each semester. Students will write papers on individual research topics.
Prerequisite: ANT 200.
Fall and spring, 3 credits each semester

Department of Art

Professors

Lawrence Alloway, Gallery Director (Art criticism; twentieth-century art)

Leopoldo Castedo, Emeritus, M.A. University of Barcelona (Art and architectural history; Latin American art and culture)

Jacques Guilmain, Ph.D., Columbia University (Art and architectural history; medieval art)

George Koras, Diploma, Athens Academy of Fine Arts (Drawing; plastic and cast-metal sculpture)

Donald B. Kuspit, Chairman, Ph.D. University of Michigan; D.Phil. University of Frankfurt (Art criticism; twentieth-century art; Northern Renaissance art)

Associate Professors

Edward Countey (Painting; design; printmaking)

James H. Kleege, M.F.A. Syracuse University (Design; welded metal sculpture)

Nina A. Mallory, Ph.D. Columbia University (Art and architectural history; Renaissance, Baroque, and eighteenth-century art)

Melvin H. Pekarsky, M.A. Northwestern University (Drawing; painting; public art)

Howardena Pindell, M.F.A. Yale University (Drawing; painting)

James H. Rubin, Ph.D. Harvard University (Art and architectural history; eighteenth- and nineteenth-century European art and criticism)

Robert W. White, Part-time, Rhode Island School of Design (Drawing; terra cotta, stone, and wood sculpture)

Assistant Professors

Toby Buonagurio, M.A. The City College of New York (Ceramics, ceramic sculpture)

Michael Edelson (Photography; history of photography; photojournalism)

Grant Holcomb, Ph.D. University of Delaware (Art and architectural history; American art; twentieth-century art)

Aldona Jonaitis, Director of Undergraduate Studies, Ph.D. Columbia University (Art and architectural history; primitive, pre-Columbian, and ancient Near Eastern art)

Claire Lindgren, Ph.D. Columbia University (Art and architectural history; Greek and Roman art)

Daniel Welden, M.A. Adelphi University (Printmaking; drawing and painting)

Lecturers

Gabor B. Inke, M.D. Pazmany Peter University, D.D.S. Halle/Saale (Anatomy)

Toni Ross, Adjunct, M.A. New York University (Art therapy)

The undergraduate programs in art are designed to provide the student with a thorough background in the history and criticism of art, as well as sound training in studio techniques and theory. The courses of study, while allowing students a considerable degree of choice, are carefully integrated toward fulfilling requirements for graduate study or preparation for professional work in the field.

Requirements for the Major in Art History and Criticism

The major in art history and criticism leads to the Bachelor of Arts degree.

	<i>Credits</i>
1. ARH 101 and 102	6
2. Seven additional courses in art history and criticism, of which at least four must be in upper division courses, and one must be in Ancient art, one in Medieval art, one in Renaissance art, one in Baroque art, one in Modern art (nineteenth- or twentieth-century), and one in non-Western art (Far Eastern, Primitive, pre-Columbian)	21
3. ARS 151 and ARS 152 or—especially for students planning graduate work in art history—a year of French or German, in addition to the College language requirement	6
4. In consultation with the departmental advisor, six credits in humanities or social sciences, in addition to the College requirements in those areas, and the recommended language year under 3, above	6
<i>Total</i>	39

Notes on the ARH Major

1. Of the 39 credits in art or related fields required for the major, 36 must be taken for letter grade (and 3 may be taken Pass/No Credit).

2. All upper division ARH courses must be passed with a grade of C or better.

Requirements for the Major in Studio Art

The major in studio art leads to the Bachelor of Arts degree.

	<i>Credits</i>
1. ARH 101	3
2. ARH 102	3
3. ARS 151	3
4. ARS 152	3
5. ARH 221	3
6. ARH 224	3
7. At least three additional credits in art history/criticism	3
8. Thirty-six additional credits in studio art, of which 12 must be in upper division courses and 12 must be in studio/theory courses (see Notes 4 and 5, below)	36
<i>Total</i>	<u>57</u>

Notes on the ARS Major

1. Studio art majors must complete a minimum of 122 credits of passing work for the Bachelor of Arts degree.

2. All ARS courses and four of the ARH courses used to fulfill the requirements for the major must be taken for letter grade. (One ARH course may be taken Pass/No Credit.)

3. All upper division ARS courses must be passed with a grade of C or better.

4. The studio art major should note that requirements 1 through 6, above, are prerequisites for virtually all upper division courses and that 12 credits in advanced studio/theory can satisfy both studio/theory and upper division requirements. Exceptions to requirements for the major and to course prerequisites are by permission of the department only, and will be made only under special circumstances.

5. The following are studio/theory courses: ARS 291, 292, 352, 358, 365, 366, 376, 383, 420, 422, 430, 487.

Honors Program in Art

The honors program is open to seniors majoring in art history/criticism or studio art who have maintained a grade point average of at least 3.0 overall and a 3.0 in the major. Students should apply for the honors program before the beginning of their senior year. The student must find a faculty member of the department to act as sponsor. The student, with the approval of the sponsor, must submit a proposal of a project, in writing, to the department. Acceptance into the honors program depends upon the approval of the proposal by the department.

In the art history area, the student's research project will be supervised by the honors advisor. In the studio art area, the student will be expected to prepare a small one-person show or similar project (i.e., one large, more ambitious work) in lieu of a thesis, under the supervision of the honors advisor.

The student's project will be judged by a jury composed of at least two members of the Art Department and a faculty member from another department. This pertains to students in both the art history/criticism and studio art majors.

When the honors program has been carried out with distinction, conferral of honors will be contingent upon the student's

achieving a 3.5 grade point average in all art courses taken in the senior year.

Minor in Art History

The minor in art history requires 21 credits in art history, of which at least nine credits must be in upper division courses. With this minor, the student acquires both a broad background in art history and a more thorough knowledge of the art history of one of the following areas of concentration: Ancient/Medieval, non-Western, Renaissance/Baroque, or Modern. Further information is available from the Director of Undergraduate Studies. The distribution of courses for the minor is as follows:

	<i>Credits</i>
1. ARH 101 and 102	6
2. An Ancient, Medieval, or non-Western art course	3
3. A Renaissance, Baroque, or Modern art course	3
4. Six additional credits in the area of concentration	6
5. ARH 400, 401, or 487 in the area of concentration	3
<i>Total</i>	<u>21</u>

Minor in Studio Art

The minor in studio art requires 21 credits in studio art, of which at least nine credits must be in upper division courses. The student must concentrate in one of the following tracks: drawing, painting, sculpture, or printmaking. Further information is available from the Director of Undergraduate Studies. The distribution of the courses for the minor is as follows:

<i>Drawing</i>	<i>Credits</i>
1. ARS 151 and 152	6
2. ARS 258 and 259	6
3. ARS 358 (twice)	6
4. ARS 422 or 487	3
<i>Total</i>	<u>21</u>

Note: The student may take ARS 487 only if ARS 422 does not cover a drawing topic.

Painting

	<i>Credits</i>
1. ARS 151 and 152	6
2. ARS 251 and 252	6
3. ARS 352 (twice)	6
4. ARS 422 or 487	3
<i>Total</i>	<u>21</u>

Note: The student may take ARS 487 only if ARS 422 does not cover a painting topic.

Sculpture

	<i>Credits</i>
1. ARS 151 and 152	6
2. ARS 261 and 262	6
3. ARS 361 and 362	6
4. ARS 365 or 366	3
<i>Total</i>	<u>21</u>

Printmaking

	<i>Credits</i>
1. ARS 151 and 152	6
2. ARS 271 and 272	6
3. ARS 371 and 372	6
4. ARS 376	3
<i>Total</i>	<u>21</u>

Minor in Photography

The photography minor is designed to give the student a high degree of competence in the studio and the darkroom, and may be pursued as part of the art major or as a separate program. Students interested in pursuing a minor in photography are strongly urged to plan their program with the photography program coordinator.

	<i>Credits</i>
1. ARS 281	3
2. ARS 282	3
3. ARS 381	3
4. ARS 382	3
5. ARS 383	4
6. ARS 420, ARS 487 or other elective in consultation with the faculty coordinator.	3-4
	<i>Total</i> 19-20

Qualifications

1. The Art Department reserves the right to select students for admission to all its photography courses on the basis of an interview and review of samples of the student's work.
2. The Art Department reserves the right to reject previous training in photography as equivalent to any part of the S.U.S.B. program.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

Art History/Criticism

ARH 101 History of Art and Architecture from Earliest Times to ca. 1400

A survey of the history of art and architecture in the Western world from its earliest beginnings to the end of the Middle Ages.
Fall and spring, 3 credits

ARH 102 History of Art and Architecture from ca. 1400 to the Present

A survey of the history of art and architecture in the Western world from the end of the Middle Ages to the present.
Fall and spring, 3 credits

ARH 203 Survey of Far Eastern Art

A general course on Far Eastern art covering India, China, and Japan from its beginnings to the present. Emphasis will be on the major arts of painting and sculpture, with some reference to architecture.
Prerequisite: ARH 101 or 102. Spring, alternate years, 3 credits

ARH 204 History of Photography

A historical survey of the technical, theoretical, and aesthetic development of black and white and color still photography and its close interrelationship with the evolution of modern art.
Prerequisite: ARH 102. Fall, 3 credits

ARH 206 The Art and Architecture of the High Middle Ages, ca. 1050-1400

The study of Romanesque and Gothic sculpture, architecture, painting, (including stained glass and manuscript illumination), metalwork, and ivory carving from ca. 1050 to the crystallization of the "International Style," ca. 1400.
Prerequisite: ARH 101. Fall, 3 credits

ARH 207 Art of the Ancient Near East

The study of the art and architecture of Mesopotamia and Egypt from Neolithic times to the Age of Alexander. Theoretical issues to be discussed will be: the development of civilization and the expression of that development in art; the interrelationships of both art and politics and art and religion.
Prerequisite: ARH 101. Fall, 3 credits

ARH 209 Ancient Celtic Art and Architecture

The study of art and architecture in ancient Celtic Europe (the area which today would include France, Germany, Britain, Ireland, the Balkans, Switzerland, and the northern parts of Italy and Spain) from the Bronze Age through the Roman Conquest.
Prerequisite: ARH 101 or 102. Spring, 3 credits

ARH 211 The Early Renaissance in Italy

Art in Italy in the fifteenth century, with special emphasis on the major figures of the period: Masaccio, Donatello, Piero della Francesca, Botticelli, and the early Leonardo.
Prerequisite: ARH 101. Fall, alternate years, 3 credits

ARH 212 Early Netherlandish Painting

The development of painting in the Netherlands during the fifteenth century will be studied from its origins in the late Gothic manuscript illumination to its last manifestations in the early sixteenth century. Major emphasis will be placed on the founders of the Netherlandish school (the Master of Flemalle, Jan van Eyck, and Roger van der Weyden) and on the great figures of the end of the century (Hugo van der Goes, Geertgen, and Bosch).
Prerequisite: ARH 101 or 102. Spring, alternate years, 3 credits

ARH 214 Northern Baroque Art

Painting and sculpture in Holland, Belgium, and France in the seventeenth century. Special emphasis will be placed on the works of such major figures as Rubens, Hals, Rembrandt, and Poussin.
Prerequisite: ARH 102. Spring, alternate years, 3 credits

ARH 218 Art of the Eighteenth Century

A study of the development of eighteenth-century European art from Rococo to Neoclassicism.
Prerequisite: ARH 102. Spring, 3 credits

ARH 221 Art of the Nineteenth Century

A survey of European art from about 1780 to 1890. Emphasis will be on individual artists, artistic attitudes, and progression of style. Art will be examined in its historical and cultural contexts. Movements studied will include Neoclassicism, Romanticism, Realism, and Impressionism.
Prerequisite: ARH 102. Fall and spring, 3 credits

ARH 224 Art of the Twentieth Century

The major movements and individual artists in twentieth-century painting and sculpture, including reference to the broader socio-cultural context of art.
Prerequisite: ARH 102. Fall and spring, 3 credits

ARH 240 Introduction to Library Research in Art History and Criticism

The student, in consultation with the instructor, selects an art history or art criticism research project requiring fairly extensive library research of moderate difficulty. The course includes individual advising sessions as well as class lectures and discussions designed to familiarize the student with specialized art resources.
Prerequisite: ARH 101 or 102. Spring, 3 credits

ARH 300 Greek Art and Architecture

The study of ancient Greek art and architecture from the earliest beginnings in the geometric pe-

riod through the archaic, classical, and Hellenistic periods.
Prerequisites: ARH 101 or 102 and two other courses in the humanities. Spring, alternate years, 3 credits

ARH 301 Roman Art and Architecture

The study of ancient Roman art and architecture from the Republic through the Constantinian period in Italy and the greater Roman world including the Iberian peninsula, Gaul, Britain, Germany, Greece, Asia Minor, Judea, Syria, Egypt, Cyrenaica, and Tunisia.
Prerequisites: ARH 101 or 102 and two other courses in the humanities. Spring, alternate years, 3 credits

ARH 303 The Art and Architecture of the Early Middle Ages, ca. 400-1050

After a short background introduction to Early Christian art and architecture, the course concentrates on migration and Hiberno-Saxon art, Carolingian art and architecture, and the ninth- and tenth-century art traditions of northern Spain, Anglo-Saxon England, Ottonian Germany, and Viking Scandinavia.
Prerequisites: ARH 101 and two other courses in the humanities. Spring, 3 credits

ARH 307 High Renaissance and Mannerism in Central Italy

Art and architecture in Florence and Rome in the sixteenth century. The High Renaissance will be studied in the works of Leonardo, Michelangelo, Raphael, and Bramante; Mannerism in the works of Pontormo, Bronzino, Giambologna, Giulio Romano, and Vignola, among others.
Prerequisites: ARH 101 or 301, 102, and one other course in the humanities. Fall, alternate years, 3 credits

ARH 309 Northern Renaissance Art

Painting and the graphic arts in Germany and the Netherlands in the sixteenth century. The rise of genres and Italian influences in Northern art. Emphasis will be placed on such major figures of the period as Dürer, Grünewald, Holbein, and Bruegel.
Prerequisites: ARH 102 and two other courses in the humanities. Spring, alternate years, 3 credits

ARH 311 Venetian Art and Architecture from the Fifteenth through the Eighteenth Centuries

Venetian painting will be studied from the early Renaissance works of the Bellini family, Antonello da

Messina, and Mantegna, through the sixteenth century in such major figures as Giorgione, Titian, Tintoretto, and Veronese, to its final phase in the eighteenth century, with Piazzetta, Tiepolo, and Guardi. The work of such architects as Sansovino, Palladio, and Longhena will also be studied.

Prerequisites: ARH 101 or 301, 102, and one other course in the humanities.

Fall, 3 credits

ARH 312 Baroque Art and Architecture in Italy and Spain

Italian painting, sculpture, and architecture, and Spanish painting in the seventeenth century. Special emphasis will be placed on the contributions of such major figures as Caravaggio, Bernini, Borromini, and Velazquez.

Prerequisites: ARH 101 or 301, 102, and one other course in the humanities.

Fall, alternate years, 3 credits

ARH 313 Art of the United States

Painting, sculpture, and architecture from the American Revolution to modern times. Special emphasis will be placed on John Singleton Copley, the Hudson River School, and important individual artists of the nineteenth and twentieth centuries up to World War II.

Prerequisites: ARH 102 and two other courses in the humanities.

Fall, alternate years, 3 credits

ARH 317 Pre-Columbian Art

A survey of the artistic forms of pre-Columbian civilizations from archaeological *Olmechs* to the architecture of *Machu Pichu*.

Prerequisites: ARH 101 or 102 and two other courses in the humanities.

Spring, alternate years, 3 credits

ARH 318 History of Chinese Painting

A study of Chinese painting from its beginning to the present, in relation to art theories.

Prerequisites: ARH 101 or 102 or 203 and two other courses in the humanities. Chinese history or philosophy courses are recommended.

Spring, alternate years, 3 credits

ARH 322 American Art Since 1947

A survey of painting and sculpture in New York, including abstract expressionism, "hard edge" painting, pop art, minimal art, and earthworks.

Prerequisites: ARH 102 and two other courses in the humanities.

Spring, alternate years, 3 credits

ARH 323 Major Artists

A single major artist or architect will be selected. His or her development, works, and influence on others will be carefully analyzed through lectures and class discussions. May be repeated once with departmental permission.

Prerequisites: ARH 102 and two other courses in the humanities.

Fall, alternate years, 3 credits

ARH 324 Architecture and Design of the Nineteenth and Twentieth Centuries

A survey of architecture and design from the end of the eighteenth century to the present. Subjects and concepts covered will include: the crystallization and evolution of Romantic Classicism and Romantic Naturalism, historicism, the Arts and Crafts Movement, Art Nouveau, machine aesthetics, the Beaux Arts tradition, functionalism, the International style, Art Deco, and Post-modernism.

Prerequisites: ARH 101, 102, and one other course in the humanities.

Fall, 3 credits

ARH 326 History of Criticism

A study of the theory and development of art criticism from the Renaissance to the present.

Prerequisites: ARH 102 and two other courses in the humanities.

Fall or spring, 3 credits

ARH 327 Theoretical Foundations of Nineteenth-Century Art

Analysis of European art from about 1780 to 1890 through the history of ideas using both visual materials and primary and secondary source readings.

Prerequisite: ARH 221.

Fall or spring, 3 credits

ARH 328 Theoretical Foundations of Twentieth-Century Art

An examination of artists' writings and other theoretical materials that express the intention of twentieth-century art. Beginning with the letters of Cézanne and Van Gogh, and ending with some of the tracts meant to justify minimal art, and introducing philosophical, sociological, and psychological materials, the meaning of twentieth-century art will be interpreted.

Prerequisite: ARH 224.

Fall or spring, 3 credits

ARH 329 Primitive Art

A study of the arts of the native peoples of Africa, Oceania, Siberia, and North America. Emphasis will be on application of theories on art and religion, art and social control, art and structuralism.

Prerequisites: ARH 101 or 102 and two other courses in the humanities.

Spring, 3 credits

ARH 331 The History of Japanese Art

A study of Japanese art from the prehistoric period to the nine-

teenth century. Emphasis will be placed on the major art forms of each period in relation to their socio-religious background.

Prerequisites: ARH 101 or 102 or 203 and two other courses in the humanities.

Fall or spring, 3 credits

ARH 340 The Social History of Art

Art and architecture from the Stone Age to the present are analyzed in terms of the place and time of their origin. In each period works are considered in relation to contemporary political, economic, social, and cultural developments. The education and training of the artist, his or her relationship to patrons, and the changing demands and status of the profession are also emphasized.

Prerequisites: Two social science and two humanities courses.

Spring, 3 credits

ARH 400 Topics in Art History, Ancient to Modern

A special course offered from time to time by the department, utilizing the unique talents and facilities of the art history/criticism faculty. Topics to be announced. May be repeated once with permission of the departmental advisor.

Prerequisites: At least five courses in art history and permission of instructor.

Schedule to be announced, 3 credits

ARH 401 Topics in Twentieth-Century Art

An advanced course for students who have a basic familiarity with modern art. It is intended as a detailed study of a single style and, in addition, as an example of the research methods by which art movements are approached. Topics to be announced. May be repeated once with departmental permission.

Prerequisite: ARH 224.

Spring, 3 credits

ARH 402 Topics in Art Criticism

A study of the practice and theory of criticism. Typical areas of concentration would be Renaissance art criticism, nineteenth-century French art criticism, the criticism of a particular artist or movement, and post-1945 American art criticism. May be repeated once with departmental permission.

Prerequisite: ARH 224.

Fall or spring, 3 credits

ARH 475 Undergraduate Teaching Practicum

Each student will periodically conduct a recitation session that will

supplement a regular art course. The student will receive regularly scheduled supervision from the instructor. Responsibilities may include supplementary teaching and review sessions and assisting students with research methods. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Art history/criticism major, preferably senior standing, sponsorship of an instructor, and permission of department.

Fall and spring, 3 credits

ARH 485 Projects in Art History and Criticism in New York City

Under the supervision of a faculty advisor, the student will carry out an assignment including reading; examination of a single work or a group of works from a particular style period in New York City (its streets, its museums, or its galleries); and the preparation of a report, lecture, or critical essay. Interested students should contact the Art Department Director of Undergraduate Studies for the list of possible projects. May be repeated once.

Prerequisites: ARH 101, 102, two other ARH courses, and permission of sponsor and department.

Fall and spring, 3 credits

ARH 487 Independent Reading and Research in Art

A project designed by the student involving reading, research, or field work in art history or criticism conducted under the supervision of a faculty member. The course may be repeated for a maximum of 12 credits.

Prerequisites: At least four courses in art, sponsorship of a faculty member, and permission of department.

Fall and spring, 1 to 6 credits

Studio/Theory

Waiver of prerequisites in studio/theory courses requires permission of department.

ARS 151 Introductory Still-Life, Composition, Painting, and Drawing

Introducing the student to drawing and painting media and techniques, and to the study of color, perspective, and composition.

Prerequisite: Permission of department.

Fall and spring, 3 credits

ARS 152 Figure Drawing and Painting

Studio course stressing drawing and painting from the nude and draped model, and investigating anatomy, foreshortening, and the expressive potential of the figure in the visual arts. ARS 151 and 152 may be taken independently of each other.

Prerequisite: Permission of department.

Fall and spring, 3 credits

ARS 251 Intermediate Painting I

Painting and drawing for the second-year student stressing exploration of the media and craft of painting. Studio and discussion. *Prerequisites:* ARH 101, 102, ARS 151, 152, and permission of department.

Fall and spring, 3 credits

ARS 252 Intermediate Painting II

Painting and drawing for the second-year student stressing individual development. Studio and discussion.

Prerequisites: ARS 251 and permission of department.

Fall and spring, 3 credits

ARS 258 Intermediate Drawing: The Human Body

Drawing for the second-year student, focusing entirely on the human body.

Prerequisites: ARH 101, 102, ARS 151, 152, and permission of department.

Fall and spring, 3 credits

ARS 259 Intermediate Drawing: Conceptual Problems

Drawing for the second-year student, focusing on conceptual processes, individual solutions to problems, and use of a wide variety of media.

Prerequisites: ARH 101, 102, ARS 151, 152, and permission of department.

Fall and spring, 3 credits

ARS 261 Fundamentals of Sculpture: Modeling, Casting, and Carving

An introduction to the techniques and formal principles of clay modeling, plaster casting, wood carving, and related methods of sculpture.

Prerequisites: ARH 101, 102, ARS 151, 152, and permission of department.

Fall and spring, 3 credits

ARS 262 Fundamentals of Sculpture: Welding and Related Techniques

An introduction to the techniques and formal principles of wood and metal construction methods.

Prerequisites: ARH 101, 102, ARS 151, 152, and permission of department.

Fall and spring, 3 credits

ARS 264 Ceramics

Investigation of ceramic ware and ceramic sculpture media, techniques, and styles through wheel, hand-built, slab, and modeled projects; firing processes with gas and electric kilns. May be repeated once with permission of instructor.

Prerequisites: ARS 151, 152, and permission of department.

Fall and spring, 3 credits

ARS 271 Fundamentals of Graphics: Intaglio and Relief Processes

An introduction to etching, engraving, linoleum, woodcut, and related areas with an emphasis on techniques and aesthetics.

Prerequisites: ARH 101, 102, ARS 151, 152, and permission of department.

Fall, 3 credits

ARS 272 Fundamentals of Graphics: Planographic Processes

An introduction to lithography and silkscreen, with an emphasis on techniques and aesthetics.

Prerequisites: ARH 101, 102, ARS 151, 152, and permission of department.

Spring, 3 credits

ARS 281 Photography I

An intensive course with extensive practice and experimentation in the aesthetics, techniques, and materials of photography. It will be expected that the student's academic program or vocational objectives require a real need for training in photography. Students must provide their own camera and materials.

Prerequisite: Sophomore standing and permission of instructor.

Fall, 3 credits

ARS 282 Photography II

An intermediate-level course for those who have mastered basic camera and darkroom techniques and have acquired an understanding of photographic aesthetics. Further exploration of photography as a means of personal visual expression, along with a continued intensive examination and application of materials and techniques. Students must provide their own camera and materials.

Prerequisites: ARS 281 and permission of instructor after interview and review of portfolio.

Spring, 3 credits

ARS 291 Two-Dimensional Design Theory and Techniques and Graphic Representation

A course in the theories and techniques of perspective drawing, isometric projection, multiphase drawings, motion studies, graphics, and analytical drawing, and their application to selected projects. Air-brush instruction is available.

Prerequisites: ARS 151, 152, and permission of department.

Fall, 3 credits

ARS 292 Theory and Practice of Three-Dimensional Design

Theoretical and practical use of graphic (photos, drawings, paintings) and nongraphic (modulators, scale models, test models, full-scale mockups, and prototypes) media to study the elements of design in space. Students may stress 2D or 3D presentation, and concentrate their design research or project in a field of their choice (mural, 3D painting, architecture, engineering electronics, commercial art media, etc.); but course

emphasis will be on the 3D area. *Prerequisites:* ARS 151, 152, and permission of department.

Spring, 3 credits

ARS 352 Advanced Theory and Practice of Painting

Theory and practice of painting for the advanced student. Examination of ideas and techniques of painting through studio, lecture, critique, exhibition, and painting assignments. May be repeated once.

Prerequisites: ARH 221, 224, ARS 251, 252, and permission of department.

Fall and spring, 3 credits

ARS 355, 356 Gross Anatomy for Artists

In the first semester, after work on elementary techniques in depiction of anatomy, students will become familiar with the human skull and parts of the skeleton. Lectures on the gross anatomy of the human body. Laboratory demonstrations using models, dissections, and other materials. The second semester will consist of laboratory demonstrations of the human cadaver and continued drawing practice. Each student will maintain a portfolio of drawings. This course is identical with HBA 320, 321.

Prerequisites for ARS 355: ARS 152 and permission of instructor and department. *Prerequisites for ARS 356:* ARS 355 and permission of instructor and department.

Fall and spring, 2 credits each semester

ARS 358 Advanced Theory and Practice of Drawing

Theory and practice of drawing for the advanced student. Examination of ideas and techniques of work in all drawing media through studio, lecture, critique, exhibition, and drawing assignments. May be repeated once.

Prerequisites: ARH 221, 224, ARS 258, 259, and permission of department.

Fall or spring, 3 credits

ARS 361 Intermediate Sculpture: Modeling, Casting, and Carving

Increasing development of craft in clay modeling, plaster casting, wood and stone carving, and related techniques.

Prerequisites: ARS 261 and permission of department.

Fall and spring, 3 credits

ARS 362 Intermediate Sculpture: Welding and Related Techniques

Increasing development of craft in wood and metal construction

methods and related techniques. *Prerequisites:* ARS 262 and permission of department.

Fall and spring, 3 credits

ARS 365 Advanced Theory and Practice of Sculpture: Casting

Theory and practice of sculpture for the advanced student. Investment and sand casting. May be repeated once.

Prerequisites: ARH 221, 224, ARS 361, and permission of department.

Fall and spring, 3 credits

ARS 366 Advanced Theory and Practice of Sculpture: Welding and Related Techniques

Theory and practice of sculpture for the advanced student. All types of welding, including stick arc, electric, oxyacetylene flame. May be repeated once.

Prerequisites: ARH 221, 224, ARS 362, and permission of department.

Fall and spring, 3 credits

ARS 371 Intermediate Graphics: Intaglio and Relief Processes

Increasing development of craft in etching, engraving, and woodcut, with growing emphasis on technical specialization and individual growth as an artist.

Prerequisites: ARS 271 and permission of department.

Fall, 3 credits

ARS 372 Intermediate Graphics: Planographic Processes

Increasing development of craft in lithography and silkscreen, with growing emphasis on technical specialization and individual growth as an artist.

Prerequisites: ARS 272 and permission of department.

Spring, 3 credits

ARS 376 Advanced Theory and Practice of Graphics

A graphic arts workshop and critique, stressing individual development and refinement of craft for the advanced student or professional artist. Theories and methods of various printmakers and their times will be examined. May be repeated once.

Prerequisites: ARH 221, 224, ARS 371 or 372, and permission of department.

Fall and spring, 3 credits

ARS 381, 382 Photography III, IV

A two-part course dealing first with the photographic studio environment and its unique potential as an additional form of visual expression. The second half is an introduction to color materials and imagery. Concurrent lecture, studio, and darkroom. Students must provide their own camera and materials, but large format

cameras will be available for studio work.

Prerequisites for ARS 381: ARS 282 and permission of instructor after interview and review of portfolio.

Prerequisites for ARS 382: ARS 381 and permission of instructor. *Fall and spring, 3 credits each semester*

ARS 383 The Language of Photographic Images

An in-depth study of the varied methods that enable still photography to communicate aesthetically and informatively. Areas to be investigated through individual project assignments include the photo essay, picture story, film strip, and various slide/tape presentations. In addition to three hours of lecture per week, there will be a one-hour production workshop. Students must provide their own camera and materials. *Prerequisites:* ARS 282 and permission of instructor after interview and review of portfolio. *Fall or spring, 4 credits*

ARS 390 Special Directed Studio Projects

Explorations in studio areas not covered by the core curriculum—for example, textile arts. The student works under the guidance of a sponsor and is expected to complete a report, portfolio, or project. May be repeated once. *Prerequisites:* At least three courses in studio art, sponsorship of a faculty member, and permission of department. *Fall and spring, 3 credits*

ARS 391 Studio Workshop

A workshop offered by an Art Department faculty member or a visiting artist in a special area for part or all of the semester. May be repeated up to a limit of six credits. *Prerequisites:* Four courses in studio art and permission of department. *Schedule to be announced, 1 to 3 credits*

ARS 420 Advanced Photography Seminar

Personal projects designed to explore and interpret special interests and viewpoints of the student. Emphasis on long-term, in-depth studies, culminating in a final formal exhibition. Lecture, seminar, and critique. Students must provide their own camera and materials. *Prerequisites:* ARS 382 and permission of instructor after interview and review of portfolio. *Fall or spring, 4 credits*

ARS 422 Special Topics In Studio/Theory and Practice

Special courses may be offered from time to time by the department, utilizing the unique talents and facilities of the department faculty and the University environment, and presenting particular areas for consideration on an advanced level in seminar, critique, and studio sessions. May be repeated once. *Prerequisite:* Permission of department. *Schedule to be announced, 3 credits*

ARS 430 Art Therapy

A course for highly qualified and motivated students conducted in a clinical setting in the University

area. This extremely selective course is limited to two students per semester. Admission by departmental interview only.

Prerequisites: Five studio courses in art or evidence of basic studio skills through portfolio submission; interview with art department and associated clinical staff. Courses in psychology and biological sciences recommended. *Fall and spring, 4 credits*

ARS 475 Undergraduate Teaching Practicum

Each student will conduct periodically a studio section that will supplement a regular art course. The student will receive regularly scheduled supervision from the instructor. Responsibilities may include assisting students to familiarize themselves with various studio and darkroom techniques and helping students with studio projects. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Studio art major, preferably senior standing, sponsorship of an instructor, and permission of department. *Fall and spring, 3 credits*

ARS 482 Intermediate Independent Studio Projects

Intermediate-level projects for students in areas of their specific interest. Students will work inde-

pendently in their area of concentration under the guidance of a sponsor, with whom they will meet periodically for critique and discussion of work. Specifically designed for the student who has achieved intermediate status in one of the studio tracks (drawing, painting, sculpture, printmaking), but who is not yet prepared for advanced independent work (i.e., ARS 487). Does not count toward the 12 credits of studio/theory courses required for the ARS major. May be repeated once.

Prerequisites: Intermediate-level courses in area of project (i.e., ARS 252, 258, 259, 361, 362, 371, or 372), sponsorship of a faculty member, and permission of department. *Fall and spring, 3 credits*

ARS 487 Advanced Directed Projects In Studio Theory and Practice (Formerly ARS 488)

Advanced projects for outstanding students in areas of their specific interest. Students will work independently in their area of concentration under the guidance of a sponsor, with whom they will meet periodically for critique and discussion of work. Specific assignments, reports, readings, and field trips may be required. May be repeated once.

Prerequisites: Advanced-level status in one of the studio tracks, sponsorship of a faculty member, and permission of department. *Fall and spring, 3 credits*

BIOLOGICAL SCIENCES

Department of Biochemistry

Professors

Vincent P. Cirillo, Ph.D. University of California, Los Angeles (Membrane transport processes in yeast and bacteria)

Masayori Inouye, Ph.D. Osaka University (Control of cell division; biochemistry of membranes)

Monica Riley, Ph.D. University of California, Berkeley (Bacterial genetics)

Joseph F. Sambrook, Adjunct, Ph.D. Australian National University (Molecular genetics of DNA tumor viruses)

Richard B. Setlow, Adjunct, Ph.D. Yale University (DNA repair; biological effects of ultraviolet and ionizing radiation)

Elliot N. Shaw, Adjunct, Ph.D. Massachusetts Institute of Technology (Protein chemistry of proteolytic enzymes)

Melvin V. Simpson, Ph.D. University of California, Berkeley (Replication of mitochondrial DNA; conformational changes in ribosomes)

F. William Studier, Adjunct, Ph.D. California Institute of Technology (Genetics and physiology of bacterial viruses)

Associate Professors

Norman Arnheim, Jr., Ph.D. University of California, Berkeley (Structure and evolution of ribosomal DNA in mammals)

Bernard S. Dudock, Chairman, Ph.D. Pennsylvania State University (Structure and function of cellular and viral tRNA). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1973-74

Martin Freundlich, Ph.D. University of Minnesota (Regulation of protein synthesis)

Carl Moos, Ph.D. Columbia University (Molecular mechanisms of muscle contraction)

Raghupathy Sarma, Ph.D. Madras University (X-ray crystal structure analysis of molecules of biological interest)

Jakob Schmidt, Ph.D. University of California, Riverside, M.D. University of Munich (Neurochemistry)

Sanford R. Simon, Ph.D. Rockefeller University (Structure-function relationships in hemoglobin; membrane biochemistry)

Rolf Sternglanz, Ph.D. Harvard University (DNA replication)

Teaching Assistants

Estimated Number: 21

Department of Biology

Distinguished Professor Emeritus

H. Bentley Glass, Ph.D. University of Texas (Human genetics; science and ethics)

Distinguished Teaching Professor

Elof Axel Carlson, Ph.D. Indiana University (Mutation and gene structure; history of genetics; human genetics)

Professors

Leland N. Edmunds, Jr., Ph.D. Princeton University (Biological clocks; cell cycles)

Frank C. Erk, Ph.D. Johns Hopkins University (Nutritional factors in insect development; developmental genetics; human genetics)

William S. Hillman, Adjunct, Ph.D. Yale University (Plant photoperiodism; biological rhythms)

F.C. Steward, Adjunct, Ph.D. University of Leeds (Plant growth and development)

Associate Professors

Edwin H. Battley, Ph.D. Stanford University (Physiology of growth in microorganisms)

Abraham D. Krikorian, Ph.D. Cornell University (Plant growth and development)

Kenneth D. Laser, Ph.D. Iowa State University (Developmental anatomy of vascular plants)

Harvard Lyman, Ph.D. Brandeis University (Origin and development of chloroplasts)

Robert W. Merriam, Chairman, Ph.D. University of Wisconsin (Cellular biology of egg cells)

Bernard D. Tunik, Ph.D. Columbia University (Physiology of muscle cells)

Assistant Professor

James A. Fowler, Ph.D. Columbia University (Developmental biology; computer models)

Lecturer

Elizabeth J. Mallon, Ph.D. University of Michigan (Biological education; curriculum development and teacher education)

Teaching Assistants

Estimated Number: 15

Department of Ecology and Evolution

Professors

Edward R. Baylor, Joint with Marine Sciences, Ph.D. Princeton University (Behavioral physiology of marine organisms)

Richard K. Koehn, Ph.D. Arizona State University (Population genetics; enzyme functions and adaptation in natural populations)

R. James Rohlf, Ph.D. University of Kansas (Application of multivariate statistics to taxonomy; mathematical population biology)

Lawrence B. Slobodkin, Ph.D. Yale University (Evolutionary theory and applications of ecological principles)

Robert R. Sokal, Chairman, Ph.D. University of Chicago (Ecological genetics; numerical taxonomy, theory of systematics)

George C. Williams, Ph.D. University of California, Los Angeles (Evolution theory and the ecology of marine fish)

Associate Professors

Barbara L. Bentley, Ph.D. University of Kansas (Plant ecology; plant-animal interactions; tropical ecology)

James S. Farris, Ph.D. University of Michigan (Theory of phylogenetic inference)

Douglas J. Futuyma, Ph.D. University of Michigan (Population genetics; coevolution; community ecology). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1973-74

Lev R. Ginzburg, Ph.D. Agrophysical Institute, Leningrad (Mathematical ecology and genetics)

George J. Hechtel, Ph.D. Yale University (Invertebrate zoology, especially zoogeography of marine demospongiae)

Jeffrey S. Levinton, Ph.D. Yale University (Marine benthic ecology; population genetics of bivalve mollusks; paleoecology)

Robert E. Smolker, Ph.D. University of Chicago (Ornithology; conservation)

John J. Walsh, Adjunct, Ph.D. University of Miami (Phytoplankton ecology; modeling of coastal zone and upwelling ecosystems)

Assistant Professors

Robert A. Armstrong, Ph.D. University of Minnesota (Mathematical ecology; aquatic community ecology)

Michael A. Bell, Ph.D. California State University (Evolutionary systematics of sticklebacks)

James D. Thomson, Ph.D. University of Wisconsin (Pollination ecology; plant breeding systems; plant-animal interactions)

Teaching Assistants

Estimated Number: 26

Department of Neurobiology and Behavior

Professors

Albert D. Carlson, Ph.D. University of Iowa (Neurophysiology, pharmacology, and behavior of fireflies)

David H. Cohen, Chairman, Ph.D. University of California, Berkeley (Cellular mechanisms of conditioning; neural control of the cardiovascular system)

Harvey J. Karten, Joint with Psychiatry, M.D. Albert Einstein College of Medicine (Role of neural systems in species-specific behavior of vertebrates; neuroanatomy and neural development of birds)

Jeffrey F. McKelvy, Ph.D. Johns Hopkins University (Brain peptide metabolism; hypothalamic hypophysiotropic hormones; neurosecretion)

Lorne M. Mendell, Ph.D. Massachusetts Institute of Technology (Spinal physiology; modifiability of spinal circuitry)

Robert Y. Moore, Joint with Neurology, M.D., Ph.D. University of Chicago (Organization, development, and plasticity of central monoamine neuron systems; central neural mechanisms in circadian rhythm regulation)

S.M. Sherman, Ph.D. University of Pennsylvania (Plasticity of developing visual systems)

Charles Walcott, Ph.D. Cornell University (Animal orientation and communication)

Department of Neurobiology and Behavior (Cont.)

Associate Professor

Stephen Yazulla, Ph.D. University of Delaware (Electrophysiology, synaptic integration, and pharmacology of the vertebrate retina)

Assistant Professors

John B. Cabot, Ph.D. University of Virginia (Neural control of the cardiovascular system)

Angel L. deBlas, Ph.D. Indiana University (Neurochemistry; synaptic function; molecular mechanisms of cellular recognition during synaptogenesis)

Gary G. Matthews, Ph.D. University of Pennsylvania (Cellular neurophysiology of the vertebrate central nervous system; visual transduction; synaptic transmission)

Sheryl A. Scott, Ph.D. Yale University (Development of cutaneous sensory innervation patterns)

Teaching Assistants

Estimated Number: 8

Physical Facilities in the Biological Sciences

Department of Biochemistry

The Department of Biochemistry offers a laboratory course in biochemistry. Teaching facilities for this course are provided in the Biological Sciences Building and include preparation areas and all necessary equipment.

Faculty in the department also share in the offering of BIO 151, 152 Principles of Biology, which utilizes four laboratories designed for the teaching of introductory biology. Some materials for this course are provided by the Biological Sciences greenhouse, and interested students may visit this facility for additional information.

Students who are pursuing individual research projects work in faculty research laboratories.

Department of Biology

The Department of Biology utilizes laboratories in the Biological Sciences and Laboratory/Office Buildings for courses in embryology, physiology, and secondary education. Other plant and development laboratory courses offered by the department are given in Biological Sciences interdisciplinary laboratories. When required, additional space is provided for students to return during the week to make needed observations of experiments in progress.

BIO 151, 152 Principles of Biology, an interdisciplinary course, is offered in four laboratories, with an additional laboratory available to students for making up exercises missed because of holidays. Plant materials for this course are provided by a 15-bay greenhouse, and students may use this facility to further examine materials used in the laboratory exercises.

All laboratories have adjacent preparation areas as well as the facilities and equipment needed for carrying out the required experiments.

Faculty research laboratories are used by students carrying out individual research projects.

Department of Ecology and Evolution

The department has laboratories in the Biological Sciences and Laboratory/Office Buildings which were designed for ecological studies. These are used for offerings in invertebrate zoology, plant ecology, life in water, ecology, marine biology, and entomology. Other departmental courses, such as BIO 206 Anatomy and Physiology, are given in Biological Sciences interdisciplinary laboratories.

An introductory biology laboratory is offered jointly by this department and the other departments in the Division of Biolog-

ical Sciences. There are four laboratories used for this course, with an additional laboratory available for making up exercises missed because of holidays.

Some courses utilize greenhouse and aquarium facilities located in the building, and some involve field work. All necessary equipment is provided for use by students.

Students pursuing individual research projects conduct their studies in faculty research laboratories.

Programs in the Biological Sciences

The Division of Biological Sciences sponsors programs in two undergraduate majors: biochemistry (BCH) and biological sciences (BIO).

The undergraduate program in biochemistry is designed to provide an introduction to the chemical basis of biological phenomena. The student is prepared primarily for graduate study in biochemistry or other biological sciences and for professional study in the health sciences. The program is based on a core of introductory courses in biology, chemistry, and biochemistry, with pertinent courses in mathematics and physics.

The undergraduate program in biological sciences is designed to provide an introduction to the principles and methodology of the biological sciences. The student can prepare for graduate study, for professional study in the health sciences, for secondary school teaching, and for certain positions in industry and research.

Requirements for the Biochemistry Major

The biochemistry major program leads to the Bachelor of Science degree. All courses offered for the major must be taken for a letter grade and all courses listed in Group B below, numbered 300 or over, must be passed with a grade of C or better.

Group A	Credits
1. CHE 131, 132 General Chemistry or 141, 142 Honors Chemistry	8
2. CHE 133, 134 General Chemistry Laboratory or 143, 144 Honors Chemistry Laboratory	2
3. CHE 321, 322 Organic Chemistry or 331, 332 Honors Organic Chemistry	6
4. CHE 327 Organic Chemistry Laboratory A (CHE 333, 334 Organic Chemistry Laboratory B, 4 credits, may be substituted.)	2
5. CHE 301 or 312 Physical Chemistry	3
6. MSM 131, 132 Calculus I, II	8
7. MSM 231 or 241 Calculus III (Linear Algebra) or 221 Calculus III (Differential Equations)	3
8. PHY 101, 102 General Physics I, II	8
9. PHY 251 General Physics III or ESI 281 An Engineering Introduction to the Solid State	4
Sub-Total	44

<i>Group B</i>	<i>Credits</i>
1. BIO 151, 152 Principles of Biology	8
2. BIO 220 General Genetics	3
3. BIO 361, 362 Biochemistry I, II	6
4. BIO 365 Biochemistry Laboratory	2
5. One additional course from the list below, chosen in consultation with the advisor:	
BIO 364 Molecular Genetics	
BIO 366 Crystal Structure of Macromolecules	
BIO 410 Seminar in Molecular and Cellular Biology	
BMO 504 Protein and Nucleic Acid Synthesis	
BMO 505 Microbial Regulatory Mechanisms	
BMO 506 Membranes and Transport	
BMO 507 Neurochemistry	
BMO 513 Enzymology	
BMO 517 Biomembranes	
	<u>2-4</u>
<i>Sub-Total</i>	<u>21-23</u>
	<i>Total</i> 65-67

In addition to the courses listed above, certain other courses with BMO, HBH, HBM, or HBP designators may be selected from the *Graduate Bulletin* with the permission of the undergraduate advisor. Research may not be used to satisfy major requirements; however, biochemistry majors are encouraged to do research in biochemistry or molecular biology (BIO 488 or similar course).

The following sample program is suggested.

Freshman Year

General Chemistry and the Laboratories
Calculus I and II

Sophomore Year

Principles of Biology
Calculus III
Organic Chemistry and the Laboratory

Junior Year

Biochemistry
General Genetics
Physics (I)

Senior Year

Physics (II and III)
Physical Chemistry
Experimental Biochemistry Laboratory
Elective

Honors Programs in Biochemistry

Students who wish to apply for graduation with honors in biochemistry must: (1) maintain a cumulative grade point average of 3.5 or better in courses listed under Groups A and B above; (2) carry out research under BIO 488; and (3) submit a thesis based upon the results of the research performed. Three copies of the completed thesis must be submitted to the student's research advisor no later than 21 days before the date of graduation. Conferral of honors is contingent upon the recommendation of a Reading Committee consisting of the research advisor, another member of the Biochemistry Department, and a member from another department in a related field.

Requirements for the Biological Sciences Major

All courses (group A and B) offered for the major must be taken for a letter grade and all upper division courses in group A must be passed with a grade of C or better.

Students majoring in the biological sciences are required to take 63 to 65 credits in biology and related areas: 30 credits of biology, 7 to 9 credits of mathematics, 18 credits of chemistry, and 8 credits of physics.

A. Study Within Biology

- At least 30 credits of biology, which must include BIO 151, 152 Principles of Biology or approved equivalents at previous schools, and fulfillment of the following distribution requirements.
- At least one lecture or seminar course in four of the five emphasized areas (I-V) of biological inquiry, as listed below, and a second lecture or seminar course in one of them. The laboratory-only courses marked with an asterisk do not meet this requirement. Tutorial readings (BIO 445, 446, 447, 448, 449) do not meet this requirement unless explicitly authorized by the Divisional Undergraduate Studies Committee.
- A laboratory course, or course with included laboratory, in two of the four chosen areas.
- A third laboratory to be taken from any of the divisional offerings at the 200 level or above, including biology research (BIO 486, 487, 488, 489). Research in the Health Sciences may meet the requirement if approved by the Divisional Undergraduate Studies Committee.

Course Lists, Areas of Inquiry

Area I, Cell Biology and Biochemistry—BIO 310, 361, 362, 364, 365*, 366, 410

Area II, Genetics and Development—BIO 220, 321, 322, 323, 420, 421

Area III, Physiology and Behavior—BIO 230, 239*, 330, 332, 334, 339*, 375, 376, 377, 378, 379, 430

Area IV, Organisms—BIO 240, 241, 242, 340, 342*, 343, 344, 345, 380, 383, 440

Area V, Ecology and Evolution—BIO 350, 351, 352*, 353, 354, 355, 356*, 385, 386*

Notes on Section A

1. Biological sciences majors in the secondary education program must complete at least one lecture-seminar in *each* of the five areas of inquiry.

2. Non-major courses (BIO 101, 102, 111, 113, 204) and teacher preparation courses (BIO 200, 300, 450, 454, 475, 476) do not satisfy Section A requirements.

3. Research courses, such as BIO 486, 487, 488, 489 may be used for a maximum of eight credits; and tutorial readings, such as BIO 446, 447, 448, 449 for a maximum of two credits toward the 30-credit requirement of Section A.

4. ISP research projects and health science research/readings projects do not meet Section A requirements unless explicitly approved by the Divisional Undergraduate Studies Committee.

5. Transfer students must take at least 15 of the 30 Section A credits at Stony Brook; of these at least 12 must be taken in the Division of Biological Sciences. At least one of the required 200-400-level laboratory experiences must be at Stony Brook. Courses taken elsewhere meet area requirements only when explicitly authorized by the divisional transfer evaluator.

6. Aside from area requirements, electives may be chosen from among any of the biology courses for majors or from a diverse list of approved courses given by other departments (see advisors for list).

B. Courses Required in Related Fields

1. Chemistry and Physics

One year of introductory chemistry with laboratory: CHE 131, 132 or 141; 142 and CHE 133, 134 or 143, 144. (Students may substitute CHE 111, 112 for CHE 131).

One year of organic chemistry, with one semester of

laboratory: CHE 321, 322 or 331, 332 and CHE 327 or 333.

One year of physics with laboratory: PHY 103, 104 or 101, 102.

2. Mathematics

A year of calculus (MSM 125, 126 or 131, 132 or 141, 142) and an approved third semester of probability and statistics (BIO 305 or MSA 110 or MSA 310).

Additional mathematics is recommended for many areas of research.

C. Curriculum Planning

1. Students are strongly urged to consult with faculty advisors in planning programs and specific course schedules. The Undergraduate Information Office in the Graduate Biology Building maintains a list of advisors.
2. The Divisional Undergraduate Studies Committee reviews transfer evaluation problems and considers petitions for alterations of major requirements. The USC can be contacted through the Undergraduate Information Office.
3. Students planning graduate or professional studies should obtain information on specific requirements of particular schools and programs. Students interested in health professions, including medicine, should contact the Undergraduate Studies Office.
4. Doctoral programs in the biological sciences usually require a reading knowledge of one or two approved foreign languages. A knowledge of computer techniques is increasingly valuable.

Biology Teacher Preparation Program

This program is designed for the biology major who is preparing to teach in the junior or senior high school. It includes observational experiences in biology classrooms, practice using various biology curricula, study of adolescent psychology, a laboratory-oriented methods course, a student teaching experience, and a seminar to help solve student teaching problems.

The normal course sequence leading to certification is: BIO 200, a course in foundations of education (PSY/SOC 232 or PHI 360), SSI 265 Drug and Alcohol Education, BIO 300, BIO 450, BIO 454. These courses are in addition to those required of biology majors.

Guidelines to the Teacher Selection Committee include minima of a 2.7 overall G.P.A. and a 3.0 G.P.A. in biology courses (at SUSB and previous institutions).

See requirements for "Study Within Biology," p. 59.

Honors Program and Independent Study in Biological Sciences

Divisional majors with a grade point average of 3.5 or better in courses in the biological sciences and related fields (see A and B, above) are eligible to apply for candidacy in the Honors Program. A potential honors student must obtain a sponsor (and a co-sponsor in biological sciences, if the sponsor is not a member of the division). The student should be enrolled in BIO 486-89 (Research) or its equivalent (e.g., research courses in health sciences, Independent Study Program), normally for two semesters.

Application is made to the Divisional Undergraduate Studies Committee in the form of a proposal or interim report, approved by the sponsor. Applications normally are submitted at the beginning of the last semester of the project, and must be sub-

mitted no later than one month before graduation. The USC will appoint an examination committee for approved candidates.

The honors thesis has the format of a Master's Thesis and must be written solely by the student. Three copies of the thesis must be submitted to the examination committee no later than Monday of the penultimate week of classes (excluding final examination week). The student will meet with the examination committee for a formal thesis defense, no later than Monday of the last week of classes. If satisfied, the examination committee should schedule a public seminar by the candidate, to be given no later than the last day of classes. A copy of the thesis, with approvals page, must be sent to the Divisional USC for final review of the grade point average (which must be no less than 3.5 in the biological sciences and related fields). Conferral of honors also requires maintenance of the highest standards of academic integrity by the student.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

BIO 101, 102 Biology: A Humanities Approach

The major concepts of biology are presented from historical, contemporary, and critical viewpoints. These concepts include the cell, the gene, molecular biology, development, and evolution. The human implications or values associated with each concept are emphasized. For students not majoring in the biological sciences. *Prerequisite to BIO 102:* BIO 101. *Fall (101) and spring (102), 3 credits each semester*

BIO 111 Genetics and Man

A general introduction to genetics, with special attention to its importance in medicine, agriculture, and other aspects of human life and culture. For students not majoring in the biological sciences. *Spring, 3 credits*

BIO 113 General Ecology

Designed to provide a sense of the problems of modern ecology. Population growth and regulation, interspecific interactions in natural communities, and the concept of the balance of nature will be analyzed. The mutual relation between human activities and ecology will be discussed. Mathematics is not a prerequisite but might prove helpful. For students not majoring in biological sciences. *Fall, 3 credits*

BIO 114 The Aquatic World

An introduction to the animals, plants, and communities of the sea, rivers, and lakes. Visits to on-campus exhibits. For students not majoring in biological sciences. *Prerequisite:* High school biology. *Fall and summer, 3 credits*

BIO 151 Principles of Biology: From Organisms to Ecosystems

A survey of the diversity and evolutionary history of major groups of organisms, ecological relations of organisms to their environments, elementary genetics, and the mechanisms of evolution. In-

tended for prospective majors. Three hours of lecture and one three-hour laboratory per week. *Prerequisites:* High school biology and chemistry. *Fall, 4 credits*

BIO 152 Principles of Biology: From Molecules to Organisms

The chemical and cellular bases of structure, energy metabolism and heredity in living organisms, and the reproduction, development, and physiology of animals. Intended for prospective majors. Three hours of lecture and one three-hour laboratory per week. *Prerequisites:* High school biology and chemistry. *Spring, 4 credits*

BIO 200 Introduction to Biology Teaching

Materials used in teaching secondary school biology. Approaches to teaching strategies, lesson planning, student testing and evaluation. Observation of classroom activities in selected junior and senior high school biology classrooms. Two hours of lecture and one three-hour laboratory per week. Not for major credit. *Prerequisite:* BIO 151. *Fall, 3 credits*

BIO 204 Ecology of Feast and Famine

A survey of the ecology of agricultural systems and the natural limits of food production. Topics include the impact of environmental factors on agricultural systems, the biology of food production by major crop plants, and the role that human population growth and evolution may play in global patterns of feast or famine. May not be taken for credit after BIO 205 or 240 or 350. *Prerequisite:* Sophomore standing. *Fall, 3 credits*

BIO 206 Anatomy and Physiology

The study of circulatory, respiratory, digestive, urogenital, and endocrine systems. Study of

structure and function of skeleton, muscular system, and nervous system. Includes dissection and laboratory exercises. Three hours of lectures and one three-hour laboratory per week. May not be taken for credit in addition to HBY 350. Not acceptable for major credit if taken after BIO 230. BIO 206 does not fulfill Area III requirements.

Prerequisites: BIO 151, 152.
Fall, 4 credits

BIO 220 General Genetics

An introductory course in genetics for biology majors. General areas to be discussed include transmission genetics, cytogenetics, immunogenetics, molecular genetics, population genetics, and quantitative genetics.

Prerequisites: BIO 151, 152. *Prerequisite or corequisite:* CHE 131 or 141 or 111, 112.
Fall, 3 credits

BIO 230 Animal Physiology

The basic principles of vertebrate physiology. The subject matter includes circulation, respiration, nutrition, excretion (and their control by the nervous and endocrine systems), and sensation and coordination. May not be taken for credit in addition to HBY 350.

Prerequisites: BIO 151, 152, and CHE 131 or 141 or 111, 112.
Spring, 3 credits

BIO 239 Introductory Physiology Laboratory

Laboratory exercises designed to complement BIO 230. Topics include muscles and hormones, physiological activities of nerves, circulation, respiration, excretion, digestion, sensory function, and central processes of coordination. One hour of lecture and one three-hour laboratory per week. May not be taken for credit after BIO 339.

Prerequisite or corequisite: BIO 230.
Spring, 2 credits

BIO 240 Plants and Man

An introduction to the origin, structure, and growth of the higher plant body as a basis for understanding the broader principles of plant biology, as well as the relations of plants to human life. Economically important plants and their products, especially as sources of food, shelter, clothing, drugs, and industrial raw materials are stressed. Current problems in agriculture, plant industry, medicine, use, conservation, and appreciation of plants are included.

Prerequisites: BIO 151, 152, CHE 132.

Fall, 3 credits

BIO 241 Life in Water

Evolution, diversity, and adaptations of water-dwelling invertebrates, vertebrates, and plants, with study of water-land transitions. Three hours of lectures and one three-hour laboratory per week. May not be taken for credit after BIO 342, 343, 344, or 381.

Prerequisites: BIO 151, 152.
Spring, 4 credits

BIO 282 History of Biology

A thorough examination of selected topics in the history of biology; for example, Darwinism, development of taxonomy, origins of cell theory, preformation-epigenesis controversy, development of biochemical biology. This course is identical with HIS 282.

Prerequisites: BIO 151, 152.

Fall, 3 credits

BIO 300 Instructional Strategies and Techniques

This course is second in a series for prospective secondary school teachers of biology. It emphasizes instructional strategies and techniques necessary to create and implement inquiry and discovery activities of an investigative nature. Laboratory skills, preparations, life support systems for organisms, question-asking strategies, and a humanistic approach to teaching are stressed. Three hours of discussion or lecture and one three-hour laboratory per week. Not for major credit.

Prerequisite: BIO 200.

Spring, 4 credits

BIO 301 Biological Literature and Its Use

Use of a research library in biology. Preparation and use of bibliographies; various philosophies of classification of literature, information storage, and retrieval. A review paper, meeting professional standards of style, will be required.

Prerequisite: At least 15 credits of biology majors' courses.

Fall, 1 credit

BIO 305 Statistics for Biologists

An introductory statistics course for students in all areas of biology. Normal statistics to analysis of variance, regression analyses and transformations. Non-parametric tests and chi-square testing. Properties of distributions and tests of fit to distributions. Fundamentals of probability theory, statistical decision theory, and the concept of statistical inference.

Prerequisite: Completion of one of the required calculus options.

Fall, 3 credits

BIO 310 Cell Biology

The cell is studied as the unit of structure, biochemical activity, genetic control, and differentiation. The principles of biochemistry and genetics are applied to an understanding of nutrition, growth, and development.

Prerequisites: BIO 152 and CHE 321 or 331.

Spring, 3 credits

BIO 321 Animal Embryology

A survey of the developmental anatomy of vertebrates. Laboratory exercises consist of the study

of embryonic development from sectioned material and whole embryos of selected vertebrates. Lectures and readings cover the principal developmental sequences and some of the important experimental analyses of these processes. Three hours of lecture and one three-hour laboratory per week.

Prerequisites: BIO 151, 152.

Fall and spring, 4 credits

BIO 322 Animal Development

An introductory analysis of the development of form and function in animals emphasizing the experimental evidence underlying general principles. Topics covered include differentiation, determination, polarity, induction, nucleocytoplasmic interactions, cytostructure. Laboratory work will consist of experiments on live invertebrate organisms. Three hours of lecture and one three-hour laboratory per week.

Prerequisite: BIO 310; BIO 220 recommended.

Spring, 4 credits

BIO 323 Plant Form and Function

An examination of plant structure and development as it relates to function and environment. The subject will be traced from the subcellular level to the complete organism with an analysis of organelles, cell types, and tissues, plant hormones, and growth responses.

Prerequisites: BIO 240 and CHE 321 or 331.

Spring, 3 credits

BIO 330 Comparative Physiology

An introduction to the physiological adaptations of various animal species to environmental variables. Emphasis is placed upon homeostatic mechanisms at the organismic level.

Prerequisite: BIO 230.

Fall, 3 credits

BIO 332 Animal Behavior

An introduction to the study of animal behavior including a consideration of current research in the field.

Prerequisite: BIO 230.

Fall, 3 credits

BIO 334 Cellular Neurobiology

An introduction to the neuron: its anatomy, chemistry, and the ionic basis of its electrical activity. The course includes a discussion of the interactions between neurons via electrical and chemical synapses concluding with the properties of simple neural networks.

Prerequisite: BIO 230.

Fall, 3 credits

BIO 339 Experimental Physiology

An analytical approach to selected topics, including active transport, bioelectric potentials, receptor and effector organs, and

neural and hormonal regulatory mechanisms. Students will contribute to the selection of topics and will design the experiments. Three hours of laboratory and two hours of discussion per week.

Prerequisite: BIO 330 or 334.

Fall, 3 credits

BIO 340 Biology of Vascular Plants

A study of vascular plants, including laboratory and field investigations, in which the structure and pattern of development of vegetation and reproductive organs and the life histories will be examined. Emphasis is placed on the comparative anatomy, morphology, and evolutionary relationships of aquatic and terrestrial cryptogams, gymnosperms, and angiosperms. Three hours of lecture and one three-hour laboratory per week.

Prerequisite: BIO 240.

Spring, 4 credits

BIO 342 Comparative Biology of the Non-Vascular Plants

A summary of the biology of the algae, fungi, slime molds, lichens, liverworts, hornworts, and mosses. The course will include considerations of the morphology, physiology, ecology, and biochemistry of these groups. Three hours of lecture and three hours of laboratory each week.

Prerequisites: BIO 151, 152 and CHE 322 or 332.

Fall, 4 credits

BIO 343 Marine Invertebrate Zoology

A study of the diversity, comparative and functional morphology, natural history, and evolution of multicellular marine invertebrates. Three hours of lecture and one three-and-one-half-hour laboratory per week.

Prerequisites: BIO 151, 152 or corequisite: ESS 211; BIO 241 recommended.

Fall, 4 credits

BIO 344 Chordate Zoology

An introduction to the diversity, comparative, and functional morphology, natural history, and evolution of chordates, with interest centered on the modern fauna. Three hours of lecture or discussion and one three-and-one-half-hour laboratory each week.

Prerequisites: BIO 151, 152.

Spring, 4 credits

BIO 345 Ornithology

Systematics, ecology, and evolution of birds with emphasis on comparative biology and unique features. Topics selected from behavior, reproductive biology, mi-

gration, zoogeography, population regulation, vocalization, color patterns, nest parasitism, flight.
Prerequisites: BIO 151, 152.
Spring, 3 credits

BIO 350 Adaptation and Evolution

Studies of adaptation in organisms, community dynamics, ecology, and the theory of evolution.

Prerequisites: BIO 151, 152; MSM 125 and BIO 220 recommended.
Fall, 3 credits

BIO 351 Ecology

An examination of the interactions of living organisms with their physical and biological environments. Special attention is given to population dynamics and the interactions among organisms that determine the structure, function, and evolutionary development of biological communities.

Prerequisites: BIO 350 and completion of divisional mathematics requirement.
Fall, 3 credits

BIO 352 Ecology Laboratory

Investigation of the application of general ecological principles to specific populations and communities.

Prerequisite or corequisite: BIO 351.

Fall, 2 credits

BIO 353 Marine Ecology

A survey of biotic responses to ecological challenges in different marine realms. Controls of diversity and trophic structure in the marine ecosystem, historical aspects of marine realms, productivity in the oceans, plankton, soft-bottom communities, intertidal habits, coral reefs, deep sea environments, and effects of pollution in the ocean will be discussed. This course is identical with ESS 353.

Prerequisite: BIO 343.

Spring, 3 credits

BIO 354 Evolution

A detailed discussion of the mechanisms of evolution, focusing on the ways in which genetic changes in populations lead to adaptation, speciation, and historical patterns of evolutionary change.

Prerequisites: BIO 350 and completion of divisional mathematics requirement.

Spring, 3 credits

BIO 355 Modelling in Ecology and Genetics

An advanced undergraduate course for biology, mathematics, and physics majors reviewing existing mathematical theories designed to describe different phenomena in ecology and popu-

lation genetics.

Prerequisites: A year of calculus and either BIO 151, 152 or PHY 102 or 104.

Spring, alternate years, 4 credits. Not offered 1981-82

BIO 356 Marine Ecology Laboratory

Students will be introduced to laboratory techniques in marine ecology such as nutrient and elemental analysis of sediments and seawater; particle size analysis; collecting techniques; epifluorescence microbial counting techniques; and data analysis. Individual projects will be encouraged after instrument instruction.

Prerequisites: BIO 343, 353 and permission of instructor.

Fall, 2 credits

BIO 361, 362 Biochemistry I, II

Biochemistry I surveys the major chemical constituents of the cell, including carbohydrates, lipids, and proteins. Emphasis is on enzyme structure, enzyme kinetics, reaction mechanisms, and metabolic pathways. Biochemistry II treats nucleic acid structure, replication, and transcription, both *in vivo* and *in vitro*. The machinery of protein synthesis is also covered, including amino acid activation, transfer RNA, ribosomes, the genetic code, and the peptides chain initiation, elongation, and termination.

Prerequisites for BIO 361: BIO 152, CHE 322 or 332. *Prerequisite for BIO 362:* BIO 361.

Fall (361) and Spring (362), 3 credits each semester

BIO 364 Molecular Genetics

The molecular bases of recombinations, mutation, replication, and gene expression are studied. The genetics of microorganisms is presented, and the experimental support for molecular models of basic genetic phenomena is examined.

Prerequisites: BIO 220 and 362.

Fall, 3 credits

BIO 365 Biochemistry Laboratory

A series of laboratory experiments and discussions designed particularly to complement BIO 361. Topics include isolation of cellular organelles, extraction and characterization of nucleic acids and enzymes, osmosis and permeability, bioenergetics. Four hours of laboratory and discussion per week.

Prerequisite or corequisite: BIO 310 or 361.

Fall, 2 credits

BIO 366 Crystal Structure of Macromolecules (Formerly BIO 362)

The determination of the three-dimensional structures of biological macromolecules using the X-ray diffraction analysis of their single crystals.

Prerequisites: CHE 322 or 332 and MSM 127 or 132 or 142; BIO 361 is recommended.

Fall, 3 credits

BIO 375 Sensory Processes

Comprehensive coverage of major and minor sensory systems with emphasis on the integration of anatomical, physiological, and behavioral data. Sensory systems to be covered include vision, audition, somesthesia, the chemical senses, kinesthesia, vestibular and visceral sensation.

Prerequisite: BIO 334.

Spring, 3 credits

BIO 376 General Plant Physiology

The physiological patterns and integration of cellular processes that culminate in plant growth.

Prerequisites: BIO 310 and 323, and CHE 321 or 331.

Fall, 3 credits

BIO 377 Biological Clocks

A consideration of the temporal dimension of biological organization and of periodic phenomena which are a basic property of living systems. Topics include a survey of circadian rhythms; influence of light, temperature, and chemicals; use of the clock for adjustment to diurnal, tidal, and lunar cycles, for direction finding (homing and orientation), and for day-length measurement (photoperiodism); chronopathology and chronopharmacology; aging and life cycle clocks; possible molecular mechanisms of the clock.

Prerequisites: BIO 310, CHE 321 or 331, at least one course in physiology, and permission of instructor.

Spring, 3 credits

BIO 378 Integrative Neurobiology

An introduction to the structure and function of the vertebrate nervous system, to include in-depth coverage of the organization of sensory and motor systems.

Prerequisite: BIO 334.

Spring, 3 credits

BIO 379 Developmental Neurobiology

An introduction to the development of the nervous system. General areas to be discussed include neuroembryology, neuronal differentiation, synapse formation, neurotrophic interactions, and specificity and plasticity of neuronal connections.

Prerequisite: BIO 334.

Spring, 3 credits

BIO 380 Entomology

The higher systematics, behavior, physiology, and ecology of insects. The emphasis in the course is on interpreting the material in an ecological context. Three hours of lecture and one laboratory period

per week. Three weekend trips and a student project are required.

Prerequisite: BIO 350.

Fall, 4 credits

BIO 383 Marine Vertebrate Zoology (Formerly BIO 381)

Ecology, systematics, and evolution of fishes, with consideration of special topics on marine representatives of other vertebrate groups. Field and laboratory work on local forms.

Prerequisite: BIO 344.

Fall, 4 credits

BIO 385 Ecology of Land Plants

Lectures and discussions on ecological phenomena and problems important to plants and plant communities, including such areas as physiological processes, competitive interactions, plant-animal interactions, and community dynamics.

Prerequisite: BIO 350.

Fall, alternate years, 3 credits. Not offered in 1982-83

BIO 386 Plant Ecology Laboratory

Study of local flora, soils, ecological anatomy, herbivory, pollination, dispersal, and competition. One three-hour laboratory per week plus three intensive weekend field trips.

Prerequisite: Permission of instructor. *Corequisite:* BIO 385.

Fall, alternate years, 2 credits. Not offered in 1982-83

BIO 401, 402 Special Seminars in Biology

Discussions of a specific area of current interest in biology. The work of each semester covers a different area of biology. May be repeated as subject matter differs.

Prerequisite: Permission of instructor.

Fall (401) and Spring (402), 2 credits each semester

BIO 410 Seminar in Molecular and Cellular Biology

A series of reports on current research, with particular reference to research work in progress within the department.

Prerequisite: BIO 362.

Spring, 2 credits

BIO 420 Developmental Genetics

The genetic analysis of developmental events in higher organisms.

Prerequisites: BIO 220 and 310.

Fall, 2 credits

BIO 421 Seminar in Developmental Biology

Lecture-discussion groups of no more than 20 students. Each student gives one lecture as a basis for group discussion. Analyses of mechanisms underlying early animal development include gametogenesis, nuclear-cytoplasmic interactions, cell-cell interactions, the characteristics of

specific cellular differentiations, etc. The emphasis is on the cellular and molecular level.

Prerequisites: BIO 310 and 321 or 322.

Fall, 2 credits

BIO 430 Behavior and Evolution

Natural selection as the major force in shaping behavior will be the primary focus of this course. Invertebrate and vertebrate behavior will be discussed, but the main emphasis will be on vertebrate social systems.

Prerequisites: BIO 332 and permission of instructor.

Fall, 3 credits

BIO 440 Advanced Invertebrate Zoology

Lectures and student seminars on selected aspects of invertebrate adaptations and evolution. Alternative semester topics are radiate invertebrates, mollusks, and protostomes. May be repeated as topics change.

Prerequisite: BIO 343 or ESS 211.

Spring, 2 credits

BIO 445 Readings in Biological Education

Tutorial studies on recent advances in biological education. Not for major credit.

Prerequisite: Permission of Biology Teacher Preparation Program.

Fall and spring, 1 credit

BIO 446 Readings in Neurobiology and Behavior

BIO 447 Readings in Genetics, Development, and Behavior

BIO 448 Readings in Biochemistry

BIO 449 Readings in Ecology and Evolution

Tutorial readings in the biological sciences. These courses may be repeated, but not more than two credits may be used toward the divisional major requirements. Limit of one topic per semester. *Prerequisites for BIO 446, 447, and 449:* Permission of instructor and of Undergraduate Studies Committee. *Prerequisites for BIO 448:* Permission of instructor and Biochemistry Department.

Fall and spring, 1 or 2 credits each semester

BIO 450 Supervised Teaching—Biology

Prospective biology teachers at the secondary school level receive extensive practice under selected cooperating teachers. Student teachers work with one or two certified biology teachers in one school each regular school day for the entire semester. Frequent consultations with University faculty members are designed to assist the student. Applications must be filed with the Biology Teacher Preparation Program one semester prior to student teaching. Not for major credit. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisite: Senior standing. *Corequisite:* BIO 454.

Fall and spring, 12 credits

BIO 454 Student Teaching Seminar

Seminar on problems encountered by student teachers and public school teachers at the secondary level. Study and analysis of the many aspects of the teaching profession, such as legal responsibilities, morality, and professional ethics.

Corequisite: BIO 450.

Fall and spring, 3 credits

BIO 475 Teaching Practicum in College Biology I

Study of the literature, resources, and teaching strategies in a field of biology, coordinated with a supervised clinical experience in instruction. Not for major credit. Cannot be repeated for credit. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Permission of instructor and of the Undergraduate Studies Committee.

Fall and spring, 2 or 3 credits

BIO 476 Undergraduate Teaching Practicum in College Biology II

This course continues on a more advanced level study of the literature, resources, and teaching strategies in a field of biology, coordinated with a supervised clinical experience in instruction. Students will assume greater responsibility in supervising laboratories, laboratory preparation, and recitation sections. Students may not serve as teaching assistants in the same course twice; the sec-

ond course in which a student acts as a T.A. should be of at least equal difficulty with the course in which he/she previously assisted. Grading in this course shall be Satisfactory/Unsatisfactory only. Not for major credit.

Prerequisites: BIO 475 and permission of instructor and Undergraduate Studies Committee.

Fall and spring, 2 or 3 credits

BIO 486 Research in Neurobiology and Behavior

BIO 487 Research in Genetics, Development, and Behavior

BIO 488 Research in Biochemistry

BIO 489 Research in Ecology and Evolution

In these courses the student will work under the supervision of a faculty member in developing an individual project which makes use of the knowledge and techniques acquired in previous courses. The student will prepare an appropriate report on the project. Any of the courses may be taken more than two semesters, but no more than eight credits may be used for divisional major requirements. Limit of one topic per semester. Request for approval of the Undergraduate Studies Committee must be submitted no later than two days prior to the last day of the add period as scheduled in the calendar.

Prerequisites for BIO 486, 487 and 488: Written permission of instructor and of Undergraduate Studies Committee. *Prerequisites for BIO 488:* Written permission of instructor and Biochemistry Department.

Fall and spring, 1 to 4 credits each semester

Business

Minor Coordinator

Lawrence P. DeBoer, Assistant Dean for Undergraduate Studies

Advisory Committee

Applied Mathematics—
Alan C. Tucker

Computer Science—Jack Heller

Economics—Michael Zweig

French and Italian—
Harriet Allentuch

Philosophy—Michael Simon

Political Science—
Mark Schneider

Sociology—Gerald Zeitz

Career Development—
James W. Keene

Grants Management—
Susan Pickman

Mid-Life Assessment Program—
Alan D. Entine

Undergraduate Studies—
Lawrence P. DeBoer

The business minor is intended primarily for students who are preparing for careers in business and who are planning to do graduate work in business administration or management. For those students the minor complements their chosen major by introducing them to principles and techniques used in business and management.

Because graduate schools and employers in business prefer people with experience, students are encouraged to include a semester or summer internship (see p. 44) in their undergraduate program.

The requirements for this minor are relatively extensive; they include specific advanced courses in economics, political science, and sociology, and these courses have one or more prerequisites. Students are encouraged to plan the inclusion of this minor within their course selection early in their undergraduate career, especially those whose majors are in the natural sciences, engineering, and applied sciences.

Requirements for the Minor in Business

	Credits
1. Either: MSA 102 Elements of Statistics or MSC 105 Introduction to Computer Science and Business Data Processing	3
2. POL 261 Business Law	3
3. ECO 114 Financial Accounting	3
4. ECO 251 Intermediate Microeconomic Theory	4
5. ECO 348 Analysis for Managerial Decision Making	3
6. SOC 381 Sociology of Organizations	3
7. Either: MSA 441 Business Policy: Formulation and Administration or An approved internship (see p. 44)	3
Total	22

Economics majors are required to take a minimum of 18 credits for the minor exclusive of courses offered towards their major. An approved list of courses from which economics majors may select to fulfill minor requirements is available. The list may interest all business minor students for selecting electives related to their career intentions.

Information and advising about careers in business, graduate study in business, and the business minor are available in the Undergraduate Studies Office.

Department of Chemistry

Professors

John M. Alexander, Ph.D. Massachusetts Institute of Technology (Nuclear chemistry)

Jacob Bigeleisen, Ph.D. University of California, Berkeley (Chemistry of isotopes)

Francis T. Bonner, Ph.D. Yale University (Nitrogen and isotope chemistry)

Benjamin Chu, Chairman, Ph.D. Cornell University (Light-scattering spectroscopy; X-ray scattering)

Harold L. Friedman, Ph.D. University of Chicago (Theory of equilibrium; dynamic properties of solutions)

Albert Haim, Ph.D. University of Southern California (Kinetics and mechanisms of inorganic reactions)

David M. Hanson, Ph.D. California Institute of Technology (Theoretical and experimental investigations of molecular crystals)

Takanobu Ishida, Ph.D. Massachusetts Institute of Technology (Chemistry of stable isotopes)

Francis Johnson, Joint with Pharmacology, Ph.D. Glasgow University (Structure and total synthesis of naturally-occurring biologically active molecules)

Philip M. Johnson, Ph.D. Cornell University (Optical molecular spectroscopy)

Edward M. Kosower, Adjunct, Ph.D. University of California, Los Angeles (Physical organic chemistry applied to biochemistry and medicine)

Paul C. Lauterbur, Ph.D. University of Pittsburgh (Nuclear magnetic resonance spectroscopy; image formation in biology and medicine)

William J. le Noble, Ph.D. University of Chicago (Chemistry of highly compressed solutions)

Yoshi Okaya, Ph.D. Osaka University (Crystallography; computer-controlled data acquisition)

Richard N. Porter, Ph.D. University of Illinois (Theoretical chemistry)

Fausto Ramirez, Ph.D. University of Michigan (Organic synthesis; organic phosphorus compounds)

Sei Sujishi, Ph.D. Purdue University (Organosilicon chemistry)

Jerry L. Whitten, Ph.D. Georgia Institute of Technology (Theoretical chemistry)

Associate Professors

Lawrence J. Altman, Ph.D. Columbia University (Synthetic organic chemistry)

Larry R. Dalton, Ph.D. Harvard University (Magnetic resonance; biological application)

Frank W. Fowler, Ph.D. University of Colorado (Synthesis and study of heterocyclic molecules)

Theodore D. Goldfarb, Ph.D. University of California, Berkeley (Vibrational spectroscopy). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1978-79

Paul M. Helquist, Ph.D. Cornell University (Organometallic chemistry in organic synthesis)

Robert C. Kerber, Coordinator of Undergraduate Studies, Ph.D. Purdue University (Organotransition metal complexes)

Allen Krantz, Ph.D. Yale University (Physical and bioorganic chemistry)

Joseph W. Lauher, Coordinator of Graduate Studies, Ph.D. Northwestern University (Inorganic and organometallic synthesis and structure)

Robert F. Schneider, Ph.D. Columbia University (Nuclear quadrupole resonance)

Richard Solo, Adjunct, Ph.D. University of California, Berkeley (Gas phase kinetics)

Charles S. Springer, Ph.D. Ohio State University (Metal coordination chemistry; nuclear magnetic resonance in membranes)

David Weiser, Ph.D. University of Chicago (History of science)

Arnold Wishnia, Ph.D. New York University (Physical chemistry of proteins)

Assistant Professors

H. Aaron Bates, Ph.D. University of California, Berkeley (Structure and synthesis of biologically active substances)

Stephen A. Koch, Ph.D. Massachusetts Institute of Technology (Bioinorganic chemistry)

Glenn D. Prestwich, Ph.D. Stanford University (Bioorganic chemistry and chemical ecology)

Lecturers

Carolyn B. Allen, Coordinator of General Chemistry Laboratories, Ph.D. Rensselaer Polytechnic Institute

Marjorie Kandel, Coordinator of Organic Chemistry Laboratories, M.S. Indiana University

Teaching Assistants

Estimated Number: 50

The Bachelor of Science program in chemistry is designed to prepare the student for graduate study in chemistry or for industrial or other employment. The program of the Department of Chemistry is approved by the Committee on Professional Training of the American Chemical Society.

The Bachelor of Arts program allows more flexibility in the choice of electives. It is designed to accommodate the needs of pre-medical students and others whose career objectives may call for a substantial introduction to chemistry. It can also accommodate students who wish to obtain a strong undergraduate background in another science or mathematics while earning a degree in chemistry.

Students interested in combining the study of chemistry with the study of materials science should see also the Interdisciplinary Program in Engineering Chemistry.

Physical Facilities

Chemistry laboratory facilities consist of about 7,000 square feet of general chemistry laboratories in the Old Chemistry Building and over 11,000 square feet of advanced undergraduate laboratories in the Chemical Laboratories Building. Students taking laboratory courses are issued lockers that contain the appropriate basic glassware and other apparatus; more specialized equipment and apparatus are issued for a laboratory period. All laboratories have conveniently located balance rooms or weighing areas; instructional stockrooms are located adjacent to the work areas. Equipment associated with (1) general chemistry laboratory (CHE 133, 134 and CHE 143, 144) includes analytical balances, pH meters, and visible spectrophotometers; (2) organic chemistry laboratory (CHE 327, CHE 333, 334) includes gas chromatographs, infrared and ultraviolet spectrometers, and melting point apparatus; and (3) physical chemistry laboratory (CHE 303, 304 and CHE 357) includes digital spectrophotometers, bomb calorimeter, oscilloscopes, digital electronic equipment, EPR, pulsed NMR, X-ray generator and cameras, spectrofluorimeter, atomic absorption spectrometer, and mass spectrometer.

Requirements for the Bachelor of Science Degree in Chemistry

All required courses must be taken for a letter grade. No transferred course with a grade lower than C may be used to fulfill any major requirement.

A. Study Within the Area of Chemistry

	Credits
1. CHE 131, 132 or 141, 142 General or Honors Chemistry	8
2. CHE 133, 134 or 143, 144 General or Honors Chemistry Laboratory	2
3. CHE 301, 302 Physical Chemistry (or 312, 302 with permission of department)	6
4. CHE 303 Solution Chemistry Laboratory	2
5. CHE 304 Chemical Instrumentation Laboratory	2
6. CHE 321, 322 or 331, 332 Organic Chemistry	6
7. CHE 333, 334 Organic Chemistry Laboratory	4
8. CHE 355 Physical Chemistry III	3
9. CHE 357 Molecular Structure and Spectroscopy Laboratory	2
10. CHE 375 Inorganic Chemistry I	3

B. Courses in Related Fields

1. Four semesters of calculus: MSM 131, 132, 231, 306	14
2. Three semesters of physics: PHY 101, 102, or 103, 104, and 251	12
Total	64

Note: The following alternate calculus sequences may be substituted in major requirements or prerequisites: MSM 141, 142 or 125, 126, 127 for 131, 132; MSM 241 for 231; MSM 307 for 306.

For those students who plan to pursue postcollege studies in chemistry it is recommended that a reading knowledge be attained in German and in French or Russian.

Students who wish to meet the American Chemical Society certification requirements must take, in addition to the above requirements, two additional advanced chemistry courses. Experience in statistics and computer science is highly recommended by the ACS.

Requirements for the Bachelor of Arts Degree in Chemistry

All required courses must be taken for a letter grade. No transferred course with a grade lower than C may be used to fulfill any major requirement.

A. Study Within the Area of Chemistry

	Credits
1. CHE 131, 132 or 141, 142 General or Honors Chemistry	8
2. CHE 133, 134 or 143, 144 General or Honors Chemistry Laboratory	2
3. CHE 301 or 312 Physical Chemistry I or Short Course	3
4. CHE 302 Physical Chemistry II	3
5. CHE 303 Solution Chemistry Laboratory, and one additional laboratory course (304, 334, or 357)	4
6. CHE 321, 322 or 331, 332 Organic Chemistry	6
7. CHE 327 or 333 Organic Chemistry Laboratory	2
8. CHE 375 Inorganic Chemistry I	3

B. Courses in Related Fields

1. Three semesters of calculus: MSM 131, 132, and 231	11
2. Three semesters of physics: PHY 101, 102 or 103, 104, and 251	12
Total	54

Note: The following alternate calculus sequences may be substituted in major requirements or prerequisites: MSM 125, 126, 127 or 141, 142 for 131, 132; MSM 241 for 231.

Honors Program in Chemistry

Students who have maintained a minimum cumulative grade point average of 3.0 in science and mathematics through the junior year are eligible for departmental honors in chemistry. An additional requirement for honors is the submission of a senior thesis based upon research performed during the senior year. The student will be given an oral examination in May by his or her research supervisor and the undergraduate research committee. The awarding of honors requires the recommendation of this committee and is a recognition of superior performance in research and scholarly endeavors. The award is contingent upon maintenance of a 3.4 cumulative grade point average in senior CHE courses.

Courses

See p. 45. Course Credit and Prerequisites, and Numbering System.

CHE 111, 112 Elementary Chemistry

An introduction to the concepts of chemical bonding and reactivity that underlie modern inorganic, organic, and biochemistry. These concepts will be illustrated with examples from the life sciences. The full year sequence may serve as the equivalent of CHE 131, and may be applied as prerequisite to CHE 132. CHE 111 is suitable for liberal arts students and students preparing for nursing and some allied health professions. Previous background in chemistry is helpful, but not required. CHE 111 may not be taken for credit by students who have completed CHE 131 or its equivalent. Students planning to take CHE 132 following 112 are urged to take note of the CHE 131, 132 mathematics recommendation and prepare accordingly (i.e., take MSM 102 or 103, 104 if necessary).

Prerequisite to CHE 112: CHE 111.

Fall (111) and spring (112), 3 credits each semester

CHE 131, 132 General Chemistry

A broad introduction to the fundamental principles of chemistry, including substantial illustrative material drawn from the chemistry of inorganic, organic, and biochemical systems. The principal topics covered are: stoichiometry, the states of matter, chemical equilibrium and introductory thermodynamics, electrochemistry, chemical kinetics, electron structure and chemical bonding, chemical periodicity. The course emphasizes basic concepts, problem solving, and factual material. This course provides the necessary foundation for students who wish to pursue further course work in chemistry. It is assumed that the student enrolled in CHE 131 has taken a chemistry course in high school. It is strongly recommended that General Chemistry Laboratory and calculus be taken concurrently with CHE 131, 132. (Note that CHE 134 is prerequisite to CHE 321.) Three lecture hours and one discussion hour per week.

Prerequisite to CHE 132: CHE 131 or 112.

Fall (131); spring and summer (132), 4 credits each semester

CHE 133, 134 General Chemistry Laboratory

Designed to familiarize students with (1) some chemical and physical properties of substances, (2) techniques of quantitative chemistry, and (3) scientific methodology. Four hours of laboratory and discussion per week.

Pre- or corequisite to CHE 133: CHE 131 or 112. *Prerequisite to CHE 134:* CHE 133. *Pre- or corequisite to CHE 134:* CHE 132.

Fall and spring (133), spring and summer (134), 1 credit each semester

CHE 141, 142 Honors Chemistry

Designed for students with strong backgrounds in science and mathematics. The topics covered in this course are similar to those covered in CHE 131, 132, but the course draws more upon background in mathematics and physics. It is assumed that the student enrolled in CHE 141 has taken courses in chemistry and physics in high school, and it is recommended that PHY 101, 102 be taken concurrently with CHE 141, 142. Three lecture hours and one discussion hour per week.

Corequisite to CHE 141: MSM 131 or 141. *Prerequisite to CHE 142:* CHE 141. *Corequisite to CHE 142:* MSM 132 or 142.

Fall (141) and spring (142), 4 credits each semester

CHE 143, 144 Honors Chemistry Laboratory

Laboratory program similar in content to CHE 133, 134, but conducted at a more intensive and demanding level. Four hours of laboratory and discussion per week.

Corequisite to CHE 143: CHE 141. *Prerequisite to CHE 144:* CHE 143. *Corequisite to CHE 144:* CHE 142.

Fall (143) and spring (144), 1 credit each semester

CHE 301 Physical Chemistry I

Introduction to rate laws, mechanisms, and transition-state theory of chemical kinetics. Equations of state. The principles of thermodynamics and their application to chemical reactions, phase equilibria, ideal and nonideal solutions, and electrochemical systems.

Prerequisites: CHE 132 or 142; MSM 132. *Corequisite:* PHY 101 or 103.

Fall, 3 credits

CHE 302 Physical Chemistry II

Introductory quantum mechanics, with applications to atomic and molecular systems. The Schrodinger equation will be solved for simple systems and the general theory applied in the discussion of chemical bonding, molecular structure, and spectroscopy.

Prerequisites: CHE 301 or 312; MSM 231.

Spring, 3 credits

CHE 303 Solution Chemistry Laboratory

Quantitative techniques of solution chemistry. Measurement: accuracy and precision, analysis, computation, and reporting. Spectrophotometry. Solution equilibria and kinetics. Use of computers will be introduced. Six hours of laboratory and discussion.

Prerequisite: CHE 134 or 144. *Corequisite:* CHE 301.

Fall, 2 credits

CHE 304 Chemical Instrumentation Laboratory

Electrochemical and thermochemical measurements. Electronics in chemical instrumentation. Vacuum techniques. Electrical and magnetic properties of materials. Data-handling methods. Six hours of laboratory and discussion.

Prerequisites: CHE 303, knowledge of computer programming.

Corequisite: CHE 302.

Spring, 2 credits

CHE 310 Chemistry in Technology and the Environment

Use of chemical principles in understanding processes that occur in the modern technological world and in the natural environment. Certain ecological problems of a chemical nature are analyzed. Methods of controlling these problems are discussed.

Prerequisite: CHE 112 or 132 or 142.

Spring, 3 credits

CHE 312 Physical Chemistry (Short Course)

A one-semester treatment of fundamental concepts of physical chemistry, intended primarily for students of the biological sciences desiring an introduction to physical chemistry. Topics include equations of state; classical thermodynamics and its application to chemical equilibrium in reaction systems, multiphase systems, and electrochemical cells; kinetic theory of gases; transport properties, chemical kinetics. Cannot be taken for credit by students who have completed CHE 301.

Prerequisite: CHE 132 or 142. *Co- or prerequisites:* MSM 132 or 142, PHY 101 or 103.

Spring, 3 credits

CHE 321, 322 Organic Chemistry

A systematic discussion of the structures, physical properties, and syntheses of carbon compounds, based on modern views of chemical bonding and mechanism. The chemistry of substances important in biology and technology, including macromolecules, will be emphasized.

Prerequisites to CHE 321: CHE 132 or 142, 134 or 144. *Prerequisite to CHE 322:* CHE 321.

Fall and summer (321) and spring and summer (322), 3 credits each semester

CHE 327 Organic Chemistry Laboratory

Techniques of isolating and handling organic substances, including biological materials. A one-semester course which provides a basic organic laboratory experience. It is recommended that students take CHE 327 at the same time as or immediately following CHE 322 or 332. Four laboratory hours and one lecture hour per week.

Prerequisite: CHE 134 or 144. *Co- or prerequisite:* CHE 321 or 331.

Fall and spring, 2 credits

CHE 331, 332 Honors Organic Chemistry

An organic chemistry course similar to CHE 321, 322 but providing a more fundamental view of organic compounds, reaction mechanisms, and synthesis, based somewhat more explicitly on thermodynamics and kinetics. Especially for those who may major in chemistry, biochemistry, or another physical science.

Prerequisites to CHE 331: CHE 132 or 142, 134 or 144. *Prerequisite to CHE 332:* CHE 331.

Fall (331) and spring (332), 2 credits each semester

CHE 333, 334 Organic Chemistry Laboratory B

Fundamental laboratory techniques of organic chemistry, including methods of isolation, purification, and structure identification, with applications to synthetic, structural, and mechanistic problems. For students who will require substantial laboratory skills, such as those planning careers in research.

Prerequisite: CHE 134 or 144. *Corequisites:* CHE 321, 322 or 331, 332. *Prerequisite to CHE 334:* CHE 333.

Fall (333) and spring (334), 2 credits each semester

CHE 345 Intermediate Organic Chemistry

An extension of the material introduced in CHE 321, 322 or 331, 332. Electronic and stereochemical theories are utilized to discuss selected organic reactions, syntheses, and natural products.

Prerequisite: CHE 322 or 332.

Fall or spring, 3 credits

CHE 346 Physical Chemistry of Solid Interfaces

The behavior and chemical properties underlying solid-gas, solid-liquid, and solid-solid interfaces: the principal concepts determining the energetics and kinetics of nucleation at solid surfaces; the colloidal state, including the classification, preparation, and properties of colloids; adsorption and the specific factors influencing heterogeneous catalysis on gas-solid interfaces, with examples drawn from industrial processes. This course is identical with ESM 346.

Prerequisite: CHE 302.

Spring, 3 credits

CHE 348 Electrochemistry at Metal-Liquid Interfaces

Introduction to basic electrochemical processes occurring at metal-solution interfaces under free and controlled conditions. Emphasis on electrochemistry of corrosion, deposition processes, and batteries. This course is identical with ESM 348.

Prerequisites: PHY 102 and CHE 301 or ESG 301.

Spring, 3 credits

CHE 355 Physical Chemistry III

Kinetic theory of gases, transport phenomena, and molecular theories of chemical kinetics. Introductory statistical mechanics. Partition functions and spectroscopic determination of thermodynamic quantities. Electrochemistry.

Prerequisites: CHE 302; MSM 231 or 241; PHY 102 or 104.
Fall, 3 credits

CHE 357 Molecular Structure and Spectroscopy Laboratory

Spectroscopic study of molecular properties. Magnetic resonance and optical spectra. X-ray crystallography, mass spectrometry. Six hours of laboratory and discussion.

Prerequisite: CHE 304.
Fall, 2 credits

CHE 375 Inorganic Chemistry I

A survey of inorganic chemistry covering various classes of inorganic compounds and reactions with emphasis on the structural aspects. Wherever possible, the subject is treated on the basis of modern concepts of chemical bonding. Thermodynamic and kinetic aspects of inorganic reactions are included.

Prerequisites: CHE 302 and 322 or 332.
Fall, 3 credits

CHE 376 Inorganic Chemistry II

The chemistry of the elements with an emphasis on the transition metals. Reaction mechanisms, synthesis, and structure will be covered. Specific areas of concern will include coordination chemistry, organometallic chemistry, bioinorganic chemistry, and selected topics from solid state and nontransition metal chemistry.

Prerequisite: CHE 375.
Spring, 3 credits

CHE 461 Selected Topics in Chemistry

Topics of current interest in the chemical sciences. Topics will be announced in the Undergraduate Studies Newsletter prior to the beginning of the semester in which the course is offered. May be repeated as the subject matter differs.

Prerequisites: Varying with topics.
Fall or spring, 3 credits

CHE 475 Undergraduate Teaching Practicum I

An opportunity for selected upper division students to collaborate with the faculty in teaching. In addition to working as tutors or laboratory assistants, students will meet at least weekly with their faculty supervisors to discuss teaching strategies and problems encountered. Students may participate only in courses in which they have excelled. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisite: Permission of department.
Fall and spring, 3 credits

CHE 476 Undergraduate Teaching Practicum II

The continuation of training in the teaching of chemistry courses. Students may participate only in courses in which they have excelled. Either increased or different responsibilities will be assigned, adding to the quality of

academic experience already gained in CHE 475. Students may offer only two teaching practica for credit. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: CHE 475 and permission of department.
Fall and spring, 3 credits

CHE 487, 488 Tutorial in Special Topics in Chemistry

Supervised readings, laboratory work, or both on specialized topics in chemistry. For students who wish to gain familiarity with a subject or area not included in sufficient depth in other undergraduate courses. Departmental permission to register will be based on a brief outline jointly submitted by the student and faculty supervisor. A final report will be submitted by the student. May be repeated for credit.

Prerequisites: Permission of instructor and department.
Fall and spring, 1 to 3 credits each semester

CHE 491-492 Senior Research

A two-semester research program to be carried out under the supervision of a staff member. The results of this work are to be submitted to the department in the form of a senior research report. The student will be given an oral examination in May by a faculty committee consisting of the student's supervisor and three other faculty members. A composite grade for the two semesters will be assigned. Students who are interested in registering for this course should apply to the office of the Chairman prior to registration.

Prerequisites: CHE 304, 334, senior standing, acceptance as a research student by a member of the departmental staff, and permission of department. *Corequisite:* CHE 375.
Fall and spring, 3 credits each semester

Graduate Courses

Advanced chemistry students may elect 500- and 600-level graduate courses in aspects of chemistry of particular interest to them. The requirement for registration is a 3.0 average in CHE courses or permission of the instructor. See the *Graduate Bulletin* for course descriptions.

- CHE 501 Structural Organic Chemistry
- CHE 502 Mechanistic Organic Chemistry
- CHE 503 Synthetic Organic Chemistry
- CHE 511 Structural Inorganic Chemistry
- CHE 512 Physical Methods in Inorganic Chemistry
- CHE 513 Reaction Mechanisms in Inorganic Chemistry
- CHE 521 Quantum Chemistry I
- CHE 522 Quantum Chemistry II
- CHE 523 Chemical Thermodynamics
- CHE 528 Statistical Mechanics
- CHE 529 Nuclear Chemistry
- CHE 530 Physical Chemistry of Macromolecules
- CHE 604 Molecular Biochemistry
- CHE 623 Molecular Spectroscopy
- CHE 624 Magnetic Resonance
- CHE 625 Molecular Structure and Crystallography
- CHE 626 Computer-Controlled Experimentation in Chemistry

Chinese

Associate Professor

Shi Ming Hu, Ed.D. Columbia University (Chinese language; Asian studies)

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

CHI 111, 112 Elementary Chinese

An introduction to spoken and written Chinese Mandarin, with equal attention to speaking, reading, and writing. Laboratory practice supplements class work. No student who has had two or more years of Chinese in high school or who has otherwise acquired an equivalent proficiency will be permitted to enroll in CHI

111 without written permission from the supervisor of the course.
Fall and spring, 3 credits each semester

CHI 191, 192 Intermediate Chinese

An intermediate course in Chinese Mandarin to develop audio-lingual skills and reading and writing ability. Selected texts will serve as the basis for practice in reading comprehension and composition. Intensive exercises in

"character writing" will be required to develop writing technique.

Prerequisite: CHI 112.
Fall and spring, 3 credits each semester

CHI 221, 222 Advanced Chinese

An advanced course in Chinese Mandarin to increase comprehension and writing ability. Selected reading materials include newspapers, contemporary Chinese literature, and other samples of different writing styles.

Prerequisite: CHI 192.
Fall and spring, 3 credits each semester

CHI 487 Independent Research

An individual research project in Chinese, such as translation, analysis of documents or literature, etc., in consultation with the instructor. Students are expected to meet at regular intervals and to present the completed project at the end of the semester. May be repeated.

Prerequisites: CHI 222 and permission of instructor.
Fall and spring, 3 credits

Classics and Classical Languages

Professors

Harvey Gross, Ph.D. University of Michigan (Comparative literature)

Richmond Y. Hathorn, Ph.D. Columbia University (Myth; classical drama; classical languages)

Lecturers

Joan B. Fry, Adjunct, M.A. University of California, Berkeley (Classical literature; archaeology)

Aaron W. Godfrey, M.A. Hunter College (Latin; medieval studies)

Affiliated Faculty

Walter Watson, Ph.D. University of Chicago (Metaphysics; history of philosophy)

Minor in Classical Civilization

The minor in classical civilization provides students with a broad knowledge of the cultures of ancient Greece and Rome. After elementary literary surveys, the student completes at least two semesters of either Latin or Greek and selects a mixture of courses with classical content from offerings in classics, classical languages, and related courses from other departments. The student must fulfill the following minimum requirements by selecting at least two courses from group IA, or IB, and one course each from groups II through VI, including nine credits numbered 300 or above. Substitutions may be permitted for other courses with classical content with permission of the minor coordinator.

	Credits
Group IA: GRK 111, 112, 251, 252, 447	
Group IB: LAT 111, 112, 251, 252, 353, 354, 355, 356, 447	6
Group II: CLS/CLT 113	3
Group III: CLS 215, EGL 260	3
Group IV: CLS 120, ARH 300, ARH 301	3
Group V: HIS 100, 230, 231, 232, 300	3
Group VI: PHI 101, 200, 301	3

Total 21

Latin literature in translation under close faculty supervision. May be repeated.

Prerequisite: Permission of Director.

Fall and spring, 1 to 4 credits

Greek

GRK 111, 112 Elementary Greek

An introduction to the Greek language, including the study of grammar, with reading and writing.

Prerequisite: Permission of instructor.

Fall and spring, 3 credits each semester

GRK 251, 252 Readings in Greek Literature

The reading and interpretation of works such as the *Apology* of Plato, the *Prometheus Bound* of Aeschylus, or selections from the *New Testament*.

Prerequisite: GRK 112.

Fall and spring, 3 credits each semester

GRK 447 Directed Readings in Greek

Intensive study of a particular author, period, or genre of Greek literature in the original under close faculty supervision. May be repeated.

Prerequisite: Permission of Director.

Fall and spring, 1 to 4 credits

Latin

LAT 111, 112 Elementary Latin

This intensive course is designed to prepare the beginning student to translate Latin that may be needed for use in undergraduate or graduate study. Focus of the course is on the fundamentals of grammar and techniques of translation. No student who has had two or more years of Latin in high school or who has otherwise acquired an equivalent proficiency will be permitted to enroll in LAT 111 without written permission from the course supervisor.

Fall and spring, 3 credits each semester

LAT 251, 252 Readings in Latin Literature

Readings in classical Latin literature of the Republic. The course will include a brief intensive review of grammar and the sampling of a number of authors, including Catullus, Cicero, Virgil, and Livy.

Prerequisite: LAT 112.

Fall and spring, 3 credits each semester

LAT 353 Literature of the Roman Republic

Selected works of Plautus, Terence, Cicero, Lucretius, and Catullus will be translated and examined in their social and historical context. The reading of critical works in English will also be required.

Prerequisite: LAT 251.

Fall, 3 credits

LAT 354 Literature of the Roman Empire

Selected works of Virgil, Horace, Livy, Petronius, Martial, Tacitus, and Juvenal will be translated and examined in their social and historical context. The reading of critical works in English will also be required.

Prerequisite: LAT 251.

Spring, 3 credits

LAT 355 Early Medieval Latin

Translation and discussion of Christian and secular Latin literature from the fourth to the twelfth century. The course will include an intense review of Latin grammar and an outline of the changes in the language which took place during early Medieval times. Selections from the Vulgate and the writings of Jerome, Augustine, and Bede will be read.

Prerequisite: Permission of instructor.

Fall, 3 credits

LAT 356 Late Medieval Latin

Translation and discussion of Latin literature from the twelfth to the sixteenth century. Authors will include: The Archpoet, Thomas Aquinas, Petrarch, Erasmus, and Thomas More.

Prerequisite: Permission of instructor.

Spring, 3 credits

LAT 447 Directed Readings in Latin

Intensive study of a particular author, period, or genre of Latin literature in the original under close faculty supervision.

Prerequisite: Permission of Director.

Fall and spring, 1 to 4 credits

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

Classics

CLS 113 Greek and Latin Literature in Translation

Historical and analytical study of the development of classical Greek and Latin literature. Extensive readings in translation will include works illustrating epic, lyric, drama, history, oration, and literary criticism. This course is identical with CLT 113.

Fall, 3 credits

CLS 120 Classical Archaeology

Introduction to archaeology describing the range and variety of artifacts which can be used as evidence for recovering and reconstructing the civilizations of Greece and Rome, including the history of methods used to infer information from the artifacts. Emphasis will be on particular facts of daily life rather than an overview of high culture.

Spring, 3 credits

CLS 215 Classical Mythology

A study of the Greek myths, classified according to the basic mythic patterns of Death and Rebirth and the Sacred Marriage; the influence of these myths on literature, art, and the history of ideas.

Prerequisite: One course in literature.

Fall and spring, 3 credits

CLS 311 Classical Drama and Its Influence

A study of the Greco-Roman theatre, dramatic festivals, and play production. Readings in English translation of most of the extant tragedies, comedies, and satyr-plays, with consideration of their meaning and influence in European culture.

Fall, 3 credits

CLS 313 The Classical Tradition

A study, through analysis of Greek and Roman literature, of the basic ideas that distinguish the classical world-view from the romantic-modern world-view: reverence for tradition; the idea of high style; the tragic vision; the ethical approach to history and to the arts and sciences.

Fall, 3 credits

CLS 447 Directed Readings in Classics

Intensive study of a particular author, period, or genre of Greek and

Interdisciplinary Program in Comparative Literature

Professors

Harvey Gross, Ph.D. University of Michigan (Prosody and poetic theory; modern intellectual history)

Jan Kott, Critic-in-Residence, Ph.D. Lodz University (Shakespeare; the drama; literary criticism)

Assistant Professor

Carrol Lasker, Ph.D. State University of New York at Stony Brook (African and Third World literatures)

Lecturers

Joan B. Fry, Adjunct, M.A. University of California, Berkeley (Classical literature; archaeology)

Aaron W. Godfrey, M.A. Hunter College (Latin, medieval studies)

Affiliated Faculty

Konrad Bieber (French)

Louise Vasvari Fainberg, Director (Spanish). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1975-76

Donald K. Fry (English)

Richmond Y. Hathorn (Classics)

Roman Karst, Emeritus (German)

Ruth Miller (English)

D. Sandy Petrey (French)

Elias Rivers (Spanish)

Walter Scheps (English)

Hugh J. Silverman (Philosophy). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1976-77

Klaus Schröter (German)

Louis Simpson (English)

Leif Sjöberg (Scandinavian)

Gerhard Vasco, Adjunct (Library)

Herbert Weisinger (English)

Iris Zavala (Spanish)

Eléonore Zimmermann (French)

Teaching Assistants

Estimated Number: 6

The Interdisciplinary Program in Comparative Literature offers undergraduate majors two options: the first, Option A, is a broadly based program for the student interested in comparative studies and general literature; the second, Option B, is intended for the student planning to undertake graduate studies in comparative literature or foreign languages. Both options stress the comparative study of national literatures; both stress the relationship between literature and other disciplines. Individual programs can be adjusted to the special interests of the student through consultation with the program's advisor.

Requirements for the Major in Comparative Literature

The interdisciplinary major in comparative literature leads to the Bachelor of Arts degree. The following courses are required and must be taken for a letter grade.

Option A	Credits
A. Introductory courses: CLT 109 and 110	6
B. Literature in the original language: Two semester courses in the literature of a language other than English	6
C. Period courses: Three courses selected from CLT 113, 202, 210, 211, 212	9
Similar courses in other literature departments may be substituted with permission of the Director of the Program or the Director of Undergraduate Studies.	
D. Theory: CLT 301	3
E. Genre courses: Two courses selected from CLT 331, 332, 333, 334	6
F. Theme courses: One course selected from CLT 351, 352	3
G. Interdisciplinary courses: The following courses: CLT 361, 362, 363	9
Total	42

Option B	Credits
A. Introductory courses: Either CLT 109 or CLT 110	3
B. Literature in the original language:	
1. Two semester courses in the literature of a language other than English	6
2. Two semester courses at any level in an additional language other than English	6
C. Period courses: Three courses selected from CLT 113, 202, 210, 211, 212	9
Similar courses in other literature departments may be substituted with permission of the Director of the Program or Director of Undergraduate Studies.	
D. Theory: CLT 301	3
E. Genre courses: One course selected from CLT 331, 332, 333, 334	3
F. Theme courses: One course selected from CLT 351, 352	3
G. Interdisciplinary courses: Two courses selected from CLT 361, 362, 363	6
H. CLT 487, culminating in a senior thesis	3
Total	42

All upper division courses offered to fulfill major requirements must be passed with a grade of C or better.

Recommended Courses

The major in comparative literature is advised to take the following courses:

A. CLT 120 Masterpieces of Non-Western Literature
 B. EGL 204 Literary Analysis and Argumentation
 C. Courses in linguistics and in the history and development of language, such as LIN 363 Language and Culture; EGL 207 The English Language; GER 202 History of the German Language, etc.

D. Courses in classics, plus the history, arts, and philosophy of the period or languages of the student's major interests.

E. Students may earn credit toward the major through SUNY-sponsored foreign study programs at universities in France, Germany, Italy, Spain, Israel, Mexico, and Puerto Rico.

Honors Program in Comparative Literature

Comparative literature majors who have maintained a grade point average of 3.5 in the major and 3.0 overall through their junior year may attempt the degree in comparative literature with honors.

The honors program requires an additional three credits above the 42 required for the major. These three additional credits will be earned in a special research project pursued in the final semester of the senior year. The project involves the completion of a senior thesis.

Students who are eligible for the honors program must find a full-time or affiliated member of the Comparative Literature faculty to act as thesis advisor. The student, with the approval of the supervising faculty member, must submit a proposal of the project in writing to the program by the last day of classes of the first semester of the senior year. Students who have obtained permission from the program to pursue the project must enroll in CLT 495 while writing the thesis.

The thesis will be evaluated by the thesis advisor, another member of the Comparative Literature faculty, and a third reader from outside the program.

For further information consult the Director of Undergraduate Studies.

Requirements for the Minor in Comparative Literature

The minor in comparative literature, designed especially to interest students majoring in foreign languages, English, and the humanities, provides a comprehensive overview of the theory and techniques of comparative literature, culminating in a practical course in which the student applies comparative techniques to his or her major field of study.

	Credits
A. Introductory course: Either CLT 109 or 110	3
B. Period courses: Two courses selected from CLT 113, 202, 210, 211, 212	6
Similar courses in other literature departments may be substituted with permission of the Director of the Program or the Director of Undergraduate Studies.	
C. Language: One course in the literature of a language other than English	3
D. Theory: CLT 301	3
E. One Genre or Themes course selected from the following: CLT 331, 332, 333, 334 or CLT 351, 352	3
F. Interdisciplinary course: One course selected from CLT 361, 362, 363	3
G. Independent Reading and Research: CLT 487 (To be taken in the final semester)	3
Total	24

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

CLT 109 Literature and Human Life

A survey in translation of major authors and works of Western culture, focused around such problems as the self and moral values. This course is identical with PHI 109.

Fall, 3 credits

CLT 110 Literature and Artistic Creation

A survey in translation of major authors and works of Western culture, focused around the artist's perception of the world and his creative activity. This course is identical with PHI 110.

Spring, 3 credits

CLT 113 Greek and Latin Literature in Translation

Historical and analytical study of the development of Classical Greek and Latin literature. Extensive readings in translation will include works illustrating epic, lyric, drama, history, oration, and literary criticism. This course is identical with CLS 113.

Fall, 3 credits

CLT 120 Masterpieces of Non-Western Literature

A survey of the major themes and forms of non-Western literature, such as Oriental, Indian, African. Topics will vary. May be repeated.

Fall and spring, 3 credits

CLT 202 Literary Period: The Scriptural and Classical Tradition

Readings in scriptural, cultural, and some continental medieval literature essential for the study of later British and American literature. All readings are in English translation. This course is identical with EGL 272.

Spring, 3 credits

CLT 210 Literary Period: Medieval through Renaissance

Historical and analytical study of representative works illustrating medieval epic, romance, and lyric. The beginnings of Humanism through the High Renaissance.

Prerequisite: One course in literature.

Spring, 3 credits

CLT 211 Literary Period: Baroque through Enlightenment

Historical and analytical study of the trends in European literature from the High Renaissance through the seventeenth century and to the Neo-Classical era.

Prerequisite: One course in literature.

Fall, 3 credits

CLT 212 Literary Period: Romantic through Modern

Historical and analytical study of literature from the Romantic revolution through the development of key movements in the nineteenth century (Realism, Naturalism, Symbolism) leading to the culmination of Modernism.

Prerequisite: One course in literature.

Spring, 3 credits

CLT 266 The Modern Novel

A study of major works and developments in the modern novel. This course is identical with EGL 266.

Prerequisite: EGL 101 or passing the English proficiency examination.

Fall or spring, 3 credits

CLT 301 Theory of Literature

An introduction to the different modes of analyzing literature by periods, ideas, traditions, genres, and aesthetic theories. Stress will be placed on twentieth-century developments in critical theory.

Prerequisite: Two courses in comparative literature or the equivalent.

Fall, 3 credits

Genre, Theme, and Interdisciplinary Courses

Detailed information on the content of CLT 331-363 is published by the Comparative Literature Program before registration each semester. Reading lists are also available in advance. These courses may be repeated once only as the subject matter differs.

CLT 331 Literary Genres: Poetry

Analysis of poetic form as illustrated by various kinds of poetry, e.g., epic, lyric. Works selected from different national literatures and literary movements.

Prerequisites: Two courses in literature.

Fall and spring, 3 credits

CLT 332 Literary Genres: Drama

Analysis of dramatic form through readings of major works in tragedy and comedy. Works selected from different national literatures and literary movements.

Prerequisites: Two courses in literature.

Fall and spring, 3 credits

CLT 333 Literary Genres: Novel

Historical and analytical study of the novel form. Works selected from different national literatures and literary movements.

Prerequisites: Two courses in literature.

Fall and spring, 3 credits

CLT 334 Other Literary Genres

Historical and analytical study of such literary kinds as satire, fable, romance, epistle, saga, allegory, etc.

Prerequisites: Two courses in literature.

Spring, 3 credits

CLT 351 Attitudes in Western Literature

Comparative analysis of attitudes in literature toward such subjects as love, marriage, women, death, etc. Works selected from different national literatures and literary movements.

Prerequisites: Two courses in literature.

Fall, 3 credits

CLT 352 Mythical Themes and Archetypal Characters

Comparative analysis of the literary treatment of mythical themes and archetypal characters, e.g., Prometheus, Ulysses, Faust, Don Juan, etc.

Prerequisites: Two courses in literature.

Spring, 3 credits

CLT 361 Literature and Society

An inquiry, interdisciplinary in nature, into the relationship between the events and materials of political and social history and their effect on the form and content of the literature of a period. Also subsumed under the rubric Literature and Society is the topic Literature and Psychology.

Prerequisites: Two courses in literature.

Fall, 3 credits

CLT 362 Literature and Ideas

An inquiry into the primary writings and significant documents in the history of ideas and their effect on

the form and content of the literature of a period.

Prerequisites: Two courses in literature.

Spring, 3 credits

CLT 363 Literature and the Arts

An inquiry into the aesthetic milieu (including the plastic arts, theatre, and music) and its relationship to the form and content of the literature of a period.

Prerequisites: Two courses in literature.

Fall, 3 credits

CLT 475 Undergraduate Teaching Practicum

Each student will receive regularly scheduled supervision from the instructor of the course specified

as the forum for the practicum. Responsibilities will include regular attendance in the specified course and may include conducting practice or discussion sessions that will supplement the regular class meeting, preparing material for practice or discussion, initial correction of homework and tests, and helping students with course problems. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Senior standing and permission of instructor and Program Director.

Fall and spring, 3 credits

CLT 487 Independent Reading and Research

Intensive reading and research on a special topic undertaken with close faculty supervision. May be repeated.

Prerequisites: Permission of instructor and program.

Fall and spring, 3 credits

CLT 495 Comparative Literature Honors Project

A one-semester project for comparative literature majors who are candidates for the degree with honors. Arranged during the first semester of the senior year, to begin the following semester, the project involves independent study and the writing of a senior thesis under close supervision of an appropriate faculty member.

Prerequisites: Permission of instructor and program.

Fall and spring, 3 credits

Department of Earth and Space Sciences

Professors

A. Edward Bence, Ph.D. Massachusetts Institute of Technology (Geochemistry)

Peter W. Bretsky, Ph.D. Yale University (Paleontology)

Robert T. Dodd, Jr., Ph.D. Princeton University (Geochemistry)

Gilbert N. Hanson, Ph.D. University of Minnesota (Geochemistry)

Roger F. Knacke, Ph.D. University of California, Berkeley (Astronomy)

Donald H. Lindsley, Ph.D. Johns Hopkins University (Geochemistry)

Tobias C. Owen, Ph.D. University of Arizona (Planetary science)

James J. Papike, Ph.D. University of Minnesota (Geochemistry)

Charles T. Prewitt, Ph.D. Massachusetts Institute of Technology (Geochemistry)

Oliver A. Schaeffer, Ph.D. Harvard University (Geochemistry)

Michal Simon, Chairman, Ph.D. Cornell University (Astronomy)

Philip M. Solomon, Ph.D. University of Wisconsin (Astronomy)

Associate Professors

John J. Caldwell, Adjunct, Ph.D. University of Wisconsin (Astronomy)

Iver W. Duedall, Joint with Marine Sciences, Ph.D. Dalhousie University (Chemical oceanography)

Miriam A. Forman, Adjunct, Ph.D. State University of New York at Stony Brook (Astronomy)

Johannes Hardorp, Ph.D. University of Hamburg (Astronomy)

Robert C. Liebermann, Ph.D. Columbia University (Geophysics)

H. Jay Melosh, Ph.D. California Institute of Technology (Geophysics)

William J. Meyers, Ph.D. Rice University (Sedimentology)

Deane M. Peterson, Ph.D. Harvard University (Astronomy)

Donald J. Weidner, Ph.D. Massachusetts Institute of Technology (Geophysics)

Amos Yahil, Ph.D. California Institute of Technology (Astronomy)

Assistant Professors

Henry J. Bokuniewicz, Joint with Marine Sciences, Ph.D. Yale University (Marine geophysics)

Giovanna Righini-Cohen, Adjunct, Ph.D. State University of New York at Stony Brook (Astronomy)

James W. Granath, Ph.D. Monash University (Structural geology)

Richard J. Reeder, Ph.D. University of California, Berkeley (Geochemistry; sedimentology)

Joseph P. Smoot, Ph.D. Johns Hopkins University (Sedimentology)

Curator

Steven C. Eglebright, M.S. State University of New York at Stony Brook (Geology)

Teaching Assistants

Estimated Number: 65

The Department of Earth and Space Sciences offers undergraduate programs leading either to a Bachelor of Arts or to a Bachelor of Science degree. The B.A. program is flexible and is designed to meet the needs of students who desire a broad and diverse liberal arts and sciences background. The B.S. program in Earth and Space Sciences aims at giving the student maximum preparation to carry out graduate work in the fields of astronomy/astrophysics, the earth sciences, geological oceanography, or the atmospheric sciences. The various programs are designed to allow students to choose careers in teaching, law, or research in private industry and government.

Minimum course requirements for both the B.A. and B.S. programs are listed below. Upon declaring the ESS major, the student will be assigned a faculty advisor by the Director of

Undergraduate Studies and each will assist in the selection of the correct course sequence leading to the desired ESS degree. Students should consult frequently with their faculty advisors regarding their progress and regarding appropriate ESS and other science courses. The position of the scientist in society is other responsible and complex, and the student is cautioned to pay careful attention to general education in the arts, humanities, and social sciences.

Physical Facilities

The following facilities may be used by undergraduates either directly with course work or in senior research projects:

Laboratories

Physical Geology—Rock collections, maps
 Historical Geology—Fossil and rock collections
 Mineralogy, crystal models, and suites of mineral samples
 Paleontology—Fossil collections
 Optical Mineralogy—Polarizing microscopes
 Petrology, igneous, and metamorphic rock suites; thin sections
 Structural geology—Rock collections
 Sedimentology—Rock collections
 Crystallography—X-ray generators, diffractometers
 Spectroscopy—visible and IR spectrometers, gas cells

General Use

Computer terminals
 Microcomputers
 Twelve-inch reflecting telescope
 Museum of Long Island Natural Sciences

Requirements for the B.S. Degree

All courses taken to meet major requirements must be taken for a letter grade. In addition, a 2.0 G.P.A. in all upper division courses used to meet the requirements must be achieved.

I. Geology Concentration

A. The following departmental courses are required for the B.S.:

	<i>Credits</i>
ESS 106 The Ages Before Man	3
ESS 116 Historical Geology Laboratory	1
ESS 122 Physical Geology	4
ESS 201 Mineralogy	4
ESS 303 Stratigraphy	4
ESS 304 Field Methods in Geology or ESS 305 Field Geology	3
ESS 306 Petrology	3
ESS 309 Structural Geology	4
ESS 310 Introduction to Geophysics	3

B. In addition to the courses listed above, at least six credits are required from among ESS 203, 204, 246, 301, 302, 307, 323, 325, 326, 331, 348, 351, 352, 353, 363, 364, 487, any 500-level ESS course or from any 300-level or higher BIO, CHE, MSM, or PHY course from a current list of approved related sciences courses available in the departmental office. These must be in addition to the related sciences courses required under C and D.

6

C. In the related sciences, the following courses are required for the B.S.:

MSM 131, 132, or 141, 142 (MSM 125, 126, 127, 9 credits, may be substituted)	8
CHE 131, 132 or 141, 142 (CHE 111, 112, 6 credits, may be substituted for CHE 131)	8
PHY 101, 102 or 103, 104	8

D. In addition to the courses listed under C above, one of the following sets of courses must be successfully completed:

1. MSM 221 or 231 or 241 and MSM 306 or 307 (6)
2. CHE 301 and 302 (6)
3. Two of the following BIO courses: BIO 220, 343, 344, 350, or 354 (6-8)

(6-8)

Total 65-67

Geological Oceanography

Students interested in geological oceanography should fulfill item 3 of section D, above. In the senior year qualified students may enroll in approved graduate courses at the Marine Sciences Research Center and subsequently may be considered for admittance to the accelerated master's program at the MSRC. Interested students must consult with the Earth and Space Sciences Director of Undergraduate Studies regarding the sequence of courses.

II. Astronomy/Planetary Sciences Concentration

A. The following departmental courses are required for the B.S.:

	<i>Credits</i>
ESS 102 The Earth	3
ESS 203 Astronomy	4
ESS 341, 342 Astrophysics I, II	6
At least 3 credits from additional ESS courses numbered 200 or higher	3

B. Required physics courses:

PHY 101, 102	8
PHY 251	4
PHY 252	4
At least 12 credits from approved PHY courses numbered 300 or higher	12

C. Required mathematics courses:

MSM 131, 132 or 141, 142 (MSM 125, 126, 127, 9 credits, may be substituted)	8
MSM 231 or 241	3
MSM 306 or 307	3

Total 58

III. Atmospheric Sciences Concentration

A. The following departmental courses are required for the B.S.:

	<i>Credits</i>
ESS 104 Oceanography or ESS 102 The Earth	3
ESS 203 Astronomy	4
ESS 205 Introduction to Atmospheric Sciences	3
ESS 343 Planetary Atmospheres	3

B. Required engineering courses:

ESC 345 Theoretical Meteorology	3
ESC 346 Dynamic Meteorology	3
ESC 348 Elements of Atmospheric Sciences	3
ESC 397 Air Pollution and Its Control	3

C. In the related sciences the following courses are required:

MSM 131, 132 or 141, 142 (MSM 125, 126, 127, 9 credits, may be substituted)	8
MSM 221	3
MSM 306 or 307	3
CHE 131, 132 or 141, 142 (CHE 111, 112, 6 credits, may be substituted for CHE 131)	8
PHY 101, 102	8
PHY 251	4
PHY 306	3

Total 64

Requirements for the B.A. Degree

All courses taken to meet major requirements must be taken for a letter grade. In addition, a 2.0 G.P.A. in all upper division courses used to meet the requirements must be achieved.

A. Required courses	<i>Credits</i>
ESS 106 The Ages Before Man	3
ESS 116 Historical Geology Laboratory	1
ESS 122 Physical Geology	4
B. The following courses may also be taken for department credit:	
ESS 101 Introduction to Astronomy	4
ESS 104 Oceanography	3
C. At least five courses are required from the following (seven courses if category B above is not elected): 201, 203, 204, 246, 248, any upper division course	
	15-20
D. Minimum of one year's study in each of mathematics, chemistry, and physics and either one additional year of study in any of those fields or in biology or engineering.	
	30
<i>Total</i>	60

Preparation for Teachers of Earth Science in Secondary Schools

Curricula leading to provisional certification in earth sciences for secondary school teachers are available from the Department of Earth and Space Sciences.

Honors Program in Earth and Space Sciences

Students majoring in earth and space sciences, following either the B.S. or B.A. degree program, and who have maintained a cumulative grade point average of 3.5 in natural sciences and mathematics through the junior year, may become candidates for departmental honors in earth sciences or astronomy upon application to the department. B.S. candidates for honors in the *earth sciences* must include in their program ESS 301, 307, and 363. B.A. candidates for honors in the *earth sciences* must include ESS 201, 301, 303, 306, 307, 309, 310, and 363. Candidates for honors in *astronomy* must include a sequence of mathematics, physics, and earth and space sciences courses approved by the student's advisor following petition by the student.

In addition to the academic program, the student must complete an honors thesis, which will be evaluated by a committee composed of the student's advisor and two other science faculty members including one from outside of the department, and must maintain a minimum 3.5 grade point average in all course work in natural sciences and mathematics.

Geology Minor

For students majoring in other areas who are interested in obtaining a fundamental understanding of the earth sciences, a minor concentration in geology is available. The minor is aimed at acquainting students with earth materials, the origin and evolution of life on the earth, and physical processes that have shaped the surface of the earth through time. This program, comprised of courses offered yearly by the earth sciences faculty, will be administered by the Director of Undergraduate Studies, who will also serve as student advisor. Minimum requirements for the minor in geology shall be satisfactory completion of the following courses (24 credits):

1. ESS 106 The Ages Before Man
2. ESS 122 Physical Geology
3. ESS 201 Mineralogy
4. ESS 302 Paleontology
5. ESS 306 Petrology
6. Six (6) additional credits from among ESS courses numbered 300 or higher.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

Introductory Courses

ESS 101 through 107, while of interest and value to science majors, are primarily designed for the general University student who is not majoring in a physical science, but who elects the course either because of personal interest or to fulfill the College distribution requirement in the natural sciences.

ESS 101 Introduction to Astronomy

Description of planets, stars, galaxies, black holes, pulsars, quasars, supernovae, white dwarfs. Man's place in the cosmos. Cosmological and cosmogonical theories. ESS 101 and ESS 203 may not both be taken for credit.
Fall and Spring, 4 credits

ESS 102 The Earth

A summary of the processes that have shaped the earth and the other terrestrial planets as inferred from study of their surface materials, structural features, and interiors. Topics considered include: (1) the earth in the solar system; (2) earth materials and rock-forming processes; (3) surface processes and their bearing on human activities; (4) crustal deformation and global tectonics; (5) the earth's interior; and (6) the geological features, compositions, and evolution of the terrestrial planets.
Fall, 3 credits

ESS 104 Oceanography

An examination of the role the oceans play in making the surface of the earth suitable for the evolution and preservation of life. The evolution of the ocean basins and sea water are discussed. Topics cut across the usual fields of specialization because the economy of nature involves such diverse matters as the biochemistry of microscopic marine plants, inorganic weathering of rocks, and physical processes in the oceans and the atmosphere. The complex life support system that has made the earth a manned satellite of the sun is studied.
Fall, 3 credits

ESS 105 Introduction to the Solar System

A general survey of present knowledge of the planets, satellites, interplanetary medium, comets, asteroids, and outer regions of the sun. Begins with a

historical introduction and discussion of the methods of science. Emphasizes current NASA deep space exploration missions and other modern astronomical methods. May not be taken for credit following ESS 203 or 204.
Spring, 3 credits

ESS 106 The Ages Before Man

The earth is viewed as a dynamic system undergoing constant but subtle change. The history of the earth from its formation to the present is explored through study of techniques for determining geologic age and for extracting historical information from rocks; the origin of life; evolution of major animal and plant groups; the changing relationships between land and sea through time; and past changes in distribution of the continents. The impact of man on this dynamic system and speculations about the future are included.
Prerequisite: ESS 102 or 122.
Spring, 3 credits

ESS 107 Natural Hazards

The phenomena of earthquakes, tidal waves, and volcanoes will be studied to determine their cause, destructive potential, and the degree to which they can be controlled or predicted. The public response to earthquake hazards in terms of building construction and site location as well as short-term response to predictions of imminent earthquakes will be evaluated.
Fall, 3 credits

ESS 112 Physical Geology Laboratory

Rock and mineral identification, introduction to topographic and geologic maps.
Prerequisite: ESS 102.
Fall, 1 credit

ESS 116 Historical Geology Laboratory

An introduction to fossils and to the interpretation of geological history through use of geological maps and cross-sections.
Corequisite: ESS 106.
Spring, 1 credit

ESS 122 Physical Geology

The nature of the earth and of the processes that shape it: The earth's external and internal energy; minerals and rocks; external processes and the evolution of the landscape; internal processes and the structure of the earth; the earth compared with other planets; sources of materials and energy. Laboratories include study of minerals and rocks; landforms as shown on topographical maps and aerial photographs; geologic structures inferred from maps and block diagrams; problem sets. Two lectures and two three-hour laboratories per week. ESS 102/112 and ESS 122 may not both be taken for credit.

Prerequisite: High school chemistry is assumed.
Fall, 4 credits

Intermediate Courses

The following courses are designed for majors in earth and space sciences or for other majors who choose to elect a course in this area. In general the courses require preparation in biology, chemistry, physics, or mathematics at the university level.

ESS 201 Mineralogy

An introduction to the crystal chemistry, chemistry, phase equilibria, and paragenesis of the rock-forming minerals. Laboratories are devoted to elementary crystallography and mineral identification. Two one-hour lectures, one one-hour recitation, and two three-hour laboratories per week. *Prerequisites:* ESS 122 and CHE 132 or 142. *Fall, 4 credits*

ESS 203 Astronomy

A survey of the physical nature of the universe for the student with some background in physics and mathematics. May be taken instead of ESS 101 by students with better science preparation, but ESS 101 and ESS 203 may not both be taken for credit. An optional observing session will be held one evening per week. *Prerequisite:* PHY 101 or 103 or 131. *Spring, 4 credits*

ESS 204 The Solar System (Formerly ESS 247)

The chemistry and physics of the origin, evolution, and present state of the sun, planets, moons, asteroids, meteorites, and comets. Among topics to be discussed are: the condensation and accretion of planets and satellites, planetary surfaces and atmospheres, meteorites and their precursors, and the chemical structure of the solar system. *Prerequisite:* PHY 101 or 103 or 131. *Fall, 3 credits*

ESS 205 Introduction to Atmospheric Sciences

The nature and causes of atmospheric phenomena. Basic physical and chemical processes and energetics. Atmospheric thermodynamics, hydrostatics, dynamics, kinematics. Atmospheric wind systems and pressure patterns, clouds and precipitation, severe storms. This course is identical with ESC 205. *Prerequisites:* PHY 101 and MSM 126 or 131 or 141. *Spring, 3 credits*

ESS 246 Cosmology

The fascinating advances that have been made in recent years towards an understanding of the early phases of the universe will be discussed; how it started out dominated by light (some of which is still seen) and became the matter-dominated universe of today. Current observations of

galaxies and their meaning for the future evolution of the universe will be described. Designed for non-science majors with some background in astronomy. *Prerequisite:* ESS 101 or 105. *Fall, 3 credits*

ESS 248 The Search for Life in the Universe

A scientific approach to the question: Do intelligent civilizations exist elsewhere in the universe? A review of astronomical setting; the origin of life on earth; possibilities for other types of life in the solar system; methods for communicating with distant advanced civilizations in the galaxy; analysis of UFO reports and hypotheses of "Ancient Astronauts." *Prerequisites:* Two courses in natural science. *Fall, 3 credits*

Advanced Courses

The following courses are designed primarily for science majors in their junior and senior years.

ESS 300 A History of Geology

The development of theories about earth processes from the sixteenth century to the mid-nineteenth century. Hutton and Lyell's notions of uniformitarianism will be discussed against the prevailing concepts of catastrophic changes in the configuration of the earth. *Prerequisite:* One year of geology or history. *Fall, alternate years, 3 credits*

ESS 301 Optical Mineralogy

Development of methods for the identification of rock-forming minerals using the petrographic microscope. Two one-hour lectures and two three-hour laboratory sessions per week. *Prerequisite:* ESS 201. *Spring, 4 credits*

ESS 302 Paleontology

Principles and methods in the study of the history of life. The origin of life, premetazoan evolution, principles of evolution illustrated by extinct biotas, analysis of diversity and community structure, morphology and autecology of extinct species, paleobiogeography and dating are considered. May not be taken after ESS 211. Three hours of lecture and one three-hour laboratory session per week. *Prerequisite:* ESS 106. *Fall, alternate years, 4 credits*

ESS 303 Stratigraphy

The history and practice of defining units of layered rocks and interpreting their spatial relationships. Topics include the basis for the geologic time scale, lithostratigraphic versus chronostratigraphic units, biostratigraphy, magnetostratigraphy, facies patterns and Walther's Law, subsurface stratigraphy, and the application of stratigraphy to geological problems. Laboratory will emphasize practical techniques in stratigraphy. *Prerequisites:* ESS 201 and 302. *Spring, 4 credits*

ESS 304 Field Methods in Geology

Elementary mapping techniques, including pace-and-compass, alidade-and-plane table, and aerial photo methods. In addition, theoretical aspects of sampling and surveying will be discussed. During the second half of the semester, weekend field trips will develop observational skills and specialized techniques in areas of primarily sedimentary, igneous, and metamorphic terranes. The proficiency of the student will be demonstrated by an individual mapping project and report, usually on a single outcrop scale. *Prerequisite:* ESS 309. *Spring, 3 credits*

ESS 305 Field Geology

A field course which may be taken at any one of several approved university field stations. *1 to 6 credits*

ESS 306 Petrology

Principles of the description, classification, and interpretation of igneous, metamorphic, and sedimentary rocks. The student will be introduced to the use of field and laboratory data for interpreting the origin and evolution of various rock types. Two one-hour lectures and one three-hour petrography laboratory session per week. *Prerequisite:* ESS 201. *Spring, 3 credits*

ESS 307 Petrology Laboratory

Study of igneous and metamorphic rocks in thin-section, with emphasis on the application of mineral and textural relations to their genesis. *Prerequisite:* ESS 301. Corequisite: ESS 306. *Spring, 1 credit*

ESS 309 Structural Geology

Principles of structural geology including classification, criteria for recognition, and mechanics of formation of crustal structural features. Elementary concepts of rock mechanics. Discussion of important tectonic features of the continents and oceans. Accompanying laboratory to cover map interpretation and algebraic and graphical solutions of structural problems. Three hours of lecture and one three-hour laboratory per

week. A two-day weekend field trip will be made to visit classical structural localities in the east. *Prerequisite:* ESS 122. *Fall, 4 credits*

ESS 310 Introduction to Geophysics

The study of the techniques and results of geophysics. The course will cover seismology, gravity, magnetics, and heat flow with applications to the structure of the earth's crust and interior, earthquakes, and dynamic processes. *Prerequisites:* MSM 127 or 132 or 142, ESS 122 or 112. *Fall, 3 credits*

ESS 311 Geomorphology

The variety of physical processes that shape the earth's landscape including mass wasting (creep and landslides), fluvial, volcanic, glacial, and eolian processes from a quantitative point of view, emphasizing the relation between process and landform. Examples of different processes are chosen from a variety of locations, including the other terrestrial planets and satellites. Three field trips. *Prerequisites:* ESS 102/112 or 122, MSM 132. *Spring, 3 credits*

ESS 323 Thermodynamics for Geologists

Introduction to chemical thermodynamics in a geologic context: multicomponent phase equilibria in natural systems; ideal and non-ideal behavior in solid, aqueous and gas phases; mineral solubilities; brief introduction to kinetics with examples from geologic systems. *Prerequisites:* CHE 132 or 142, MSM 127 or 132 or 142. *Fall, 3 credits*

ESS 325 Marine Geochemistry

The chemistry of oceans will be considered. The various mechanisms for regular ocean chemistry and the influence of ocean circulation on ocean chemistry will be discussed. The chemistry of the sea floor, including the ocean sediments, will be considered. *Prerequisites:* MSM 131 and CHE 132 or 142. *Fall, 3 credits*

ESS 326 Chemical Sedimentology

Study of chemical processes in sediments, including changes in stable isotope ratios; the formation and alteration of clay minerals; the microbiological diagenesis of carbon, nitrogen, and sulfur compounds; and the diagenesis of iron, including the origin of the Precambrian iron formations. *Prerequisites:* MSM 131 and CHE 132 or 142. *Spring, 3 credits*

ESS 331 X-Ray Diffraction Techniques

Introduction to the use of x-ray diffraction methods for the identification and characterization of minerals and mineral-like materials. Topics include Debye-Scherrer photography, powder diffractometry, indexing of powder patterns, quantitative phase determination, single-crystal diffraction, and elements of symmetry theory. Laboratory exercises and individual projects will expose students to a variety of mineralogical and environmental applications. Two hours of lecture and one three-hour laboratory per week. *Prerequisite:* ESS 201. *Spring, 3 credits*

ESS 339 Materials and Methods in the Teaching of Earth Sciences

The course emphasizes techniques for the preparation of rocks, fossils, and minerals, especially those from field trips made in the New York, Connecticut, and New Jersey area. Field collection, identification, laboratory preparation, and classroom display and usage are emphasized. Instruction in the use of classroom equipment and general laboratory equipment is also covered. One three-hour laboratory-lecture per week and four field trips per semester.

Prerequisites: ESS 201, 302, and permission of instructor. *Corequisite:* ESS 340. *Spring, 3 credits*

ESS 340 Observational Methods and Curriculum Developments in Earth Science Education

Emphasis placed on recent secondary school curricula and development of technical aids (i.e., displays, audio-visual materials for the classroom) as they relate to instruction in earth sciences. Two one-hour seminars a week and three to six all-day observation sessions in elementary, junior, and senior high school classrooms.

Prerequisites: ESS 201, 302, and permission of instructor. *Corequisite:* ESS 339. *Spring, 3 credits*

ESS 341, 342 Astrophysics I, II

An introduction to, and development of, a firm physical understanding of the observed properties of the stars, Galaxy, and galaxies. Topics will include the structure of the interior and atmosphere of stars; evolution of stars; dynamics of multiple star systems; physics of the interstellar medium; the kinematics, dynamics, and evolution of galaxies; the cosmology and the synthesis of the chemical elements.

Prerequisites: ESS 203 and PHY 306. *Fall and spring, 3 credits each semester*

ESS 343 Planetary Atmospheres

An introduction to the atmospheres of planets and satellites in our solar system based on a review of observational data and theoretical models, stressing current controversies and the latest information from spacecraft. Hypotheses for the origin and evolution of atmospheres will be studied, including the role of our own atmosphere in the origin and nurturing of life on earth.

Prerequisites: PHY 251, 252; MSM 127 or 132 or 142; PHY 306 recommended. *Spring, 3 credits*

ESS 345 Undergraduate Research in Astronomy

Student participation in faculty-directed research projects in the area of theoretical and observational astronomy. Topics may include abundance analysis in stars, instrument design and construction, ionization balance in the interstellar medium.

Corequisite: ESS 342. *Spring, 1 credit*

ESS 348 Introduction to Cosmochemistry

The distribution and formation of chemical elements in different parts of the galaxy, especially as related to the element and isotope abundance in the solar system. Related topics include: cosmo-chronology as evidenced by isotopic variation in meteorites; and the solar wind and cosmic ray interaction in the solar system.

Prerequisite: CHE 132. *Spring, 3 credits*

ESS 351 Solid Earth Geophysics

An advanced course in the application of potential theory to problems in geophysics including geodesy and gravity, magnetism and heat flow.

Prerequisite: MSM 306 or 307. *Fall, 3 credits*

ESS 352 Seismology

An advanced course in the applications of wave theory to problems in geophysics including elastic wave propagation, earthquake mechanics, and constitution of the earth's interior.

Prerequisite: MSM 306 or 307. *Spring, 3 credits*

ESS 353 Marine Ecology

A survey of biotic responses to ecological challenges in different marine realms. Controls of diversity and trophic structure in the marine ecosystem, historical aspects of marine realms, productivity in the oceans, plankton, soft-bottom communities, intertidal habitats, coral reefs, deep

sea environments, and effects of pollution in the ocean will be discussed. This course is identical with BIO 353.

Prerequisite: BIO 343. *Spring, 3 credits*

ESS 363 Sedimentation and Sedimentary Rocks

A study of sedimentary processes and products. Marine environments (platform, continental shelf, deep ocean), terrestrial environments (fluvial), and transitional environments (deltaic) will be examined in terms of sediment production and provenance, transport, deposition, and structures produced. Identification and understanding of sediment grain properties and of sedimentary structures will be emphasized. Field trips will examine recent and ancient depositional settings. Three hours of lecture and one three-hour laboratory per week.

Prerequisite: ESS 301. *Fall, 4 credits*

ESS 364 Marine Geology

Intensive study of the morphology, origin, and evolution of deep ocean basins, ocean islands, ocean ridges, and island arc systems and the relation of these features to modern concepts of plate tectonics. The course includes the origin of basalts and a survey of sediments and sediment transport in marine environments. Three hours of lecture per week.

Prerequisites: ESS 102 and 104. *Fall, 3 credits*

ESS 447 Senior Tutorial in Earth and Space Sciences

Seminar courses in advanced topics may be arranged prior to the beginning of the semester. Topics to be discussed will be announced by the department, or students may petition for a particular topic. Weekly conferences will be held with a faculty member. May be repeated once.

Prerequisite: Permission of instructor and chairman. *Fall and spring, 1 to 3 credits*

ESS 450 Supervised Secondary School Earth Science Student Teaching

Prospective earth science teachers receive supervised practice in teaching secondary school classes by arrangement with selected Long Island junior and senior high schools. Frequent consultation with the supervising teacher and seminar meetings with a department faculty member help the student to evaluate and interpret the student teaching experience. Applications must be filed in the semester preceding that in which the student plans to

teach. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: ESS 339, 340, and permission of instructor. *Corequisite:* ESS 454. *Fall, 12 credits*

ESS 454 Earth Science Student Teaching Seminar

Seminar on problems and issues of teaching at the secondary school level. Analysis of actual problems and issues encountered by the student in his or her teaching experience. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: ESS 339, 340, and permission of instructor. *Corequisite:* ESS 450. *Fall and spring, 3 credits each semester*

ESS 475 Teaching Practicum in Earth and Space Sciences

Supervision of laboratory or recitation sections of lower division courses under the close guidance of the course instructor. Includes regular meetings with instructor for purposes of planning and evaluation; supplementary reading in preparation for laboratory or recitation sessions; and opportunities to make oral presentations, provide individual or innovative instruction, and reinforce previously acquired knowledge. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Senior standing, previous preparation in subject field, interview, and permission of instructor.

Fall and spring, 3 credits

ESS 487 Senior Research

With the approval and supervision of a faculty member, a major in the department may conduct research for academic credit. A research proposal must be prepared by the student and submitted to the department chairman for approval before the beginning of the semester in which credit is to be given. A written report must be submitted before the end of the semester. May be repeated once.

Prerequisite: Permission of the chairman. *Fall and spring, 1 to 3 credits*

Graduate Courses

Qualified seniors may take 500-level courses with the permission of the department chairman. See current *Graduate Bulletin*.

Department of Economics

Professors

Edward Ames, Ph.D. Harvard University (Economic theory; comparative systems; economic history)

Richard Dusansky, Ph.D. Brown University (Public sector economics; economics of health; microeconomic theory)

John Hause, Ph.D. University of Chicago (Theory of measurement and econometric estimation in human capital, industrial organization, and applied microeconomics)

Estelle James, Ph.D. Massachusetts Institute of Technology (Welfare economics; human resources)

Thomas Muench, Chairman, Ph.D. Purdue University (Mathematical economics; econometrics; urban economics)

Egon Neuberger, Director of Graduate Programs, Ph.D. Harvard University (Comparative systems; Soviet and East European economics)

Robert Willis, Ph.D. University of Washington (Labor economics; economic demography, microeconomic theory)

Associate Professors

Bryce Hool, Ph.D. University of California, Berkeley (Macroeconomics; general equilibrium theory; monetary theory)

Michael Hurd, Ph.D. University of California, Berkeley (Econometrics; labor; macroeconomics)

Marvin Kristein, Ph.D. New School for Social Research (Managerial economics; economics of health)

Tapan Mitra, Director of Ph.D. Program, Ph.D. University of Rochester (Growth theory; economics of exhaustible resources)

Warren Sanderson, Ph.D. Stanford University (Economic history; economic demography)

Charles Staley, Ph.D. Massachusetts Institute of Technology (History of economic thought; international trade)

Mark Walker, Ph.D. Purdue University (Mathematical economics; economics of social choice)

Dieter Zschock, Director of M.A. Program, Ph.D. Tufts University (Development economics; labor economics)

Michael Zweig, Ph.D. University of Michigan (Political economy; labor economics)

Assistant Professors

Young-Goo Lee, Ph.D. University of Minnesota (Macroeconomic theory; monetary economics)

Mingche Li, Ph.D. Harvard University (Urban economics; econometrics; housing policy)

Luis Locay, Ph.D. University of Chicago (Microeconomics; empirical microeconomics)

John Winn, Ph.D. University of Texas at Austin (Econometrics)

Myrna Wooders, Ph.D. University of Minnesota (Mathematical economics; social choice theory; urban economics)

Lecturer

William Dawes, Director of Undergraduate Studies, Ph.D. Purdue University (Econometrics; economic history). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1973-74

Teaching Assistants

Estimated Number: 40

The undergraduate major in economics provides training for graduate studies in economics, business, and law. Students may also use it to prepare for entry-level positions in research and policy-making organizations such as the government, banks, and consulting firms.

Economics is a quantitative social science, and the curriculum reflects that. Although major requirements include only a semester of calculus, students planning to use their background in economics for graduate studies or in their careers are strongly urged to take additional courses in mathematics and computer science.

The areas of study in the department fall into three broad classifications. The first of these, *microeconomics*, deals with the theoretical and empirical study of the behavior and interrelationships of individual economic agents, such as firms and individuals, and their interaction through markets. Next, *macroeconomics* examines the large sectors of the economy such as government, business, money and banking, and international trade. It also covers such topics as unemployment, inflation, and economic growth. Finally, *econometrics* uses statistics to estimate, test, and predict patterns of behavior of the various units and relationships that make up the economy.

Requirements for the Major

The major in economics leads to the Bachelor of Arts degree. The following courses are required.

- A. A minimum of 36 credits in economics, consisting of not more than seven hours of 100-level courses and including:
 1. An introductory course in economics (ECO 101, 103, or 105)
 2. ECO 251 Intermediate Microeconomic Theory
 3. ECO 252 Intermediate Macroeconomic Theory
 4. A minimum of 18 credit hours of ECO courses numbered 310 and above
- B. One semester of calculus (MSM 125, 131, or 141)

Note: All courses used to satisfy the major requirements (including calculus) must be taken for a letter grade. The G.P.A. for upper division courses counted towards the major must be at least 2.0. No transfer credit lower than C may be applied towards the upper division major requirement.

Honors Program in Economics

The honors program in economics is designed to develop the student's research and writing skills. It is composed of three courses, usually beginning in the second semester of the student's junior year, although some students may enter the program as first-semester seniors. To be admitted to the honors program, students must have completed ECO 251, 252 and one ECO course numbered 325 or above, and must have maintained a grade point average of at least 3.4 in economics and at

least 3.2 overall. Interested students should apply to the Director of Undergraduate Studies to obtain the permission of the department.

The first course, ECO 395, involves much writing and preparation of small research projects. By the end of the semester the student should already have a senior thesis topic well in mind and have a faculty supervisor for the thesis. The thesis itself will be written usually in the first half of the senior year, in ECO 495. Each student doing a thesis will also enroll in ECO 496 Senior Seminar, where work will be presented and critically evaluated by the students in the program.

The thesis will be evaluated by the student's faculty supervisor, the faculty member in charge of the senior seminar, and a faculty member from another department. When the honors project has been carried out with distinction, conferral of honors will be contingent upon the student's achieving a 3.5 grade point average in all economics courses taken in the senior year.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

ECO 101 Introduction to Economic Analysis

An introduction to economic analysis. Microeconomics (the study of individual, firm, industry, and market behavior) and macroeconomics (the study of the determination of national income, employment, and inflation). May not be taken for credit in addition to ECO 103 or 105.
Fall and spring, 4 credits

ECO 103 Economic Problems of the Environment

An analysis of the environmental problems associated with economic growth and development such as pollution and conservation and the economic means of affecting these problems. May not be taken for credit in addition to ECO 101 or 105.
Spring, 4 credits

ECO 105 Introduction to Political Economy

The basic elements of the capitalist system of production and distribution; a historical overview of the development of capitalism from feudalism; Marxism as well as orthodox approaches to microeconomic analysis (markets and price determination) and macroeconomics (inflation, unemployment, economic crisis). Topics also include class structure, exploitation, and the role of the state in capitalist society. May not be taken for credit in addition to ECO 101 or 103.
Fall, 4 credits

ECO 114 Financial Accounting

Introduction to some formal accounting statements commonly involved in economic analysis. Topics include business balance sheet and profit and loss statements and flow of funds accounting.
Fall and spring, 3 credits

ECO 202 Urban and Environmental Issues

Current problems in urban and environmental economics. The issues to be discussed will include social control of industry, problems of the cities, mass transit, environmental and urban decay, and pollution. May not be taken for credit after ECO 251 or 252.
Prerequisite: ECO 101 or 103 or 105.
Fall, 3 credits

ECO 203 History of Economic Thought

A study of the evolution of economic thought with reference to the basic problems of the discipline: factor allocation, distribution, growth, etc. The major schools are emphasized in the survey.
Prerequisite: ECO 101 or 103 or 105.
Fall, 3 credits

ECO 214 Managerial Accounting

Concepts, theories, and use of the accounting system as a source of information in the planning, control, and evaluation of the enterprise by the manager. Cash and funds flow analysis, budget development, and cost control mechanisms.
Prerequisite: ECO 114.
Fall and spring, 3 credits

ECO 222 Economics of Socialism

Analysis of the various approaches to the problems of translating Marxian socialist principles into functional economic institutions. Theoretical issues of socialism will be stressed, but will be illustrated with examples taken from the experience of various communist countries.
Prerequisite: ECO 101 or 103 or 105.
Spring, 3 credits

ECO 225 Economic Development

An examination of problems and prospects facing developing countries in the transition from traditional, predominantly rural economic systems to modern, largely urban-oriented economies. The-

ories of economic growth and development will be presented in the light of the actual experience of developing countries.

Prerequisite: ECO 101 or 103 or 105.
Fall, 3 credits

ECO 237 Economics of Industrial and Labor Relations

Evolution of labor unions and collective bargaining, with an emphasis on current labor problems, union and non-union; changing composition of the labor force; wage differentials; the theory of wage determination; labor legislation; and unemployment. May not be taken for credit after ECO 251 or 252.

Prerequisite: ECO 101 or 103 or 105.
Fall, 3 credits

ECO 243 Comparative Economic Systems

A study of different types of economic systems, comparing structures, the ways basic economic problems of factor allocation and distribution are dealt with, and the result achieved in output and growth.

Prerequisite: ECO 101 or 103 or 105.
Fall, 3 credits

ECO 251 Intermediate Microeconomic Theory

Analytical study of the behavior of fundamental economic units (consumer and the firm) and its implications for the production and distribution of goods and services. Emphasis on the use of economic theory to provide explanations of observed phenomena, including the analytical derivation of empirically verifiable propositions.

Prerequisites: One semester of calculus and either (a) ECO 101 or (b) ECO 103 or 105 and one other ECO course except ECO 114.
Fall and spring, 4 credits

ECO 252 Intermediate Macroeconomic Theory

The theory of national income determination, employment distribution, price levels, inflation, and growth. Keynesian and Classical models of the different implications of monetary and fiscal policy.

Prerequisites: One semester of calculus and either (a) ECO 101 or (b) ECO 103 or 105 and one other ECO course except ECO 114.
Fall and spring, 4 credits

ECO 301 Principles of Economics

Basic introductory microeconomic and macroeconomic analysis for upper division students not majoring in economics who want to find out how the economist looks at the world. May be used as a preparation for higher level economic courses in place of ECO 101. May not be taken after any other economics course except ECO 114.

Prerequisite: A major other than economics.
Spring, 3 credits

ECO 317 Marxist Political Economy

A Marxian analysis of capitalism, including some of the writings of Marx, Lenin, and Mao Tse-tung. The method of dialectical, historical materialism is applied to the historical development of capitalism, the operation of modern advanced monopoly capitalism, and such phenomena as economic crisis, war, and the capitalist conditions that give rise to socialism.

Prerequisites: ECO 101 or 103 or 105.
Spring, 3 credits

ECO 318 Economics of Manpower Planning

Analysis of changing manpower requirements and labor force composition in the United States. Evaluation of manpower legislation and programs at national, regional, and local levels, and of educational and other institutional responses to employment problems.

Prerequisite: ECO 237.
Spring, 3 credits

ECO 320 Mathematical Statistics

An introduction to statistical methods and their properties which are useful in analysis of economic data. Topics include: elements of probability theory and its empirical application, univariate and multivariate distributions, sampling distributions, limiting distributions, point and interval estimation. Regular problem sets and occasional projects are required. Students may not receive credit for this course and MSA 310.

Prerequisites: ECO 101 or 103 or 105 and one semester of calculus.
Fall, 4 credits

ECO 321 Econometrics

The application of mathematical and statistical methods to economic theory. Topics include: concept of an explanatory economic model; multiple regression hypothesis testing; simultaneous equation models; and estimating techniques. Emphasis is placed on the application of econometric studies.

Prerequisite: ECO 320 or MSA 310.
Spring, 4 credits

ECO 325 International Economics

Economic theory of international trade, protection, commercial policy, customs unions, capital

movements, and international finance.

Prerequisite: ECO 251.
Fall, 3 credits

ECO 326 Economics of American Industry

Application and extension of the theory of the firm to actual firms and industries, emphasizing problems which might call for various sorts of regulation of firms. Topics include market concentration, applications of the theories of monopoly and oligopoly, mergers, price discrimination, product variation, advertising, and public utility pricing, with illustrations from specific industries.

Prerequisite: ECO 251.
Fall, 3 credits

ECO 336 Theory of Welfare Economics

Analysis of the method, meaning, and implications of modern welfare economics. Major topics to be covered include: the concept of Pareto-optimality, efficiency and equity under competitive equilibrium, causes of market failure, welfare under government planning, the measurement of social welfare, and applications to intertemporal resource allocation.

Prerequisite: ECO 251.
Spring, 3 credits

ECO 337 Advanced Labor Theory

Microeconomic theory is used to investigate specific topics in the field of labor economics. Areas to be covered include: the household's decision-making process and the supply of labor, investments in human capital and discrimination in the marketplace, the effect of market structure on the demand for labor, and the distribution of income.

Prerequisite: ECO 251.
Spring, 3 credits

ECO 341 Human Resources I, Education

Education as investment in human capital, with concurrent problems of individual decision making about the optimal level of education; the public and private benefits and costs of education, and the divergence between public and private optimizing of investment levels; education and growth, educational planning.

Prerequisite: ECO 251.
Fall, 3 credits

ECO 342 Human Resources II, Health

An application of microeconomic theory to the health sector of the economy. Areas to be covered include: the demand for health care and the role of health insurance; the alleged shortage of physicians' services; the effects of physician specialty choice and location; the hospital sector of the health care market; and the utilization of non-physician support personnel.

Prerequisite: ECO 251.
Spring, 3 credits

ECO 344 Urban Economics

Theories of residential and industrial location; examination of intrametropolitan changes in industry location, suburbanization of employment and population, and ethnic problems in metropolitan areas; costs and benefits of urban services and policy formation for urban development and renewal.

Prerequisite: ECO 251.
Fall, 3 credits

ECO 345 Law and Economic Issues

How the American legal system reflects the developing economy. The American court system as a social decision-making mechanism that allocates social costs and benefits among economic effects; the allocation of liability for increasingly complex goods; the development of the contract; property under the 14th amendment; changes in the value of money; and government role in creating wealth.

Prerequisite: ECO 251.
Spring, 3 credits

ECO 346 Law and Poverty

The income and wealth distribution in the United States, and the role of government in shaping it via taxation and subsidies; taxation of the poor and non-poor will be examined in detail.

Prerequisite: ECO 345.
Fall, 3 credits

ECO 347 Environmental Economics

The meaning and implications of modern welfare economics; conditions that result in market failures, including the study of externalities, public goods, property rights, and public policy analysis and the environment.

Prerequisite: ECO 251.
Spring, 3 credits

ECO 348 Analysis for Managerial Decision Making

Development of analytical techniques (such as linear programming and statistical decision theory) for making economic decisions, both in public and private enterprises. The student will be making decisions on large-scale and detailed cases in realistic managerial situations and will be introduced to the use of the computer.

Prerequisite: ECO 251.
Spring, 3 credits

ECO 349 Advanced Mathematical Microeconomics

Alternative concepts of equilibrium state of an economic system: Do such states exist? Can they actually be attained? What properties do they have? This analysis leads to the study of market fail-

ures and the possibilities for remedying such failures.

Prerequisites: ECO 251 and MSM 127 or 132 or 142.
Fall, 3 credits

ECO 350 Advanced Mathematical Macroeconomics

A continuation of ECO 252 on the study of macroeconomic models and their application at a more advanced level. Special emphasis is placed on the study of the microeconomic foundations of macroeconomic models. An introduction to macrodynamics is also provided through mathematical studies of business cycles and other growth theories.

Prerequisites: ECO 252 and MSM 127 or 132 or 142.
Spring, 3 credits

ECO 360 Money and Banking

An introduction to modern monetary institutions and mechanisms, their relationship to the economy, and governmental policies in this area.

Prerequisite: ECO 252.
Fall and spring, 3 credits

ECO 381 Monetary Theory and Policy

The theory of asset choice is used to explore the connection between financial markets and the growth in productive capacity. The connection between the money stock and the level of economic activity and the connection between domestic and international monetary policies are also discussed.

Prerequisites: ECO 251, 252, and 360.
Fall, 3 credits

ECO 383 Public Finance

Theories of taxation and the satisfaction of public wants; the nature of public goods; theory of public expenditure; effects of taxes on resource allocation and welfare; theories of tax incidence; fiscal and equity implications of alternative tax schemes; fiscal dynamics and growth; intergovernmental fiscal relations.

Prerequisites: ECO 251 and 252.
Spring, 3 credits

ECO 385 Economic History of the United States

A survey of the United States economy from colonial times to the present. The changing structure of the economy is analyzed using the standard tools of the economist to examine the determinants of changes in factor inputs, institutional arrangements, prices and money, balance of payments, and government policy.

Prerequisites: ECO 251 and 252.
Spring, 3 credits

ECO 387 Stabilization Policy, Business Cycles, and Forecasting

The use of econometric models and techniques to forecast economic conditions and evaluate alternative economic policies. Properties of the Federal Reserve Board model, the Brookings model, and other major models in use in the U.S. economy will be

investigated. Topics will also include specification of demand and supply equations in the analysis of single product markets. Students will be expected to estimate and manipulate actual models.

Prerequisites: ECO 251, 252, and 321.
Fall, 3 credits

ECO 389 Corporate Finance

The corporation as a social and economic institution for raising capital and organizing economic activity, emphasizing financial decision making. The birth, operation, growth, and death of corporations; risk-taking and control; sources and uses of funds, financial management; mergers, acquisitions, conglomerations; reorganization, bankruptcy; regulation; public responsibility.

Prerequisites: ECO 251, 252, and 360.
Spring, 3 credits

ECO 395 Junior Seminar

This is the first course of the honors sequence in economics. The course stresses development of research and writing skills on economic subject matter. The student will write several papers, which will be evaluated critically in the seminar. Particular subject matter will vary. Enrollment will be limited to 15 students.

Prerequisite: Admission to honors program in economics.
Spring, 3 credits

ECO 400 Topics in Economic Theory

Topics in economic theory will be offered as student demand and faculty time and interest coincide. Some of the possible semester sections include: optimization theory, growth theory, investment determination, advanced microeconomic theory. Students should check with the department for information about sections to be offered in any particular semester. May be repeated for different topics.

Prerequisites: Vary with individual sections,
3 credits

ECO 402 Topics in Quantitative Economics

Topics in quantitative economics will be offered as student demand and faculty time and interest coincide. Some of the possible semester sections include: forecasting with econometric models, time series and spectral analysis, decision theory, game theory. Students should check with the department for information about sections to be offered in any particular semester. May be repeated for different topics.

Prerequisites: Vary with individual sections,
3 credits

ECO 404 Topics in Development and Comparative Systems

Topics in development and comparative systems will be offered as student demand and faculty time and interest coincide. Some of the possible semester sections include: economic development in modern Europe, China, Southeast Asia, Soviet or Eastern European economies; economic development in the Middle East or Latin America. Students should check with the department for information about selections to be offered in any particular semester. May be repeated for different topics.

Prerequisites: Vary with individual sections.
3 credits

ECO 406 Topics in Political Economy

Topics in political economy will be offered as student demand and faculty time and interest coincide. Some of the possible semester sections include: imperialism, political economy of Latin America, property relations. Students should check with the department for information about sections to be offered in any particular semester. May be repeated for different topics.

Prerequisites: Vary with individual sections.
3 credits

ECO 408 Topics in Applied Economics

Topics in applied economics will be offered as student demand and faculty time and interest coincide.

Some of the possible semester sections include: advanced topics in economics of education, capital and financial markets, medical economics. Students should check with the department for information about sections to be offered in any particular semester. May be repeated for different topics.

Prerequisites: Vary with individual sections.
3 credits

ECO 475 Undergraduate Teaching Practicum in Economics I

Each student will conduct a regular recitation or problem section that will supplement a regular economics course. The student will receive regularly scheduled supervision from the instructor. Responsibilities may include: preparing material for discussion, initial correction of homework and tests, and helping students with problems. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Permission of instructor and department.
Fall and spring, 3 credits

ECO 476 Undergraduate Teaching Practicum in Economics II

This course continues on a more advanced level training in the techniques of organization and

management in the teaching of economics courses. Students will be expected to assume greater responsibility in such areas as designing practice homework, analyzing and evaluating test results, and observing and assisting new teaching assistants to develop new teaching techniques. Students may not serve as teaching assistants in the same course twice. It is expected that the course in which a student is permitted to work as a teaching assistant will be of at least equal difficulty as the course in which he or she previously served as teaching assistant. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: ECO 475 and permission of instructor and department.

Fall and spring, 3 credits

ECO 487 Independent Research

A course of study providing opportunities for a student to undertake independently a special project entailing advanced readings, reports and discussion, or research on topics of his or her choosing with the guidance of an assigned faculty member. When two or more students' work in this course is related, a seminar may be organized covering the area of common interest. May be repeated.

Prerequisite: Permission of department.

Fall and spring, 1 to 6 credits each semester

ECO 488 Internship

Participation in local, state, and national public and private agencies and organizations. Students

will be required to submit written progress reports and a final written report on their experience to the faculty sponsor and the department. Grading in this course shall be Satisfactory/Unsatisfactory only. May be repeated to a limit of nine credits, but no more than six credits count toward economics major requirements.

Prerequisites: ECO 251 and 252; permission of instructor, department, and Undergraduate Studies Office.

Fall and spring, 3 to 9 credits

ECO 495 Senior Thesis

The student will write a major research paper under the supervision of a faculty member as part of the requirements for successful completion of the honors program in economics.

Prerequisites: ECO 395 and permission of department. *Corequisite:* ECO 496.

Fall, 4 credits

ECO 496 Senior Seminar

Comprised of all students enrolled in ECO 495. Each student will be required to make periodic and final presentations of the senior thesis. Students will be evaluated on their participation, particularly the helpfulness of their evaluations of other students' work.

Prerequisite: ECO 395 and permission of department. *Corequisite:* ECO 495.

Fall, 2 credits

Interdisciplinary Program in Engineering Chemistry

Program Committee

Patrick Herley (Materials Science and Engineering)

Robert Kerber (Chemistry)

The interdisciplinary program in engineering chemistry (ECM), which leads to the Bachelor of Science degree, is designed to provide students with a basic understanding of the chemistry and materials technology underlying modern materials engineering.

This program emphasizes a strong background in physical chemistry infused with an orientation toward the solid state sciences and materials technology. Its central theme is a chem-

istry core strengthened by materials science and laboratory courses, the latter with a unique "Chemistry of Materials" component. The choice of suitable electives will enable the student to emphasize such different aspects of solid state sciences as polymeric materials, modern industrial processes, mineral resources, biomaterials, etc.

The program is a basic preparation for training chemical-materials professionals who can enter a wide range of industries or proceed to graduate work in either solid state chemistry or materials science.

Requirements for the Major

The interdisciplinary major in engineering chemistry leads to the Bachelor of Science degree. The following courses are required and must be taken for a letter grade. No transferred course with a grade lower than C may be used to fulfill any major requirement.

Mathematics and Basic Science Requirements

	Credits
1. MSM 131 Calculus I and MSM 132 Calculus II	8
2. MSM 231 Calculus III and MSM 306 Calculus IV Multivariate Calculus or MSM 221 Calculus III Differential Equations and MSA 362 Engineering Mathematics, B	6-7
3. MSC 111 Computer Science for Engineers	3
4. CHE 131, 132 General Chemistry or CHE 141, 142 Honors Chemistry	8
5. CHE 133, 134 General Chemistry Laboratory or CHE 143, 144 Honors Chemistry Laboratory	2
6. PHY 101, 102 General Physics I, II; PHY 251 General Physics III or ESI 281 An Engineering Introduction to the Solid State	11-12
<i>Sub-Total</i>	<u>38-40</u>

Note: The following alternate calculus sequences may be substituted: MSM 141, 142 or 125, 126, 127 for 131, 132; MSM 241 for 231; MSM 307 for 306.

Core	Credits
1. CHE 301, 302 Physical Chemistry I, II	6
2. CHE 303 Solution Chemistry Laboratory	2
3. CHE 304 Chemical Instrumentation Laboratory	2
4. CHE 321 or 331 Organic Chemistry	3
5. ESG 332 Materials Science I: Structure and Properties of Materials	4
6. ESG 333 Materials Science II: Electronic Properties	4
7. ESM 302 Materials Design and Techniques	4
<i>Sub-Total</i>	<u>25</u>
<i>Total</i>	<u>63-65</u>

Electives

Selection of technical and open electives to give a total number of credits of 120. Students are advised to divide their electives among courses within the College of Engineering and Applied Sciences and the Chemistry Department that strengthen their professional interests, and courses in the social sciences and humanities that help them place the problems of society and industry in perspective.

Students who wish to meet the American Chemical Society certification requirements must take, in addition to the above, CHE 322, 333, and 334 (organic), CHE 355, and one additional advanced chemistry course.

Department of English

Professors

Thomas J. J. Altizer, Ph.D. University of Chicago (Religion and literature; myth and imagination)

David V. Erdman, Ph.D. Princeton University (Romantic literature; Blake; textual and critical editing)

Thomas B. Flanagan, Ph.D. Columbia University (Irish literature; modern British literature; Joyce; Yeats)

Donald K. Fry, Ph.D. University of California, Berkeley (Old English; Middle English; Chaucer)

Homer B. Goldberg, Ph.D. University of Chicago (Restoration and eighteenth-century literature; the novel; literary criticism). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1972-73

Harvey S. Gross, Ph.D. University of Michigan (Comparative literature; prosody and poetic theory; modern intellectual history)

Jan Kott, Ph.D. Lodz University (Comparative literature; Shakespeare; the drama; literary criticism)

Thomas Kranidas, Ph.D. University of Washington (Seventeenth-century literature; Milton)

Richard L. Levin, Ph.D. University of Chicago (Renaissance drama; literary criticism)

Richard A. Levine, Chairman, Ph.D. Indiana University (Victorian literature; the novel; literature and society)

Jack Ludwig, Ph.D. University of California, Los Angeles (Twentieth-century literature; Joyce; Yeats; creative writing)

Thomas E. Maresca, Ph.D. Johns Hopkins University (Restoration and eighteenth-century literature; the epic; satire)

Ruth Miller, Ph.D. New York University (Early American literature; poetry; Dickinson; Black American literature)

Louis Simpson, Ph.D. Columbia University (Nineteenth- and twentieth-century British and American literature; poetry; creative writing; literary criticism)

Judah L. Stampfer, Ph.D. Harvard University (Renaissance and seventeenth-century literature; Shakespeare; literature and psychology)

John A. Thompson, Ph.D. Columbia University (Twentieth-century literature; prosody; literary criticism)

Herbert Weisinger, Ph.D. University of Michigan (Renaissance literature; Shakespeare; mythology and ritual)

Associate Professors

Paul J. Dolan, Ph.D. New York University (Modern British and American literature; Yeats; literature and politics)

Edward Fiess, Director of M.A. Programs in English, Ph.D. Yale University (American literature; twentieth-century literature; biography and autobiography)

Clifford C. Huffman, Ph.D. Columbia University (Renaissance literature; Shakespeare)

June Jordan (Poetry; creative writing; children's literature; women's studies; Black American literature)

Aaron Lipton, Ed.D. New York University (The teaching of reading, composition, and literature; the psychology of literature)

Gerald B. Nelson, Ph.D. Columbia University (Twentieth-century British and American literature, poetry)

Joseph Pequigney, Ph.D. Harvard University (Seventeenth-century literature; Shakespeare)

Thomas Rogers, Director of Writing Programs in English, Ph.D. University of Pennsylvania (Restoration and eighteenth-century literature; rhetoric; the teaching of composition and literature)

Walter Scheps, Ph.D. University of Oregon (Old English; Middle English; the history of the English language)

Sallie Sears, Ph.D. Brandeis University (The novel; Henry James; literary criticism; women's studies)

Department of English (Cont.)

Peter Shaw, Ph.D. Columbia University (American literature; twentieth-century literature)

David Sheehan, Director of Undergraduate Studies in English, Ph.D. University of Wisconsin (Restoration and eighteenth-century literature)

Stephen J. Spector, Ph.D. Yale University (Old English; Middle English; the history of the English language)

Alice S. Wilson, Ph.D. Cornell University (Renaissance literature; classical backgrounds of English literature; mythology)

Rose Zimbaro, Ph.D. Yale University (Restoration; Renaissance and eighteenth-century literature; modern drama)

Assistant Professors

Bruce W. Bashford, Ph.D. Northwestern University (Literary criticism; rhetoric and the teaching of composition)

Helen Cooper, Ph.D. Rutgers University (Victorian literature; creative writing; women's studies)

Diane Fortuna, Ph.D. Johns Hopkins University (Twentieth-century British and American literature; nineteenth-century American literature)

William J. Harris, Ph.D. Stanford University (American literature; Black American literature; creative writing)

James Harvey, A.M. University of Michigan (The novel; drama; film)

David E. Laurence, Ph.D. Yale University (Colonial and nineteenth-century American literature)

Paul A. Newlin, Ph.D. University of California, Los Angeles (Nineteenth-century American literature; Black American literature; creative writing)

Patricia Silber, Part-time, Director of the Developmental English Program, Ph.D. State University of New York at Stony Brook (History of the English language; Old English; Middle English)

Susan Squier, Ph.D. Stanford University (Nineteenth- and twentieth-century British literature; women's studies)

Lecturers

Leonard Gardner, Ph.D. University of Chicago (Secondary education)

Jane Harada, M.A. Columbia University (Journalism)

Teaching Assistants

Estimated Number: 70

Requirements for the Major in English

The major in English leads to the Bachelor of Arts degree. The following courses are required.

A. Study Within the Area of the Major (Courses must be taken for a letter grade.)

	Credits
1. EGL 204 Literary Analysis and Argumentation, which should be taken as an introduction to the major	3
2. EGL 205 and 206 Survey of British Literature, I and II, which should be taken in the sophomore year	6
3. EGL 207 History and Structure of the English Language	3
4. Either EGL 217 American Literature I or EGL 218 American Literature II	3
5. One of the following Shakespeare courses: EGL 241, EGL 242, EGL 243	3
6. Three Period Courses from the sequence numbered EGL 300-318	9
7. One Major Author course from the sequence numbered EGL 340-353	3
8. One Interdisciplinary or Genre course from the sequences numbered EGL 260-276 or EGL 362-374	3
9. Elective: one additional course elected from those offerings numbered EGL 202-496, <i>exclusive of those listed in Note 1 below</i>	3
<i>Sub-Total</i>	<u>36</u>

Notes on Section A

1. No English courses below the 200 level may be used to fulfill English major requirements. In addition, the following courses may not be used for the English major: EGL 285, 286, 287, 288, 387, 388, 393, 394, 398.

2. Appropriate EGL 490 seminars may be used to satisfy the above requirements by permission of the Director of Undergraduate Studies.

B. Study in Related Areas

(Courses may be taken under the P/NC option.)

	Credits
1. One year (or its six-credit equivalent) of college study of a foreign language at the intermediate level or beyond	6
2. Six credits of study of British, American, medieval, or Renaissance history	6
3. Six credits of study in the humanities outside of English courses and in addition to the foreign language requirement above	6
<i>Sub-Total</i>	<u>18</u>
<i>Total</i>	<u>54</u>

Teacher Preparation

Students majoring in English and seeking provisional certification as secondary school English teachers are required to have a departmental advisor. They are asked to consult with the Director of Undergraduate Studies as soon as they have decided to seek certification.

Requirements for Certification

- A. All Requirements for the Major in English
- B. A 3.0 G.P.A.
- C. A writing sample
- D. Professional Educational Requirements
 1. EGL 398 Methods of Instruction in Literature and Composition (3 credits)
 2. Two of the following courses: PSY/SOC 232, PHI 360, EGL 396 (6 credits)
 3. EGL 450 Supervised Secondary School Student Teaching (12 credits)
 4. EGL 454 Student Teaching Seminar (3 credits)
 5. SSI 265 Drug and Alcohol Education (1 credit)

The Honors Program in English

To be awarded honors a department major must: (1) maintain an overall G.P.A. of at least 3.0 and a G.P.A. of at least 3.5 in English courses taken for the major; (2) receive a grade of A in an English course designated as an Honors Section (these sections are announced in the department's brochure issued before registration each semester); (3) write a senior thesis judged worthy of honors. Requirements (1) and (2) are prerequisites for undertaking the senior thesis. Students eligible to write a senior thesis must find a member of the department faculty to act as a thesis advisor and enroll in EGL 495 or 496. The thesis topic must be approved by the Undergraduate Program Committee. The thesis will be evaluated by the thesis advisor, a member of the Undergraduate Program Committee, and a third reader from outside the department. For further information consult the Director of Undergraduate Studies.

The Minor in English

The minor, which requires 18 credits, is organized around the student's interest in a particular period of British or American literature. The specific distribution of the credits should be determined in consultation with the Director of Undergraduate Studies. A general model for this distribution is the following:

	Credits
A. EGL 204 Literary Analysis and Argumentation, required of all minors	3
B. One of the following Shakespeare courses: EGL 241, 242, 243. Required of all minors	3
C. One Survey course in the period of the student's interest	3
D. One Period course in the period of the student's interest	3
E. One Major Author or Genre course appropriate to the student's interest	3
F. One elective: any 300- or 400-level English course	3
<i>Total</i>	<u>18</u>

Note: All courses for the minor must be taken for a letter grade.

The Minor in Journalism

Students interested in minoring in journalism should consult the Director of Undergraduate Studies. The minor consists of successfully completing 18 credits from the following courses:

	Credits
A. EGL 287 Newswriting I	3
B. EGL 288 Feature Writing I	3
C. EGL 289 Readings in Journalism	3
D. EGL 387 Newswriting II	3
E. EGL 388 Feature Writing II	3
F. EGL 393, 394 Practicum in Journalism	6

Note: All courses for the minor must be taken for a letter grade.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

Details of staffing and specific course descriptions should be obtained from schedules published by the English Department before registration each semester. Reading lists are also available in advance.

A student may repeat certain courses when the content varies.

For example, EGL 348 Major Writers of the Romantic Period in England will have a changing course content which can be appropriately recorded on the student's transcript. In doubtful cases, the student should consult a department advisor before registering.

Composition

Note: These courses may not be used for English major credit.

EGC 100 Developmental English (Formerly EGL 100)

For students who require intensive training in the rudiments of written English. May be repeated once. Grading in this course shall be Satisfactory/Unsatisfactory only. Fall and spring, 3 credits

EGC 101 Composition I (Formerly EGL 101)

A course in writing. Through the writing and revision of frequent short papers, the student is expected to develop proficiency in the composition of expository and argumentative essays. Fall and spring, 3 credits

EGC 102 Composition II (Formerly EGL 102)

A continuation of the development of expository and argumentative writing skills begun in EGC 101. The course will include the frequent writing and revision of short papers.

Prerequisite: EGC 101. Fall and spring, 3 credits

Note: For additional courses in writing, see EGL 202, 204, 285, 286, 385.

Introduction to Literature

EGL 191 Introduction to Poetry

Intensive analysis of poems in English of various periods and types and varying complexity. (Not for English major credit.) Fall and spring, 3 credits

EGL 192 Introduction to Fiction

Analysis of stylistic and structural modes employed by various writers of short stories and novels. (Not for English major credit.) Fall and spring, 3 credits

EGL 193 Introduction to Drama

Introduction to the analysis of drama, emphasizing the literary more than the theatrical dimension of the works, through examination of a range of plays from a variety of genres and periods. (Not for English major credit.) Fall and spring, 3 credits

Introduction to The English Major

These courses develop the skills and provide the background necessary for advanced courses in literature. They may also be of interest to the non-major. The prerequisite for 200-level courses is EGL 101 or passing the English proficiency examination.

EGL 202 Advanced Composition

Students will work on advanced problems in exposition, argument, rhetoric, and style through writing and discussion of their own papers as well as analysis of prose texts.

Fall and spring, 3 credits

EGL 204 Literary Analysis and Argumentation

An introduction to the techniques and terminology of close literary analysis and argumentation as applied to poetry, fiction, and drama; the course will include frequent demanding writing assignments and is designed for students beginning their major study in English.

Fall and spring, 3 credits

EGL 205 Survey of British Literature I

The study of British literature from the Old English period to Milton.

Fall and spring, 3 credits

EGL 206 Survey of British Literature II

The study of British literature from Dryden to the end of the nineteenth century.

Fall and spring, 3 credits

EGL 207 The English Language

The development of the English language from its Indo-European origins with emphasis upon English phonology, morphology, syntax, and lexicography, as well as a study of traditional, structural, and transformational approaches to the language.

Fall, 3 credits

EGL 217 American Literature I

The study of American literature from about 1800 to the Civil War.

Fall or spring, 3 credits

EGL 218 American Literature II

The study of American literature from the Civil War to the First World War.

Fall or spring, 3 credits

EGL 224 Modern English and American Literature

The study of English and American literature from the end of the Victorian era to World War II.

Fall or spring, 3 credits

EGL 226 Contemporary English and American Literature

The study of English and American literature from World War II to the present.

Fall or spring, 3 credits

EGL 241 Shakespeare I

A study of the comedies and the history plays. Designed to complement EGL 242. May not be taken for credit in addition to EGL 243.

Fall, 3 credits

EGL 242 Shakespeare II

A study of the tragedies and the romances. Designed to complement EGL 241. May not be taken for credit in addition to EGL 243.

Spring, 3 credits

EGL 243 Shakespeare: the Major Works

A study of major works in several genres. Designed for students who want a one-semester survey of Shakespeare. May not be taken for credit in addition to EGL 241 or 242.

Fall and spring, 3 credits

EGL 260 Mythology in Literature

The study of the dissemination and use of mythological motifs and themes in English and American literature.

Fall and spring, 3 credits

EGL 261, 262 The Bible as Literature

The study of literary forms and themes in the Bible. The Old and New Testaments will be treated in alternate semesters.

Fall and spring, 3 credits each semester

EGL 265 Development of the Novel

A survey of major works and developments in the eighteenth- and nineteenth-century novel.

Fall or spring, 3 credits

EGL 266 The Modern Novel

A study of major works and developments in the modern novel. This course is identical with CLT 266.

Fall or spring, 3 credits

EGL 272 The Scriptural and Classical Tradition

Readings in scriptural, classical, and some continental medieval literature essential for the study of later British and American literature. All readings are in English translation. This course is identical with CLT 202.

Fall or spring, 3 credits

EGL 274 Black American Literature

A survey of nineteenth- and twentieth-century Black American literature.

Fall or spring, 3 credits

EGL 276 Women and Literature

An examination of works written by or about women, which studies the development and conception of women in drama, poetry, and fiction. May be repeated with permission of the Director of Undergraduate Studies as the subject matter differs.

Fall and spring, 3 credits

Creative Writing and Journalism

Note: EGL 285 through 288 do not meet requirements for the English major.

EGL 285 Writing Workshop: Fiction

A workshop in the development of writing fiction through practice supplemented by readings.

Prerequisite: Permission of instructor.

Fall and spring, 3 credits (For additional offering in creative writing, see EGL 385)

EGL 286 Writing Workshop: Poetry

A workshop in the development of skills in writing poetry. Poetry writing is supplemented by readings.

Prerequisite: Permission of instructor.

Fall and spring, 3 credits (For additional offering in creative writing, see EGL 385)

EGL 287 Newswriting I

Basic elements and issues of news stories. A short history of journalism and study of foreign, national, and local newspapers are included. News stories are written on standard subjects, such as crime, news conferences, and court proceedings.

Prerequisites: EGC 101 or passing the writing proficiency examination, and typing speed of at least 25 words per minute.

Fall or spring, 3 credits

EGL 288 Feature Writing I

Reviews, interviews, humorous writing, and other forms of feature writing for newspapers and magazines are studied and written. A short history of magazines and readings in several periodicals are included.

Prerequisites: EGC 101 or passing the writing proficiency examination, and typing speed of at least 25 words per minute.

Fall or spring, 3 credits

EGL 289 Readings in Journalism

The journalism of such writers as Joseph Addison, Richard Steele, Benjamin Franklin, Mark Twain, Lincoln Steffens, H.L. Mencken, William Allen White, Heywood Brown, George Orwell, James Agee, Ernest Pyle, Walter Lippmann, Norman Mailer, Tom Wolfe, and Hunter Thompson.

Fall or spring, 3 credits

Note: for additional offerings in journalism, see EGL 387, 388, 393, 394. For description of minor in Journalism, see p. 82.

Period Courses

These courses are directed toward an understanding of the various periods of English and American literature. They include study of both major and minor authors, with attention to developments in theme and style and consideration of intellectual and social history. Detailed course descriptions and reading lists are provided for each course before registration.

EGL 300 Old English Literature

The study of English literature from its beginnings to the eleventh century.

Prerequisites: EGL 204 and 205.

Fall or spring, 3 credits

EGL 302 Medieval Literature in English

Major authors, themes, and forms of British literature from the thirteenth to the early sixteenth century, generally excluding Chaucer.

Prerequisites: EGL 204 and 205.

Fall or spring, 3 credits

EGL 304 Renaissance Literature in English

The study of English literature of the sixteenth century.

Prerequisites: EGL 204 and 205.

Fall or spring, 3 credits

EGL 306 English Literature of the Seventeenth Century

The study of English literature from late Renaissance to the age of Dryden.

Prerequisites: EGL 204 and 205.

Fall or spring, 3 credits

EGL 308 The Age of Dryden

The study of English literature of the Restoration period.

Prerequisites: EGL 204 and 205 or 206.

Fall or spring, 3 credits

EGL 310 Neo-Classical Literature in English

The study of English literature from about 1700 to 1790.

Prerequisites: EGL 204 and 205 or 206.

Fall or spring, 3 credits

EGL 312 Romantic Literature in English

The study of English literature from the end of the Neo-Classical period to the Victorian Age, 1798-1832.

Prerequisites: EGL 204 and 206.

Fall or spring, 3 credits

EGL 314 Victorian Literature

The study of English literature from the end of the Romantic period to World War I.

Prerequisites: EGL 204 and 206.

Fall or spring, 3 credits

EGL 316 American Colonial and Federal Writers

The study of American literature from its beginnings to about 1800.

Prerequisites: EGL 204 and 217.

Fall or spring, 3 credits

EGL 318 Nineteenth-Century American Literature

The study of American literature from Washington Irving to Stephen Crane.

Prerequisites: EGL 204 and 217 or 218.

Fall or spring, 3 credits

EGL 320 Literature of the Modern Period

An intensive study of modern British and American literature from the end of the nineteenth century to World War II.

Prerequisites: EGL 204 and 224.

Fall or spring, 3 credits

Note: EGL 320 may not be used to fulfill requirement A.6. for the major in English.

Major Authors

These courses deal intensively with the work of one or two writers at a time. An author representative of a period is not likely to be treated more often than every other year. EGL 344 through 353 may be repeated for credit with permission of the Director of Undergraduate Studies as the subject matter differs.

EGL 340 Chaucer

Prerequisites: EGL 204 and 205.

Fall or spring, 3 credits

EGL 341 Special Studies in Shakespeare

Prerequisites: EGL 204 and either 241 or 242 or 243.

Fall or spring, 3 credits

EGL 342 Milton

Prerequisites: EGL 204 and 205.

Fall or spring, 3 credits

EGL 344 Major Writers of the Renaissance Period in England

Prerequisites: EGL 204 and 205.

3 credits

EGL 345 Major Writers of the Seventeenth Century in England

Prerequisites: EGL 204 and 205.

3 credits

EGL 347 Major Writers of the Neo-Classical Period in England

Prerequisites: EGL 204 and 205 or 206.

3 credits

EGL 348 Major Writers of the Romantic Period in England

Prerequisites: EGL 204 and 206.

3 credits

EGL 349 Major Writers of the Victorian Period in England

Prerequisites: EGL 204 and 206.
3 credits

EGL 350 Major Writers of American Literature

Prerequisites: EGL 204 and 217 or 218 as appropriate.
3 credits

EGL 352 Major Writers of Modern British and American Literature

Prerequisites: EGL 204 and 224.
3 credits

EGL 353 Major Writers of Contemporary British and American Literature

Prerequisites: EGL 204 and 226.
3 credits

Genre and Interdisciplinary Courses

These courses cover the various literary kinds and the relations between literature in English and other disciplines or literatures. Detailed information on course content is published by the English Department before registration each semester. Reading lists are also available in advance. Except for EGL 370, these courses may be repeated for credit with permission of the Director of Undergraduate Studies as the subject matter differs. The prerequisite for each of these courses is one literature course at the 200 level or higher.

EGL 362 Poetry in English

The study of the development of form, theme, and language of poetry in English.
Fall and spring, 3 credits

EGL 364 Drama in English

The study of the development of plot, structure, character, setting, theme, and language of drama in English.
Fall or spring, 3 credits

EGL 366 Fiction in English

The study of the development of plot, structure, character, theme, and language of fiction in English.
Fall and spring, 3 credits

EGL 368 Prose in English

The study of the various forms of prose such as the essay, utopias, memoirs, autobiography, biography, and non-fictional narrative.
Fall or spring, 3 credits

EGL 370 Literary Criticism

Analytic survey of major texts in European and American literary theory and criticism.
Spring, 3 credits

EGL 372 Literature in English and Its Relations to Other Literatures

The study of literature in English as it affects and is affected by other literatures.
Fall and spring, 3 credits

EGL 374 Literature in English and Its Relation to Other Disciplines

The study of literature in English as it affects and is affected by other disciplines, such as anthropology, science, sociology, the history of ideas, theology, and psychology.
Fall or spring, 3 credits

Advanced Creative Writing and Journalism**EGL 385 Advanced Creative Writing**

A creative writing workshop. Students will receive detailed criticism of their work. This course may be repeated with permission of the Director of Undergraduate Studies in English.
Prerequisites: EGL 285 or 286 and permission of instructor.
Fall and spring, 3 credits

EGL 387 Newswriting II

Development of the techniques of writing news stories studied in Newswriting I. The emphasis will be on preparing stories requiring

extensive research and investigation for actual submission to regional and national newspapers.
Prerequisite: EGL 287.
Fall or spring, 3 credits

EGL 388 Feature Writing II

Development of the techniques of writing feature stories studied in Feature Writing I. The emphasis will be on feature stories written for actual publication in regional and national magazines. Students will be required to do extensive research, rewriting, and editing of longer features than can be written in Feature Writing I.
Prerequisite: EGL 288.
Fall or spring, 3 credits

EGL 393, 394 Practicum in Journalism

Provides actual working situations for journalists. Regular writing assignments—including some supervised off-campus work—are given, and student publications are discussed. Editing, editorial policy, beat coverage and organization, production, layout, and management will be studied and individual instruction given.
Prerequisites: EGL 287 and permission of instructor.
Fall and spring, 3 credits each semester

Secondary Education**EGL 396 Literature and Psychology of Adolescence**

The study of literary texts dealing with the subject of adolescence. Readings will be mostly twentieth-century novels written about adolescents, and will be studied from various theoretical perspectives (e.g., Freudian, Eriksonian, Family Systems).
Prerequisite: One 200-level literature course.
Fall or spring, 3 credits

EGL 398 Methods of Instruction in Literature and Composition

Consideration of specific problems in the teaching of English: e.g., posing questions about literary texts and commenting on student papers. There is frequent use of writing by secondary school students, and the goals of instruction in literature and language are examined. *Required of students seeking certification in secondary school English.*
Prerequisites: EGL 204, 205 or 206, and permission of department.
Fall, 3 credits

EGL 450 Supervised Secondary School Student Teaching

Supervised practice teaching by arrangement with selected Long Island secondary schools. Applications must be filed in the semester preceding that in which the student plans to student teach.
Prerequisites: Enrollment in English Teacher Preparation Program and permission of instructor.
Corequisite: EGL 454.
Fall and spring, 12 credits

EGL 454 Student Teaching Seminar

Seminar on problems and issues of teaching English at the secondary school level. Analysis of actual problems and issues encountered by the student in the student teaching experience.
Corequisite: EGL 450.
Fall and spring, 3 credits

Special Studies in English**EGL 487 Independent Project**

Intensive study of a special topic undertaken with close faculty supervision. May be repeated.
Prerequisite: Permission of instructor and Director of Undergraduate Studies.
Fall and spring, 1 to 3 credits

EGL 490 English Seminar

Advanced work in periods, genres, and authors of English and American literature will be offered in small classes. One or more seminars will be given each semester. The subject matter and its treatment as well as specific prerequisites for each section will be published in the department's brochure of course descriptions before advance registration in the previous semester. May be repeated for credit with the permission of the Director of Undergraduate Studies in English.
Prerequisite: Permission of instructor.
Fall and spring, 3 credits

EGL 495, 496 Senior Honors

See description of the Honors Program in English above.
Prerequisite: Permission of department.
Fall and spring, 3 credits each semester

English as a Foreign Language

Coordinator

Susan Chanover

A variety of courses in English may be taken by students whose first language is not English. Ranging in level from elementary to advanced, these courses are designed to improve students' speaking, reading, writing, and comprehension of English and to enable students to participate more fully in their University program and American life.

These courses are open to both regularly enrolled Stony Brook students and members of the community, who may enroll as part-time non-matriculated students.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

EFL 191 Oral/Aural Skills (Formerly LIN 191)

In this course students acquire skills necessary for speaking and understanding English. Special emphasis is placed on developing communication capabilities. Class work includes practice in the following: pronunciation, vocabulary development, structure mastery, guided conversation, and listening practice. Language laboratory work required. May be repeated but counts only once towards graduation.

Prerequisites: Diagnostic test and permission of instructor.
Fall and spring, 3 credits

EFL 192 Intermediate Composition (Formerly LIN 192)

This course is for students who have attained a degree of fluency in speaking English but need additional training in reading and writing skills. Beginning with basic English sentence patterns and working towards paragraph development and, eventually, longer themes, each student has the opportunity to practice many different varieties of writing. May be repeated but counts only once towards graduation.

Prerequisite: Permission of instructor, based on outcome of English composition proficiency examination.

Fall and spring, 3 credits

EFL 193 Advanced Composition (Formerly LIN 193)

Advanced training in writing for EFL students who need to concentrate on paragraph develop-

ment. The first half of the semester deals with paragraph construction, stressing concepts of main thesis and supporting arguments. Some advanced grammar is reviewed, but the assumption is that basic structures and mechanics of writing have already been mastered. The second half of the semester stresses combining paragraphs into short compositions. Both descriptive and argumentative writing are practiced.

Prerequisite: EFL 192.

Fall and spring, 3 credits

EFL 195 Reading Improvement (Formerly LIN 195)

Strategies for improving non-native speakers' ability to read university-level texts at greater speed and to increase their comprehension of what is read. It is particularly useful for students majoring in fields that require extensive reading but is also recommended for students in other fields who feel they need to under-

stand better the basic relationships within sentences, between sentences, and between paragraphs. As part of the course, a portion of each class will be devoted to vocabulary building.
Prerequisite: Permission of instructor.

Fall and spring, 3 credits

EFL 198 Accent Correction (Formerly LIN 198)

Non-native speakers can modify their accents to make their speech more intelligible and improve their general speaking skills. Work is done with individual sounds of English that cause problems, stress and intonation, the rhythm of English sentences, and techniques of speaking in front of others. Especially useful for undergraduates and graduates who need to make seminar presentations, graduates with teaching assistantships, and others who speak in public.

Prerequisite: Permission of instructor.

Fall and spring, 3 credits

Federated Learning Communities

Program Director

Patrick J. Hill (Philosophy)

Federated Learning Communities (FLC) programs focus several diverse disciplinary perspectives on a contemporary problem of broad human significance. Past programs have focused on "World Hunger," "Cities, Utopias, and Environments," "Technology, Values, and Society," and "Social and Ethical Issues in the Life Sciences." Students will gain a sense of the complexity of these issues, but also of the importance of personal response. Usually one new program is developed each year.

An FLC program is also a curriculum, a course of study designed to complement and to broaden a student's major field of

study, to bring *coherence* and significance to the range of courses outside one's major, and to provide the student with a guided introduction to the resources of the University. Successful completion of most FLC programs leads to an academic minor in the theme of the program.

FLC's unique structures offer the Stony Brook student several challenging opportunities:

1. The opportunity to work together with a group of faculty members and students who have a shared interest and common focus of concern. The courses in which all FLC students are enrolled provide an academic basis on which a community of interest uniting faculty and students is built.

2. The opportunity for the coherent learning of an *integrated semester* in which all the courses address a single theme. Each FLC program offers two integrated semesters, each composed of three federated departmental courses and two specifically integrating activities, i.e., a one-credit Core Course and a variable-credit Program Seminar. Both are described below.

3. In the *Core Course* of each FLC program (usually numbered 325, 326, and 327) specific attention is given to the nature and relation of disciplines as they interact around the common theme. In some FLC programs this course is team-taught; in others the federated faculty plan in advance a coordinated effort to which they all contribute serially; in still others the course is taught by one faculty member who is familiar with the content of all the federated courses.

4. The *Program Seminar* (usually numbered 301 and 302) is a new kind of course in the University which assists students in synthesizing the material of their other courses. No separate material or reading additional to that of the three federated courses upon which it is based is assigned. The Program Seminar is like a discussion session with three courses rather than one as its base.

The Program Seminar is taught by new kinds of teachers, the *Master Learner* and the *Lewis Mumford Fellow*. The Master Learner, selected from among outstanding teachers on the faculty or the most advanced graduate students at Stony Brook, is a "master" in the sense of being already accomplished in one discipline and as a teacher; but he or she is a "learner" in the sense of going back to classes to study a new interdisciplinary field that he or she has never studied before. The Mumford Fellow, chosen in a University-wide competition among graduate students, is a younger interdisciplinary scholar with extraordinary promise as a teacher. The Master Learner and Mumford Fellow attend all the classes as students with the other students enrolled in the program. They draw upon previous experience to bridge or mediate between the specialized knowledge of the faculty and the needs of the students. They assist students in learning how to learn and in assuming active responsibility for their education. With their aid, the Program Seminar becomes the center of an academically based student community where students can reflect together with all other students taking the same courses upon the significance and interrelation of the material of the semester.

5. Those who complete a minor in an FLC program can do advanced interdisciplinary work (numbered 487) sometimes independently under the direction of two of the federated faculty, and other times in a group under the direction of one of the federated faculty. They can also enroll for a three-credit teaching internship (numbered 475) in a subsequent FLC program.

6. FLC programs are coordinated with departmental programs. In many cases, a substantial number of credits earned in an FLC program will be accepted toward the major program of

the participating departments. Such arrangements in the past have been made with economics, history, humanities, liberal arts, philosophy, psychology, social sciences, and sociology.

Thus, for the student as yet uncommitted to a major or for the student contemplating a change of major or seeking awareness of how his or her major intersects and is complemented by other majors, FLC offers the opportunity to become acquainted in a short period of time with six different disciplines as they interact around a common theme. This exploration takes place within a structure set up to facilitate faculty-student and student-student contact. The academic diversity of the courses and the students in an FLC community make it a *microcosm of the University* and thus a transition to a fuller understanding and participation in the University as a whole.

Requirements for an Interdisciplinary Minor in the Federated Learning Communities

The requirements for an FLC minor differ slightly from one program to another. Roughly nineteen (19) credits, at least nine of which must be at the upper division level, are required in any program. The credits must be distributed as follows:

	<i>Credits</i>
A. Four or five of the six federated courses, three of which must be taken in the same semester.	12-15
B. One, two, or three credits of the Program Seminar, which must be taken only in the semester in which the three federated courses are taken.	1-3
C. One, two, or three credits of the Core Course.	1-3
D. Additional credits up to the minimum of nineteen to be earned in an interdisciplinary study project under the direction of two faculty members teaching in the FLC program. Successful completion of requirements A, B, and C above and permission of the instructor are prerequisites for enrollment in this activity.	3-6

Further details on FLC, its upcoming programs, and the relationship of particular programs to particular majors may be obtained in the FLC office.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

Note: Courses for individual programs are described in detail in separate brochures available from the FLC office.

FLC 475 Teaching Practicum

Supervised participation with Master Learners in the teaching of the Program Seminars of the Federated Learning Communities. The student and his or her supervising Master Learner will meet weekly with enrolled students for the preparation of seminar meetings. Responsibilities will include researching material appropriate for seminar discussions, helping students with interdisciplinary research papers, placing students with similar intellectual interests or projects in touch with each other, or responding to journals. Stu-

dents will be invited to attend FLC's bi-monthly seminar for all Master Learners and Mumford Fellows.

Prerequisites: Completion of an FLC minor with excellent performance in Program Seminars and Core Course, interview, and permission of instructor. *Corequisites:* At least two courses federated with the Program Seminar.

Fall and spring, 3 credits

Foreign Languages Secondary Teacher Preparation Program

Program Advisor

Joseph Tursi (French and Italian)

Requirements

In addition to fulfillment of the requirements for the major in French, German, Italian, Russian, or Spanish, prospective student teachers of foreign languages are required to take the following courses in order to satisfy all requirements for State certification:

	Credits
A. One course in pre-professional education (SOC/PSY 232 or PHI 360)	3
B. SSI 265 Drug and Alcohol Education	1
C. FLA 339 Methods and Materials in the Teaching of Foreign Languages	3
D. FLA 340 Curriculum Development and Micro-Teaching	3
E. FLA 450 Supervised Student Teaching	12
F. FLA 454 Student Teaching Seminar	3
Total	25

Prospective student teachers are also urged to take as many advanced language courses as possible through the semester prior to student teaching. For further information, students are asked to consult with departmental advisors. All questions concerning application for student teaching and requirements for certification are to be directed to Professor Tursi.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

FLA 339 Methods and Materials in the Teaching of Foreign Languages

A review of methods and materials for the teaching of foreign languages and literatures in the secondary schools, including a survey of audiolingual techniques and other recent developments. Special attention will be given to the problems and purposes of the teaching of foreign languages at the high school level.

Prerequisites: Foreign language major and at least one 300-level language course and one 300-level literature course.

Fall and spring, 3 credits

FLA 340 Curriculum Development and Micro-Teaching

This course is designed to train future language teachers in the development of well-articulated programs in secondary schools. Through mini- and micro-teaching, students will have the opportunity to enjoy clinical experiences in the actual classroom each week for at least two hours. Clinical experiences will be discussed in a weekly seminar.

Prerequisite: FLA 339.

Spring, 3 credits

FLA 450 Supervised Student Teaching—Languages

Prospective foreign-language teachers at the secondary level receive extensive practice under selected cooperating teachers. Student teachers work with one or two certified foreign-language teachers in one school each regular school day for the entire semester. Frequent consultations with University faculty members are designed to assist the student. Applications must be filed with the Teacher Training Office of the Department of French and Italian two months prior to student teaching. Grading in this course shall be Satisfactory/Unsatisfactory only. Not for major credit.

Prerequisites: FLA 339 and 340. A 3.0 grade point average in the major and a 2.75 grade point average overall. *Corequisite:* FLA 454.

Fall and spring, 12 credits

FLA 454 Student Teaching Seminar

Seminar on problems encountered by student teachers and public school teachers at the secondary level in foreign language teaching. Study and analysis of the many aspects of the foreign language teaching profession, such as individualized teaching, audiolingual training, use of audiovisuals, testing, professional organizations.

Prerequisites: FLA 339 and 340. *Corequisite:* FLA 450.

Fall and spring, 3 credits

Department of French and Italian

Professors

Konrad Bieber, Ph.D. Yale University (Eighteenth-century and contemporary French literature; comparative literature)

Frederick Brown, Ph.D. Yale University (Nineteenth- and twentieth-century French literature)

Linette Brugmans, Emeritus, Ph.D. New York University (Nineteenth- and twentieth-century French literature)

Oscar A. Haac, Ph.D. Yale University (Eighteenth- and nineteenth-century French literature; comparative literature)

G. Norman Laidlaw, Emeritus, Ph.D. Columbia University (Eighteenth- and twentieth-century French literature)

Joseph A. Tursi, Chairman, Ph.D. New York University (Eighteenth-century Italian literature). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1974-75

Mark S. Whitney, Ph.D. University of Pennsylvania (Sixteenth-century French literature)

Elisnore M. Zimmermann, Director of Graduate Studies, Ph.D. Yale University (Seventeenth-, nineteenth-, and twentieth-century French literature; comparative literature)

Associate Professors

Harriet Allentuch, Ph.D. Columbia University (Seventeenth-century French literature)

Carol Blum, Ph.D. Columbia University (Eighteenth-century French literature)

Leonard R. Mills, Ph.D. Columbia University (Medieval French literature; paleography)

Department of French and Italian (Cont.)

Mario Mignone, Director of Undergraduate Studies, Ph.D. Rutgers University (Contemporary Italian literature)

D. Sandy Petrey, Ph.D. Yale University (Nineteenth-century French literature)

Anthony Rizzuto, Ph.D. Columbia University (Nineteenth- and twentieth-century French literature)

Assistant Professors

Mia Cocco, Ph.D. University of California, Riverside (Italian Renaissance literature)

George Carpetto, Ph.D. Rutgers University (Fifteenth-century Italian humanism; romanticism)

Charles Franco, Ph.D. Rutgers University (Italian medieval literature)

Jeanine M. Goldman, Ph.D. Fordham University (French language; nineteenth-century French literature)

Gisele Kapuscinski, Ph.D. Columbia University (Linguistics; theatre)

Elizabeth P. Riggs, Ph.D. Columbia University (Medieval French language and literature; twentieth-century literature). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1974-75

Hugh Skubikowski, Ph.D. Indiana University (Medieval literature; history of the Italian language; methodology)

Teaching Assistants:

Estimated Number: 10

The Department of French and Italian offers a diversified program that meets the needs of all students interested in the study of French or Italian. Those wishing to major in either or both languages are offered several possible concentrations, each structured to assist students preparing for future careers or advanced study. The department also offers a minor in each language and a variety of courses of interest to non-majors, some in translation (see FRN 381 and ITL 381), some in the original language with reduced prerequisites.

Requirements for the Majors

A student wishing to major in French can choose among three concentrations. Italian majors may choose among four concentrations. These concentrations are designed to allow a maximum of flexibility in the students' programs and to fulfill their varying needs and interests. All of them require as a basis a solid preparation in the language of the major. Students will choose one of the concentrations offered according to whether they wish to acquire a general humanistic background (Concentration A in Language and Literature or C in Language and Humanities); whether they wish to prepare for graduate study in literature (Concentrations A and C); whether they wish to prepare for teaching on the secondary school level (Concentration A in Language and Literature or D in Italian Language and Linguistics); whether they wish to prepare for work in law, government, international relations, business, banking, hotel management, etc. or translation and interpretation (Concentration B in Language and the Social Sciences or A in Language and Literature).

Note: All students should consult with the appropriate departmental advisors. Students opting for Concentrations B and C must obtain departmental approval for their program by submitting it in advance, after consultation with the advisor, to the Director of Undergraduate Studies or the Chairman. In order to complement the major in French or Italian, students will be encouraged to take upper division courses in related fields: English, history, art, music, etc. All courses in the major must be taken for a letter grade.

French

The major in French leads to the Bachelor of Arts degree. The following courses are required.

A. Concentration in Language and Literature

	Credits
1. Required courses for a total of 15 credits:	
a. <i>Language courses</i>	
FRN 222 Introduction to Stylistics	3
FRN 321 Phonetics and Diction	3
FRN 322 Stylistics	3
b. <i>Literature courses</i>	
FRN 295, 296 Readings in French Literature: Analysis and Interpretation	6
2. Elective courses:	
21 additional credits of work in courses beyond FRN 295, 296, chosen in consultation with the departmental advisor	21
<i>Total</i>	<u>36</u>

B. Concentration in French and the Social Sciences

This program, with the same core requirements in French, can also, in exceptional cases, with the permission of the special advisor in charge of the program and the Director of Undergraduate Studies or the Chairman, be adapted according to the same principles outlined below to include a secondary field from the natural or mathematical sciences.

	Credits
1. Required courses for a total of 30 credits:	
FRN 221 Conversation and Composition	3
FRN 222 Introduction to Stylistics	3
FRN 295, 296 Readings in French Literature: Analysis and Interpretation	6
FRN 320 Practical French	3
FRN 321 Phonetics and Diction	3
FRN 322 Stylistics	3
One course in French literature numbered 301 or above	3
FRN 390 French Civilization	3
FRN 447 Directed Readings in French (to be undertaken after completion of FRN 320, 322, 390, and 9 credits in the allied field)	3

2. Elective courses: 12 additional credits to be chosen with the help of the designated advisor and approved by the department. Students will normally choose a sequence of three courses in one department of the Division of Social and Behavioral Sciences, which may include the introductory course. The fourth course may be chosen in the same department or in a related department of the same division.	Credits <u>12</u>
<i>Total</i>	42

C. Concentration in French and the Humanities

1. Required courses for a total of 27 credits	Credits
FRN 221 Conversation and Composition	3
FRN 222 Introduction to Stylistics	3
FRN 321 Phonetics and Diction	3
FRN 322 Stylistics	3
FRN 295, 296 Readings in French Literature: Analysis and Interpretation	6
Two courses in French literature related to the student's chosen field	6
FRN 390 French Civilization	3
2. Elective courses: 15 additional credits to be chosen with the help of an advisor and approved by the department: One course in history (above 100 level) Four courses in any of the other humanities or history (except other foreign languages) above the 100 level. The student will concentrate on one period and should be familiar with more than one discipline.	Credits <u>12</u>
<i>Total</i>	42

Italian

The major in Italian leads to the Bachelor of Arts degree. The following courses are required.

A. Concentration in Language and Literature

1. Required courses for a total of 12 credits:	Credits
a. Language courses	
ITL 222 Conversation and Composition II	3
ITL 321 Advanced Conversation and Composition I	3
b. Literature courses	
ITL 295, 296 Introduction to Italian Literature I, II	6
2. Elective courses: 21 additional credits of work in courses beyond ITL 295, 296, chosen in consultation with the departmental advisor	Credits <u>21</u>
<i>Total</i>	33

B. Concentration in Italian and the Social Sciences

This program, with the same core requirements in Italian, can also, in exceptional cases, with the permission of the special advisor in charge of the program and the Director of Undergraduate Studies or the Chairman, be adapted according to the same principles outlined below to include a secondary field from the natural or mathematical sciences.

1. Required courses for a total of 30 credits:	Credits
ITL 221, 222 Conversation and Composition I, II	6
ITL 295, 296 Introduction to Italian Literature I, II	6
ITL 320 Practical Italian	3
ITL 321, 322 Advanced Conversation and Composition I, II	6
One course in Italian literature on the 300 level given in Italian	3
ITL 390 The Italian Scene	3
ITL 447 Directed Readings in Italian (to be undertaken after completion of ITL 320, 322, 390, and 9 credits in the allied field)	3
2. Elective courses: 12 additional credits to be chosen with the help of the designated advisor and approved by the department. Students will normally choose a sequence of three courses in one department of the Division of Social and Behavioral Sciences, which may include the introductory course. The fourth course may be chosen in the same department or in a related department of the same division.	Credits <u>12</u>
<i>Total</i>	42

C. Concentration in Italian and the Humanities

1. Required courses for a total of 27 credits:	Credits
ITL 221, 222 Conversation and Composition I, II	6
ITL 295, 296 Introduction to Italian Literature I, II	6
ITL 321, 322 Advanced Conversation and Composition I, II	6
Two courses in Italian literature related to the student's chosen field	6
ITL 390 The Italian Scene	3
2. Elective courses: 15 additional credits to be chosen with the help of an advisor and approved by the department: One course in history (above 100 level) Four courses in any of the other humanities or history (except other foreign languages) above the 100 level. The student will concentrate on one period and should be familiar with more than one discipline.	Credits <u>12</u>
<i>Total</i>	42

D. Concentration in Language and Linguistics

	Credits
1. Required courses for a total of 33 credits:	
ITL 221, 222 Conversation and Composition I, II	6
ITL 295, 296 Introduction to Italian Literature I, II	6
ITL 320 Practical Italian	3
ITL 321, 322 Advanced Conversation and Composition I, II	6
Three courses in Italian literature above the 300 level	9
ITL 390 The Italian Scene	3
2. Elective courses:	
Nine additional credits in linguistics (general linguistics, applied linguistics, or philology of Romance languages)	9
Total	42

Note: Students whose language proficiency is such that they can be given credit for the equivalent of ITL 221, 222 may apply, and are strongly urged to do so, to have a course in art, music, history, or other languages count for major credit.

Students who wish to offer their native language as the main area of concentration will be asked to replace 222, 320, and 321 by English courses appropriate to their level of proficiency in that language.

Teacher Training Program

Students who wish to prepare for certification as secondary school teachers of French or Italian or both should consult appropriate departmental advisors concerning requirements and procedures for the teacher preparation program. All students will be required to take FLA 339 and FLA 340 among the four courses in education required by the State Education Department. See also alphabetical listing, Foreign Languages Secondary Teacher Preparation Program.

Honors Program in French and Italian

To be eligible to participate in the honors program, departmental majors must have an overall average of 3.0 and an average of 3.5 in French or Italian through the junior year. An eligible student wishing to write a senior thesis must find a faculty member of the department to act as thesis advisor. The student, with the approval of this advisor, must submit a proposal of a project in writing to the department. Deadline for submission of the proposal for fall semester is April 30 and for spring semester is November 30. Final selection of candidates and topics will be determined by an Honors Committee of the Department of French and Italian. Students selected for the program must enroll in FRN or ITL 495 for the semester in which the thesis is written. The thesis will be evaluated by the thesis advisor, another member of the French or Italian faculty, and a third reader from outside the department. For further information consult the Director of Undergraduate Studies.

Requirements for the Minors

The Department of French and Italian also offers a minor in each language. There are two emphases in both languages: one in language and one in literature.

Minor in French

	Credits
A. Emphasis on Language	
Required courses: FRN 192, 222, 295 or 296, 320, 321, 322, 323, 390	24
Note: Literature courses may be substituted for FRN 320 or 323 or both.	
B. Emphasis on Literature	
Required courses: FRN 192, 222, 295, 296	12
Electives: Four courses from 301 to 394	12
Total	24

Minor in Italian

	Credits
A. Emphasis on Language	
Required courses: ITL 192, 221, 222, 295 or 296, 320, 321, 322, 390	24
Note: Literature courses may be substituted for ITL 222 or 320 or both.	
B. Emphasis on Literature	
Required courses: ITL 192, 222, 295, 296	12
Electives: Four courses on the 300 level	12
Total	24

All courses are to be taken for a letter grade.

Study Abroad

The Department of French and Italian sponsors study abroad programs in France or Italy during intersession, December-January, and during the summer. For the intersession program, students may earn three credits, while students enrolled in the summer program may earn from three to six credits. These programs are available to all students of French and Italian, both majors and non-majors. Consult appropriate departmental advisors for these programs.

Placement

Entering students who wish to continue the study of French or Italian started in high school should consult a departmental advisor to help them in the choice of the appropriate course.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

French Language and Literature**FRN 111, 112 Elementary French I, II**

An introduction to spoken and written French, stressing pronunciation, speaking, comprehension, reading, and writing. Language laboratory will supplement class work. No student who has had two or more years of French in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for FRN 111 without written permission from the supervisor of the course.
Fall and spring, 3 credits each semester

FRN 113 Elementary French (An Intensive Course)

An intensive course covering the elementary French program (FRN 111, 112) in one semester. No student who has had two or more

years of French in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for this course without written permission from the supervisor of the course.

Fall and spring, 6 credits

FRN 191, 192 Intermediate French I, II

An intermediate course in conversation, composition, and the interpretation of French texts.
Prerequisite: FRN 112 or 113.
Fall and spring, 3 credits each semester

FRN 193, 194 Intermediate French: Emphasis on Reading

A course designed to prepare students for reading texts of moderate difficulty. The course will emphasize reading comprehension.

sion rather than speaking fluency, and will include a review of grammar and vocabulary building as necessary to achieve the ability to read at a reasonable speed.

Prerequisite: FRN 112 or 113.
Fall and spring, 3 credits each semester

FRN 195 Intermediate French (An Intensive Course)

Review of grammar and discussion of simple French texts through reading, writing, and discussion. Language laboratory will supplement class work.

Prerequisite: FRN 112 or 113.
Fall and spring, 6 credits

FRN 197 Intermediate French Conversation

This course may be taken separately or to supplement FRN 192 or FRN 195.

Prerequisite: FRN 112 or 113.
Fall and spring, 2 credits

FRN 221 Conversation and Composition

A course in the active use of spoken and written French. Language laboratory will supplement class work.

Prerequisite: FRN 192 or 195.
Fall and spring, 3 credits

FRN 222 Introduction to Stylistics

Reading of selected short passages of prose and poetry in class with emphasis on improved writing skills, oral expression, and increased mastery of French syntax and techniques of literary analysis.

Prerequisite: FRN 221.
Spring, 3 credits

FRN 295, 296 Readings in French Literature: Analysis and Interpretation

These courses will teach literary analysis and its applications to representative texts chosen from various periods of French literature. All readings will be done in French. Discussions will be in French.

Prerequisite: FRN 222.
Fall and spring, 3 credits each semester

FRN 301 The French Novel

A study of the nature and development of the novel from its beginnings to the present with special attention to the stylistic and thematic aspects of the works considered.

Prerequisite: FRN 222 or 295.
Fall, 3 credits

FRN 302 The French Comedy from Molière to Ionesco

The study of the comic tradition from Molière to the contemporary theatre.

Prerequisite: FRN 222 or 295.
Fall, 3 credits

FRN 320 Practical French

A course designed for students who wish to become more proficient in reading, writing, and translating French. Students will also be trained in the use of French in

business, in administration, and in everyday professional life. Emphasis will be placed on the idiomatic peculiarities of the French language and the relation of French to the structure of English.

Prerequisite: FRN 222.
Fall and spring, 3 credits

FRN 321 Phonetics and Diction

A course designed to develop mastery of the spoken language. Students will learn to express themselves in the current idiom with fluency and accuracy. At least one hour of laboratory weekly will be required.

Prerequisite: FRN 221 or 295 or 296.
Fall, 3 credits

FRN 322 Stylistics

A course designed to acquaint students with the subtleties of French grammar and style. Extensive practice in composition and in translation from English to French.

Prerequisite: FRN 222 or 295 or 296.
Spring, 3 credits

FRN 323 Advanced French Conversation

A course designed to develop and maintain complete fluency in the language.

Prerequisite: FRN 221 or 295 or 296.
Fall, 3 credits

Further Studies in French Literature

The specific content of courses FRN 333, 343, 351, 361, 373, 374 will appear in the Class Schedule and a description of the specific contents will be available in the department each semester. These courses may be repeated for credit with permission of the department as the subject matter differs. FRN 222 and FRN 295 or 296 are prerequisites for these courses.

FRN 333 Studies in Renaissance Literature

Fall, 3 credits

FRN 343 Studies in Seventeenth-Century Literature

Fall or spring, 3 credits

FRN 351 Studies in Eighteenth-Century Literature

Fall or spring, 3 credits each semester

FRN 361 Studies in Nineteenth-Century Literature

Fall or spring, 3 credits each semester

FRN 373, 374 Studies in Twentieth-Century Literature

Fall and spring, 3 credits each semester

FRN 381 French Literature in Translation

A course given in translation on a major French author or literary movement, designed primarily to give students in other disciplines an opportunity to become acquainted with the French tradition. Majors will be admitted by special permission of their advisors, and will do the reading and term papers in French.

Prerequisites: Two literature courses.
Fall or spring, 3 credits

FRN 390 French Civilization

A discussion of French civilization from the creation of the modern state to the present. The course is intended for those interested in studying the background and traditions of modern France. An anthology of historical texts and documents will serve as a point of departure; the institutions and life in France will be considered, along with the development of art, architecture, music, and literature. The emphasis will be on discussion (in French) and individual projects. Visiting lecturers will contribute to the variety of topics and points of view.

Prerequisites: FRN 222 and 295 or 296.
Fall, 3 credits

FRN 393, 394 Free Seminar

Free seminars are frequently built around themes like "Women in French Literature," "Self-Deception in the Seventeenth-Century *Moralistes* and the Twentieth-Century Novel," "The City in the French Novel." A detailed description of the seminar may be obtained from the department. May be repeated.

Prerequisite: Permission of department.
Fall and spring, 3 credits each semester

FRN 447 Directed Readings in French

Individually supervised readings in selected topics of French language and literature or, alternatively for the purpose of developing French vocabulary in a secondary field, in selected topics in the humanities, social sciences, or natural sciences. May be repeated.

Prerequisite: Permission of department.
Fall and spring, 1 to 6 credits

FRN 475 Undergraduate Teaching Practicum in French

Each student will conduct a regular problem or tutorial section that will supplement a regular language course under the guidance of a master teacher. Responsibilities may include preparing material for discussion, initial correction of homework and tests, and helping students with problems. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Fluency in French and permission of instructor.
Fall and spring, 3 credits

FRN 495 Senior Honors Project in French

A one-semester project for seniors. Arranged in consultation with the department, the project involves the writing of a paper under the close supervision of an appropriate instructor, on a suitable topic. Students who are candidates for honors will take this course.

Prerequisite: Permission of department.
Fall and spring, 3 credits

Italian Language and Literature

ITL 111, 112 Elementary Italian I, II

An introduction to spoken and written Italian, stressing pronunciation, speaking, comprehension, reading, and writing. Selected texts will be read. Practice in language laboratory supplements class work. No student who has had two or more years of Italian in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for ITL 111 without written permission from the supervisor of the course.

Fall and spring, 3 credits each semester

ITL 113 Intensive Elementary Italian

An intensive course covering the elementary Italian program (ITL 111, 112) in one semester. No student who has had two or more years of Italian in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for this course without written permission from the supervisor of the course.

Fall and spring, 6 credits

ITL 191, 192 Intermediate Italian

An intermediate course in the reading and discussion of selected Italian texts. An intensive grammar review will offer an opportunity to develop conversational ability.

Prerequisite: ITL 112 or 113.
Fall and spring, 3 credits each semester

ITL 195 Intensive Intermediate Italian

An intensive course covering the intermediate Italian program (ITL 191, 192) in one semester.

Prerequisite: ITL 112 or 113.
Fall and spring, 6 credits

ITL 221 Italian Conversation and Composition I

A course in spoken and written Italian, with emphasis on precision and fluency in the spoken form.

Prerequisite: ITL 192 or 195.
Fall and spring, 3 credits

ITL 222 Italian Conversation and Composition II

A course in spoken and written Italian, with emphasis on precision in written form.

Prerequisite: ITL 221.
Fall and spring, 3 credits

ITL 295 Introduction to Italian Literature I

Readings and discussions of representative writers in Italian literature of the nineteenth and twentieth centuries. This course is designed to introduce students to the main currents of Italian literature through analysis of literary texts.

Prerequisite: ITL 222.
Fall, 3 credits

ITL 296 Introduction to Italian Literature II

Readings and discussions of representative texts chosen from various periods of Italian literature from the thirteenth through the eighteenth centuries.

Prerequisite: ITL 222.
Spring, 3 credits

ITL 320 Practical Italian

A course designed for students who wish to become more proficient in reading, writing, and translating Italian. Students will also be trained in the use of Italian in business, in administration, and in everyday professional life. Emphasis will be placed on the idiomatic peculiarities of the Italian language and the relation of Italian to the structure of English.

Prerequisite: ITL 222.
Fall or spring, 3 credits

ITL 321 Advanced Conversation and Composition I

This course intends to develop fluency and accuracy in the use of the spoken language through intensive practice, exposition, class discussion, and the use of the language laboratory.

Prerequisite: ITL 222.
Fall, 3 credits

ITL 322 Advanced Conversation and Composition II

A course designed to acquaint students with the subtleties of Italian grammar and style. Extensive practice in composition and in translation from English to Italian.

Prerequisite: ITL 221 or 222.
Spring, 3 credits

ITL 324 History of the Italian Language

A survey of the development of the Italian language from its origin to the present day.

Prerequisite: ITL 221 or 222.
Spring, 3 credits

Further Studies in Italian Literature

The specific content of courses ITL 329, 330, 331, 351, 361, 373, will appear in the Class Schedule, and a description of the specific contents will be available in the department each semester. These courses may be repeated for credit with permission of the department as the subject matter differs. ITL 222, and 295 or 296 are prerequisites for these courses.

ITL 329, 330 Studies in Thirteenth- and Fourteenth-Century Literature

Fall and spring, 3 credits

ITL 331 Studies in Fifteenth- and Sixteenth-Century Literature

Fall or spring, 3 credits

ITL 351 Studies in Eighteenth-Century Literature

Fall, 3 credits

ITL 361 Studies in Nineteenth-Century Literature

Spring, 3 credits

ITL 373 Studies in Contemporary Literature

Fall or spring, 3 credits

ITL 381 Italian Literature in Translation

A course given in translation on a major Italian author or literary movement, designed primarily to give students in other disciplines an opportunity to become acquainted with the Italian tradition. Majors will be admitted by special permission of their advisors, and will do the reading and term papers in Italian.

Prerequisites: Two literature courses.

Fall or spring, 3 credits

ITL 390 The Italian Scene

The reality of Italy and the Italian people through a study of the evolution of the historical, cultural, political, and social character of the nation. This course will be taught in Italian.

Prerequisite: ITL 222 or 295 or 296.

Fall, 3 credits

ITL 393, 394 Free Seminar

Seminars built around a theme such as "Cities in Italian Literature," "Women in Italian Literature," "Death and Resurrection in

Contemporary Italian Literature," "Sin and Sensuality in the Italian Short Story." A detailed description of the seminar may be obtained from the department each semester.

Prerequisite: ITL 222.

Fall and spring, 3 credits each semester

ITL 447 Directed Readings in Italian

Individually supervised readings in selected topics of Italian language and literature or, alternatively for the purpose of developing Italian vocabulary in a secondary field, in selected topics in the humanities, social sciences, or natural sciences. May be repeated.

Prerequisite: Permission of department.

Fall and spring, 1 to 6 credits

ITL 475 Undergraduate Teaching Practicum in Italian

Each student will conduct a regular problem or tutorial section that will supplement a regular language course under the guidance of a master teacher. Responsibilities may include preparing material for discussion, initial correction of homework and tests, and helping students with problems. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Fluency in Italian and permission of instructor.

Fall and spring, 3 credits

ITL 495 Senior Honors Project in Italian

A one-semester project for seniors. Arranged in consultation with the department, the project involves the writing of a paper under the close supervision of an appropriate instructor, on a suitable topic. Students who are candidates for honors will take this course.

Prerequisite: Permission of department.

Fall and spring, 3 credits

Department of Germanic and Slavic Languages and Literatures

Professors

Edward J. Czerwinski, Ph.D. University of Wisconsin (Comparative Slavic literature; Slavic drama and theatre; Polish literature; Russian literature). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1973-74

Roman Karst, Emeritus, LL.M. Jagiellonian University, Cracow (Goethe; modern novel; Kafka; Mann)

Klaus Schröter, Ph.D. University of Hamburg (Literary theory; prose of the Weimar Republic; dialectal-materialistic aesthetics)

Leif Sjöberg, Ph.D. Uppsala University (Scandinavian literature; Ibsen, Strindberg, Lagerkvist, Ekelöf; Old Norse)

Associate Professors

Samuel Berr, Ph.D. New York University (Historical linguistics; Old Saxon; Yiddish language and literature). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1973-74

Russell E. Brown, Ph.D. Harvard University (Modern German literature; Expressionist poetry; Trakl, Brecht, Jahn)

Barbara Elling, Chairman, Ph.D. New York University (Romanticism; literature and sociology; methods of language teaching). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1972-73

Ferdinand A. Ruplin, Ph.D. University of Minnesota (Applied linguistics; Middle High German; computer-assisted instruction)

John R. Russell, Ph.D. Princeton University (Rococo; novella; computer-assisted instruction)

Lucy E. Vogel, Ph.D. New York University (Contemporary Russian culture; Russian literature of nineteenth and twentieth centuries)

Assistant Professors

Christina Y. Bethin, Ph.D. University of Illinois, Urbana (Slavic linguistics; Russian, Polish, and Ukrainian languages)

Daniel C. O'Neil, Emeritus, Ph.D. Cornell University (Literature and the visual arts; Barlach; problems of translation)

Lecturers

Ursula Meyer, Adjunct, Staatsexamen, University of Hamburg (Foreign language pedagogy)

Philippe D. Radley, Ph.D. Harvard University (Modern Russian literature; problems of translation; elementary language teaching)

Teaching Assistants

Estimated Number: 15

Requirements for the Major in German

The major in German leads to the Bachelor of Arts degree. The following courses are required.

	<i>Credits</i>
1. GER 199 German Civilization and Culture	3
2. GER 202 History of the German Language	3
3. GER 203 Introduction to Germanic Studies	3
4. GER 204 Survey of German Literature	3
5. GER 221, 222 German Conversation and Composition	6
6. GER 301 German Drama	3
7. GER 302 German Prose	3
8. GER 303 German Poetry	3
9. GER 304 Goethezeit	3
<i>Total</i>	<u>30</u>

Notes: All courses must be taken for letter grade.

The ascending numbers of the required options for the major are simply intended to suggest the sequence in which they might be studied most favorably; German 199-204 are to be regarded as pre- or corequisites to the courses beyond 204.

Students majoring in German may consider spending their junior or senior year at the University of Tübingen, Germany, with the permission of the department.

Requirements for the Minor in German

For students majoring in other departments, a German minor is available with three choices of emphasis. In all three cases, all courses must be taken for letter grades.

A. Emphasis on German Language

	<i>Credits</i>
1. GER 199 German Civilization and Culture	3
2. GER 202 History of the German Language	3
3. GER 221, 222 German Conversation and Composition	6
4. GER 321, 322 Advanced German Conversation and Composition	6
5. GER 337 Contrastive Structures	3
<i>Total</i>	<u>21</u>

B. Emphasis on German Language and Literature

	<i>Credits</i>
1. GER 199 German Civilization and Culture	3
2. GER 203 Introduction to Germanic Studies	3
3. GER 204 Survey of German Literature	3
4. GER 221, 222 German Conversation and Composition	6
5. GER 301 German Drama	3
6. GER 302 German Prose	3
7. GER 303 German Poetry	3
<i>Total</i>	<u>24</u>

C. Emphasis on German Language and Area Studies

	<i>Credits</i>
1. GER 199 German Civilization and Culture	3
2. GER 202 History of the German Language	3
3. GER 221, 222 German Conversation and Composition	6
4. GER 337 Contrastive Structures	3
5. HIS 311 Germany 1806-1890	3
6. HIS 312 Germany 1890-1945	3
<i>Total</i>	<u>21</u>

Requirements for the Major in Russian

The major in Russian leads to the Bachelor of Arts degree. The following courses are required.

	<i>Credits</i>
1. RUS 141, 142 Masterpieces of Russian Literature	6
2. RUS 221, 222 Russian Conversation and Composition	6
3. RUS 291 Special Author in Translation	3
4. RUS 292 Special Genre or Period in Translation	3
5. RUS 293 Aspects of Contemporary Slavic Culture	3
6. RUS 321 or 322 Advanced Conversation and Composition	3
7. RUS 302 History of the Russian Language or RUS 339 Linguistics for the Teacher of Russian	3
8. RUS 391 Special Author	3
9. RUS 392 Special Genre or Period	3
<i>Total</i>	<u>33</u>

Notes: All courses must be taken for letter grade.

HIS 209 or HIS 302 may be substituted for RUS 293.

The department strongly recommends that majors take related courses in other departments. A list of recommended courses is available from departmental advisors.

Students may also wish to complete some of their work abroad. SUNY maintains exchange programs with Russia and Poland for which qualified students may apply.

Requirements for the Minor in Russian

For students majoring in other departments, a Russian minor is available with three choices of emphasis:

A. Emphasis on Russian Literature

	<i>Credits</i>
1. RUS 141, 142 Masterpieces of Russian Literature	6
2. RUS 221, 222 Russian Conversation and Composition	6
3. RUS 291 Special Author in Translation or RUS 292 Special Genre or Period in Translation	3
4. RUS 302 History of the Russian Language	3
5. RUS 391 Special Author	3
6. RUS 392 Special Genre or Period	3
<i>Total</i>	<u>24</u>

B. Emphasis on Russian Language

	<i>Credits</i>
1. RUS 221, 222 Russian Conversation and Composition	6
2. RUS 321, 322 Advanced Conversation and Composition	6
3. RUS 302 History of the Russian Language	3
4. RUS 339 Linguistics for the Teacher of Russian	3
5. RUS 291 Special Author in Translation or RUS 292 Special Genre or Period in Translation or RUS 293 Aspects of Contemporary Slavic Culture	3
<i>Total</i>	<u>21</u>

C. Emphasis on Russian Language and Area Studies

	<i>Credits</i>
1. RUS 141 or 142 Masterpieces of Russian Literature	3
2. RUS 221, 222 Russian Conversation and Composition	6
3. RUS 293 Aspects of Contemporary Slavic Culture	3
4. RUS 490 Senior Seminar	3
5. HIS 209 Imperial Russia	3
6. HIS 302 Kievan and Muscovite Russia	3
7. HIS 362 History of Marxist Thought or ECO 317 Marxist Political Economy or another upper division course in another department related to Soviet studies	3
<i>Total</i>	<u>24</u>

Teacher Preparation

Students who wish to prepare for certification as secondary school teachers of German or Russian should consult appropriate departmental advisors. Those seeking certification in German are urged to take, in addition to the courses required for certification, GER 337 and 321, 322. Students of Russian are urged to take RUS 339 and 302.

See also alphabetical listing: Foreign Languages Secondary Teacher Preparation Program.

Placement in Language Courses for Incoming Students

The prerequisites for courses listed below indicate approximate placement levels. One year of high school foreign language is generally considered the equivalent of one college semester. Students are advised to consult the Undergraduate Director if they feel that the recommended course is inappropriate.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

Germanic Languages and Literatures**GER 111, 112 Elementary German I, II**

An introduction to spoken and written German, stressing pronunciation, speaking, comprehension, reading, writing, and culture. The course consists of three hours in a small section conducted in German, one hour in a group (plenary) section taught by a contrastive linguist, and one laboratory hour. No student who has had two or more years of German in high school (or who has otherwise acquired an equivalent proficiency)

may receive credit for GER 111 without written permission from the supervisor of the course. *Fall and spring, 3 credits each semester*

GER 113 Intensive Elementary German

An intensive course covering the elementary German program (GER 111, 112) in one semester. No student who has had two or more years of German in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for GER 113 without written permission from the supervisor of the course. *Fall and spring, 6 credits*

GER 115, 116 Reading German I, II

An introductory course designed to teach the student to read and translate German prose of moderate difficulty. Practice in translating from German into English and in transferring ideas into the appropriate terminology. This course is not intended to prepare the student for the major. May not be taken for credit after GER 191, 192. *Fall and spring, 3 credits each semester*

GER 191, 192 Intermediate German I, II

The reading and interpretation of a wide variety of German texts, with a review of German grammar, composition, and conversation. Work in the language laboratory will further develop audiolingual skills. *Prerequisite: GER 112 or 113. Fall and spring, 3 credits each semester*

GER 195 Intensive Intermediate German

An intensive course covering the intermediate German program (GER 191, 192) in one semester. *Prerequisite: GER 112 or 113. Fall and spring, 6 credits*

GER 199 German Civilization and Culture

An introduction to the history and culture of the German-speaking areas with an emphasis on the post-World-War-II period. The course, offered in English, is team taught by members of the department and guest speakers and is suitable for both German majors and non-majors. *Fall, 3 credits*

GER 200 German Literature in Translation

Selected works from major German authors such as Mann, Kafka, Böll, Grass, and Lenz will be read in translation. *Fall or spring, 3 credits*

GER 202 History of the German Language

The development of the German language from Indo-European to modern High German. While special emphasis will be placed on western Germanic languages, specifically German, some attention will be given to the Scandinavian languages and Gothic. The framework within which work will be done will be that of modern linguistic theory (generative-transformational phonology). A historically representative selection of texts will be examined. Conducted as a seminar. *Prerequisite: GER 192 or 195. Spring, 3 credits*

GER 203 Introduction to Germanic Studies

Using selected texts easily read and understood by students whose background in German may be limited, this course is intended to introduce those stu-

dents to terminology and techniques of literary analysis and interpretation. *Prerequisite: GER 192 or 195. Fall, 3 credits*

GER 204 Survey of German Literature

A chronological survey of German literature from its beginnings to the present with stress on defining the periods therein. All readings will be in German. *Prerequisite: GER 192 or 195. Spring, 3 credits*

GER 221, 222 German Conversation and Composition

This course consists of the active use of spoken and written German. *Prerequisite: GER 192 or 195. Fall and spring, 3 credits each semester*

GER 231 German for Business and Career

An introduction to the German business environment. Designed to broaden previous knowledge of German by emphasizing business terms and conversational skills. *Prerequisite: GER 192 or 195. Fall and spring, 3 credits*

GER 241 Non-Literary Texts: Social Sciences

A course designed to integrate an undergraduate sequence in German with a concentration in the social sciences by acquiring a German vocabulary in the relevant field. There will be non-literary readings in German. *Prerequisite: GER 192 or 195. Fall, 3 credits*

GER 242 Non-Literary Texts: Natural Sciences

A course designed to integrate an undergraduate sequence in German with a concentration in the natural sciences by acquiring a German vocabulary in the relevant field. There will be non-literary readings in German. *Prerequisite: GER 192 or 195. Spring, 3 credits*

GER 301 German Drama

A survey of German drama and its sub-genres. All work will be done in German. *Prerequisites: GER 203, 204. Fall, 3 credits*

GER 302 German Prose

A survey of German prose and its sub-genres. All work will be done in German. *Prerequisites: GER 203, 204. Spring, 3 credits*

GER 303 German Poetry

A survey of German poetry and its sub-genres. All work will be done in German. *Prerequisites: GER 203, 204. Fall, 3 credits*

GER 304 Goethezeit

An intensive study of German literature in the period 1750-1832. All work will be done in German. *Prerequisites: GER 203, 204. Spring, 3 credits*

GER 321, 322 Advanced German Conversation and Composition

A course designed to develop mastery of spoken German. Students will learn to express themselves idiomatically and fluently and become acquainted with the subtleties of German grammar and style.

Prerequisites: GER 221, 222.
Fall and spring, 3 credits each semester

GER 337 Contrastive Structures of German and English

A detailed descriptive analysis of modern German phonology, morphology, and syntax from the standpoint of transfer interference.

Prerequisite: GER 221, 222, or fluency in German.
Fall, 3 credits

GER 420 Special Topics in German Literature

An intensive study of the works of a German author or a period of German literature. All work will be done in German. May be repeated as the subject matter differs.

Prerequisites: GER 321, 322.
Fall or spring, 3 credits

GER 447 Special Author

A tutorial demanding intensive study of the works of a specific German-language author. All work will be done in German.

Prerequisites: GER 301-304.
Fall and spring, 3 credits

GER 448 Special Period

A tutorial demanding intensive study of German-language literature of a specific period. All work will be done in German.

Prerequisites: GER 301-304.
Fall and spring, 3 credits

GER 487 Independent Readings and Research in German

Qualified juniors and seniors may read independently in an approved program of advanced or specialized language, area, or culture studies under the supervision of a faculty member.

Prerequisites: GER 221 or 222 or 231 and permission of department.

Fall and spring, 1 to 3 credits

GER 488 Internship

Participation in local, state, national, and international public and private agencies and organizations to apply and reinforce language and related skills and knowledge of social and cultural institutions.

Prerequisites: GER 221, 222, 231, and permission of instructor, department, and Undergraduate Studies Office. Specific placement examinations where applicable.

Fall and spring, 3 to 9 credits

Selected Germanic Languages**SGL 111, 112 Elementary Selected Germanic Languages I, II**

An introduction to a selected Germanic language (Danish, Icelandic, Norwegian, etc.), speaking, comprehension, reading, and writing. Selected texts will be read. Practice in the language laboratory supplements class work. May be repeated for more than one language. No student who has had two or more years of the language selected in high school (or has otherwise acquired an equivalent proficiency) may receive credit for SGL 111 without written permission from the supervisor of the course.

Fall and spring, 3 credits

SGL 191, 192 Intermediate Selected Germanic Languages I, II

The reading and interpretation of a minor Germanic language's texts, with a review of grammar, composition, and conversation. The student gains an acquaintance with the various literary genres through examples drawn from representative authors. (This course may be repeated for more than one language.)

Prerequisite: SGL 112.
Fall and spring, 3 credits each semester

SGL 204 Survey of a Selected Germanic Literature

A chronological survey of a selected Germanic literature (short stories, poetry, novels) from the beginning to the present with stress on defining the periods therein. All readings will be done in the Germanic language.

Prerequisites: Reading ability in the language of the authors and permission of instructor.
Spring, 3 credits

Scandinavian**SWE 111, 112 Elementary Swedish I, II**

An introduction to spoken and written Swedish, stressing pronunciation, speaking, comprehension, reading, and writing. Selected texts will be read. Practice in the language laboratory supplements class work. No student who has had two or more years of Swedish in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for SWE 111 without written permission from the supervisor of the course.

Fall and spring, 3 credits each semester

SWE 191, 192 Intermediate Swedish I, II

The reading and interpretation of Swedish texts, with a review of Swedish grammar, composition, and conversation.

Prerequisite: SWE 112.
Fall and spring, 3 credits each semester

SWE 320 Special Topics in Swedish Literature

An intensive study of selected works of Swedish authors or a period of Swedish literature. All work will be done in Swedish. May be repeated as the subject matter differs.

Prerequisite: SWE 192.
Fall or spring, 3 credits

SWE 447 Directed Readings in Scandinavian

Individually supervised readings of selected Scandinavian authors such as Ibsen, Strindberg, Lagerkvist, Moberg, and Holberg. May be repeated.

Prerequisites: Reading fluency in the language of the author studied and permission of department.

Fall and spring, 3 credits

Yiddish**YDH 111, 112 Elementary Yiddish**

An introduction to spoken and written Yiddish, stressing pronunciation, speaking, comprehension, reading, writing, and culture. No student who has had two or more years of Yiddish in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for YDH 111 without written permission from the supervisor of the course.

Fall and spring, 3 credits each semester

YDH 191, 192 Intermediate Yiddish

The reading and interpretation of Yiddish texts, with a review of Yiddish grammar, composition, and conversation.

Prerequisite: YDH 112.
Fall and spring, 3 credits each semester

YDH 205 Yiddish Drama

Intensive study of Yiddish drama. All work will be done in Yiddish.

Prerequisite: YDH 192.

Fall, 3 credits

YDH 206 Yiddish Novel

Intensive study of the Yiddish novel. All work will be done in Yiddish.

Prerequisite: YDH 192.
Spring, 3 credits

Slavic Languages and Literatures—Polish**PSH 111, 112 Elementary Polish I, II**

An introduction to spoken and written Polish, stressing pronunciation, speaking, comprehension, reading, writing, and culture. No student who has had two or more years of Polish in high school (or who has otherwise acquired an

equivalent proficiency) may receive credit for PSH 111 without written permission from the supervisor of the course.

Fall and spring, 3 credits each semester

PSH 191, 192 Intermediate Polish I, II

The reading and interpretation of Polish texts, with a review of Polish grammar, composition, and conversation. The student gains an acquaintance with the various literary genres through examples drawn from representative Polish authors.

Prerequisite: PSH 112.
Fall and spring, 3 credits each semester

Minor East European Languages**EEL 111, 112 Elementary Minor East European Language I, II**

An introduction to spoken and written minor East European language (Serbo-Croatian, Czech, Ukrainian, Slovak, Macedonian, Slovenian, Bulgarian, or Hungarian), stressing pronunciation, speaking, comprehension, reading, writing, and culture. No student who has had two or more years of the language selected in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for EEL 111 without written permission from the supervisor of the course. (This course may be repeated for more than one language.)

Fall and spring, 3 credits each semester

EEL 191, 192 Intermediate Minor East European Language I, II

The reading and interpretation of a minor East European language's texts, with a review of grammar, composition, and conversation. The student gains an acquaintance with the various literary genres through examples drawn from representative authors. (This course may be repeated for more than one language.)

Prerequisite: EEL 112.
Fall and spring, 3 credits each semester

Russian**RUS 111, 112 Elementary Russian I, II**

An introduction to Russian. Class work will be supplemented by practice in the language laboratory. No student who has had two or more years of Russian in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for RUS 111 without written permission from the supervisor of the course.

Fall and spring, 3 credits each semester

RUS 113 Intensive Elementary Russian

An intensive course covering the elementary Russian program (RUS 111, 112) in one semester. No student who has had two or more years of Russian in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for RUS 111 without written permission from the supervisor of the course.
Fall and spring, 6 credits

RUS 141, 142 Masterpieces of Russian Literature in Translation

A survey in English of the major works of Russian literature of the nineteenth and twentieth centuries, such as Tolstoy's *War and Peace*, Dostoevsky's *Brothers Karamazov*, Solzhenitsyn's *Gulag Archipelago*. This course is designed to give the student a short history of Russian literature as well as a certain competence in the analysis of texts.
Fall and spring, 3 credits each semester

RUS 191, 192 Intermediate Russian I, II

An intermediate course in Russian stressing an active command of the language.
Prerequisite: RUS 112.
Fall and spring, 3 credits each semester

RUS 201 Tolstoy's Religious Thought

Tolstoy's later works in translation with emphasis on his religious philosophy as it is expressed in his short stories, such as "The

Kreutzer Sonata," "Master and Man," "A Confession," "Strider," and others.
Fall, 2 credits

RUS 221, 222 Russian Conversation and Composition

This course consists of the active use of spoken and written Russian.
Prerequisite: RUS 192.
Fall and spring, 3 credits each semester

RUS 291 Special Author in Translation

Each semester will be devoted to one particular author such as Tolstoy, Dostoevsky, Chekhov, etc. Essential works and significant criticism will be analyzed. May be repeated, but will count toward fulfillment of major requirements only once.
Prerequisites: RUS 141, 142 or two other literature courses.
Fall and spring, 3 credits

RUS 292 Special Genre or Period in Translation

Each semester will be devoted to one particular genre or period such as the Russian Novel of the Nineteenth Century, Russian Drama, the Golden Age, Symbolism, etc. Essential works and significant criticism will be analyzed. May be repeated, but will count toward fulfillment of major requirements only once.
Prerequisites: RUS 141, 142 or two other literature courses.
Fall and spring, 3 credits

RUS 293 Aspects of Contemporary Slavic Culture

Analysis and discussion of literary and social topics dealing with Russia or East Europe related to contemporary culture and life, such as: Dissidents in the Slavic World, The Jew in Russia, The Role of Women in the Slavic

World. May be repeated, but will count toward fulfillment of major requirements only once.
Prerequisite: RUS 142 or HIS 210.
Fall and spring, 3 credits

RUS 302 History of the Russian Language

The development of the Russian literary language from its beginnings to the present day. The influence of Church Slavonic on the development of the language will be discussed.
Prerequisite: RUS 192.
Spring, 3 credits

RUS 321, 322 Advanced Russian Conversation and Composition

A course designed to develop mastery of spoken Russian. Students will learn to express themselves idiomatically and fluently and become acquainted with the subtleties of Russian grammar and style.
Prerequisite: RUS 222.
Fall and spring, 3 credits each semester

RUS 339 Linguistics for the Teacher of Russian

Applied linguistics for future teachers of the Russian language; the phonetics and morphology needed to explain Russian grammar to students.
Prerequisite: RUS 192.
Spring, 3 credits

RUS 391 Special Author

A detailed study of the works of a major author of the nineteenth or twentieth century, such as Pushkin, Gogol, Turgenev, Blok, etc. Readings will be in Russian, and classes will be conducted

largely in Russian. May be repeated as the subject matter changes.
Prerequisites: RUS 141, 142 and RUS 222.
Fall and spring, 3 credits

RUS 392 Special Genre or Period

A detailed study of a special genre—such as the Russian Novel, Russian Drama—or period—such as the Baroque, the Golden Age. Readings will be in Russian, and classes will be conducted largely in Russian. May be repeated as the subject matter changes.
Prerequisites: RUS 141, 142 and RUS 222.
Fall and spring, 3 credits

RUS 394 Special Topics in Slavic Languages

The investigation of selected topics in Russian and other Slavic languages not included in the language sequence, providing students with research skills under the close supervision of faculty. Topics may include: the history of Soviet linguistics, Slavic accentology, aspect in the Slavic languages, strategies and techniques for the teaching of Slavic languages.
Prerequisite: RUS 321 or 322.
Spring, 3 credits

RUS 490 Senior Seminar

Group discussion in Russian and individual research on various aspects of Russian culture and life.
Prerequisites: RUS 141, 142 and RUS 222.
Fall and spring, 3 credits

Department of Hispanic Languages and Literature

Professors

Pedro Lastra, University Professor, University of Chile (Spanish-American literature)

Elias L. Rivers, Chairman, Ph.D. Yale University (Spanish literature; literary theory)

Iris M. Zavala, Ph.D. University of Salamanca (Seventeenth- to eighteenth-century Peninsular literature; Caribbean literature)

Associate Professors

Louise Vasvari Fainberg, Ph.D. University of California, Berkeley (Medieval Spanish literature;

Romance philology; linguistics). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1975-76

Román De La Campa, Ph.D. University of Minnesota (Bilingual-bicultural studies; applied linguistics; Spanish-American theatre)

Jaime A. Giordano, University Professor, University of Concepción (Spanish-American literature)

Clara E. Lida, Joint with History, Ph.D. Princeton University (Peninsular and Latin American intellectual history and culture)

James B. McKenna, Ph.D. Harvard University (Twentieth-century Hispanic culture and literature)

Adrián G. Montoro, Ph.D. Universities of Havana and Madrid (Medieval literature; modern critical theory)

Georgina Sàbat-Rivers, Ph.D. Johns Hopkins University (Spanish Golden Age and Colonial literature)

Assistant Professors

Lou Charnon-Deutsch, Ph.D. University of Chicago (Nineteenth-century Spanish literature)

Gonzalo Navajas, Ph.D. University of California, Los Angeles (Twentieth-century Spanish literature)

Teaching Assistants

Estimated Number: 15

The department offers a major program leading to the Bachelor of Arts degree in Spanish, two different minors in Spanish, and courses in Portuguese. Students wishing to major in Spanish should consult with a departmental advisor to choose individual programs.

Requirements for the Major in Spanish

Required Basic Courses

- | | |
|---|---|
| A. 1. Either SPN 221 Spanish Conversation and Composition I or SPN 220 Spanish Conversation and Composition for Students of Spanish-Speaking Background | 3 |
| 2. SPN 222 Spanish Conversation and Composition II
(Note: Challenge Examinations are given in SPN 221 and 222, but <i>not</i> in SPN 220) | 3 |
| B. Two courses chosen from SPN 301, 391, 392 | 6 |
| C. Three courses chosen from SPN 396, 397, 398, 462 | 9 |

II. Advanced Courses in Hispanic Linguistics, Literature, and Culture

- | | |
|---|-----------|
| A. Either SPN 421 or 442. (Taking both is strongly recommended) | 3 |
| B. Twelve additional credits of work in upper division courses chosen in consultation with the departmental advisor. (A maximum of three credits of SPN 447 is applicable towards this requirement) | 12 |
| Total | 36 |

All upper division courses in Spanish offered to fulfill major requirements must be passed with a grade of C or better.

The department requires that transfer students take at least eighteen credits of Spanish courses in residence at Stony Brook to complete a Spanish major.

Teacher Training Program

Students who wish to prepare for certification as secondary school teachers of Spanish should take at least two of the following courses: SPN 301, SPN 462, SPN 463. They should consult appropriate departmental advisors concerning additional requirements and procedures of the teacher preparation program. To be eligible to enter student teaching, students must have maintained a 3.0 grade point average in the major and a 2.5 grade point average overall. See also alphabetical listing: Foreign Languages Secondary Teacher Preparation Program.

The Honors Program in Spanish

To be awarded honors a departmental major must: (1) maintain an overall grade point average of at least 3.0 and a grade point average of at least 3.5 in Spanish courses taken for the major; (2) write a senior thesis judged worthy of honors. Students eligible to write a senior thesis must find a member of the department faculty to act as a thesis advisor and enroll in SPN 495. The thesis topic must be approved by the Director of Undergraduate Studies, the chairman, and the thesis advisor. The thesis will be evaluated by the thesis advisor, another member of the Spanish faculty, and a third reader from outside the department. Prerequisites to register in SPN 495 are: (1) same as requirement 1, above; (2) senior standing; (3) permission of department.

Minor in Spanish Language, Culture, and Literature

- | | |
|--|-----------|
| <i>Credits</i> | |
| I. Basic Language | |
| A. SPN 221 Spanish Conversation and Composition I or SPN 220 Spanish Language for Students of Spanish-Speaking Background | 3 |
| B. SPN 222 Spanish Conversation and Composition II | 3 |
| II. Advanced Courses | |
| A. Four courses at the 300 level | 12 |
| B. Two courses at the 400 level. Of these <i>one</i> is to be chosen from: SPN 421 Topics in Golden Age Literature and Culture or SPN 442 Topics in Spanish-American Literature and Culture from 1880 to the Present | 6 |
| Total | 24 |

Minor in Hispanic Bilingual-Bicultural Studies

The courses in this minor program cannot also be counted toward a major in Spanish except for the basic language courses, SPN 220, 221, and 222.

- | | |
|--|-----------|
| <i>Credits</i> | |
| I. Basic Language | |
| A. SPN 221 Spanish Conversation and Composition I or SPN 220 Spanish Language for Students of Spanish-Speaking Background | 3 |
| B. SPN 222 Spanish Conversation and Composition II | 3 |
| II. Advanced Courses | |
| A. 1. SPN 461 Hispanic Language and Culture in the U.S.A. | |
| 2. SPN 462 Contrastive Spanish-English Phonology | |
| 3. SPN 463 Contrastive Spanish-English Morphology | |
| 4. SPN 375 Introduction to Methods of Teaching English as a Second Language | 12 |
| B. Six credits to be chosen from:
SPN 301 Advanced Grammar and Composition
SPN 441 Topics in Peninsular Literature and Culture from 1898 to the Present
SPN 442 Topics in Spanish-American Literature and Culture from 1880 to the Present
SPN 444 Topics in Caribbean Literature and Culture
LIN 305 Introduction to Sociolinguistics
SOC 301 Principles of Sociology | 6 |
| Total | 24 |

All upper division courses in Spanish offered to fulfill minor requirements must be passed with a grade of C or better. At least nine credits of upper division Spanish courses must be earned at Stony Brook to complete the minors.

Study Abroad

Language majors and other interested students who would like to spend a semester or a year studying abroad should consult the Director of Undergraduate Studies.

Placement

Entering students who wish to continue the study of Spanish started in high school should consult a departmental advisor to help them in the choice of the appropriate course.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

Portuguese Language**POR 111, 112 Elementary Portuguese I, II**

An introduction to spoken and written Portuguese, stressing pronunciation, speaking, comprehension, reading, and writing. Language laboratory will supplement class work. No student who has had two or more years of Portuguese in high school (or who has otherwise acquired an equivalent proficiency) will be permitted to register for POR 111 without written permission from the supervisor of the course.
Fall and spring, 3 credits each semester

POR 191, 192 Intermediate Portuguese I, II

A comprehensive review of the Portuguese language. It is intended to develop a competence in reading, writing, and speaking Portuguese through the study of grammar and the interpretation of selected literary texts.
Prerequisite: POR 112.
Fall and spring, 3 credits each semester

POR 447 Directed Readings in Portuguese

Individually supervised readings in selected topics of Portuguese language and literature. May be repeated.
Prerequisite: Permission of department.
Fall and spring, 1 to 6 credits

Spanish Language**SPN 111, 112 Elementary Spanish I, II**

An introduction to spoken and written Spanish, stressing pronunciation, speaking, comprehension, reading, and writing. Language laboratory will supplement class work. No student who has had two or more years of Spanish in high school (or who has otherwise acquired an equivalent proficiency) will be permitted to register for SPN 111 without written permission from the supervisor of the course.
Fall and spring, 3 credits each semester

SPN 113 Intensive Elementary Spanish

An intensive version of SPN 111, 112. No student who has had two or more years of Spanish in high school (or who has otherwise acquired an equivalent proficiency) will be permitted to register for this course without written permission from the supervisor of the course.
Fall and spring, 6 credits

SPN 191, 192 Intermediate Spanish I, II

A comprehensive review of the Spanish language. It is intended to develop competence in reading, writing, and speaking Spanish through the study of grammar and the interpretation of selected literary texts.
Prerequisite: SPN 112 or 113.
Fall and spring, 3 credits each semester

SPN 220 Spanish Conversation and Composition for Students of Spanish-Speaking Background (Formerly SPN 198)

A course intended for students of Spanish-speaking background, designed to improve their competence in oral and written Spanish. May not be taken for credit in addition to SPN 221.
Fall and spring, 3 credits

SPN 221, 222 Spanish Conversation and Composition I, II

These courses consist of a thorough review of Spanish grammar and of the active use of spoken and written forms. SPN 221 may not be taken for credit in addition to SPN 220.
Prerequisite to SPN 221: SPN 192 or 195. Prerequisite to SPN 222: SPN 220 or 221.
Fall and spring, 3 credits each semester

Hispanic Linguistics, Literature, and Culture (Conducted in Spanish)**SPN 301 Advanced Grammar and Composition**

A review of advanced Spanish grammar with emphasis on improving writing skills and increasing mastery of Spanish syntax. Extensive practice in composition and in translation.
Prerequisite: SPN 222.
Fall and spring, 3 credits

SPN 302 Topics in Spanish Linguistics

The specific content of this course will be announced each semester. Possible topics may be: Spanish phonetics, History of the Spanish Language, Applied Linguistics for Secondary School Teachers.
Prerequisite: SPN 222.
Fall and spring, 3 credits

SPN 323 Advanced Spanish Conversation

A course designed to develop and maintain complete fluency in the language. Not open to native-background speakers or students who have been in a Spanish-speaking country for a considerable length of time.
Prerequisite: SPN 222.
Spring, 3 credits

SPN 391 The Culture and Civilization of Spain

The evolution of the culture and civilization of Spain as seen through its history, art, and literature.
Prerequisite: SPN 222.
Fall, 3 credits

SPN 392 The Culture and Civilization of Spanish America

The evolution of the culture and civilization of Spanish America as seen through its history, art, and literature.
Prerequisite: SPN 222.
Spring, 3 credits

SPN 396 Introduction to Spanish-American Literature

Readings in Spanish-American literature from the Colonial period to the present.
Prerequisite: SPN 222.
Fall, 3 credits

SPN 397 Introduction to Spanish Literature I

Readings in Peninsular literature from its origins through the seventeenth century.
Prerequisite: SPN 222.
Fall, 3 credits

SPN 398 Introduction to Spanish Literature II

Readings in Peninsular literature from the eighteenth century to the present.
Prerequisite: SPN 397.
Spring, 3 credits

Advanced Courses (Conducted in Spanish)

The topic to be studied in SPN 411, 421, 431, 432, 441, 442, 444, and 455 will appear in the Class Schedule, and a description of the specific contents will be available one semester in advance in the department. Each course may be repeated for credit as the subject matter changes.

SPN 411 Topics in Medieval and Renaissance Literature and Culture

Readings and discussion of major literary works in Spanish within the Medieval and Renaissance periods and their interrelation with the cultural context. Topics will vary. May be repeated.
Prerequisite: SPN 397.
Fall or spring, 3 credits

SPN 421 Topics in Golden Age Literature and Culture

Readings and discussion of major literary works within the Golden Age period (sixteenth and seventeenth centuries) and their interrelation with the cultural context. Topics will vary. May be repeated.
Prerequisite: SPN 397.
Fall or spring, 3 credits

SPN 431 Topics in Eighteenth- and Nineteenth-Century Peninsular Literature and Culture

Readings and discussion of major literary works of the eighteenth and nineteenth centuries in Spain and their interrelation with the cultural context. Topics will vary. May be repeated.
Prerequisite: SPN 398.
Fall or spring, 3 credits

SPN 432 Topics in Spanish-American Literature and Culture from the Colonial Period to 1880

Readings and discussion of major literary works in Spanish America within the Colonial, the Independence, and the Romantic periods and their interrelation with the cultural context. Topics will vary. May be repeated.
Prerequisite: SPN 396.
Fall or spring, 3 credits

SPN 441 Topics in Peninsular Literature and Culture from 1898 to the Present

Readings and discussion of major literary works in Spain from the Generation of 1898 to the present and their interrelation with the cultural context. Topics will vary. May be repeated.
Prerequisite: SPN 398.
Fall or spring, 3 credits

SPN 442 Topics in Spanish-American Literature and Culture from 1880 to the Present

Readings and discussion of major literary works in Spanish-America from the outset of modernism and naturalism to the contemporary period and their interrelation with the cultural context. Topics will vary. May be repeated.
Prerequisite: SPN 396.
Fall or spring, 3 credits

SPN 444 Topics in Caribbean Literature and Culture

Readings and discussion of relevant literary works in Puerto Rico, Cuba, and other Caribbean countries. Special emphasis will be given to the interrelation between literature and culture. Topics will vary. May be repeated.
Prerequisite: SPN 392 or 396.
Fall or spring, 3 credits

SPN 447 Directed Individual Studies

Individually supervised studies in selected topics of Hispanic language, literature, and culture. May be repeated. Normally no more than three credits are allowed toward the major requirements; other credits are considered as electives.
Prerequisite: Permission of instructor and department.
Fall and spring, 1 to 6 credits

SPN 455 Topics in Literary Genres

Reading of major works in Spanish belonging to specific literary genres such as drama (*comedia* and *entremés*), epic poetry (vernacular and classical), lyric poetry (sonnet, ode, elegy), fiction (romance, novel, short story); theoretical discussion and analysis of formal and thematic characteristics and of historical development.
Prerequisite: SPN 396 or 397 or 398.
Fall or spring, 3 credits

SPN 461 Hispanic Language and Culture in the U.S.A.

Studies in the forms of survival of the Hispanic culture in the United States and the identity crisis expe-

rienced by the Hispanic communities in this country. This course will include a survey of written material (from journalism to poetry) reflecting this conflict, and a critical analysis of the current theories of bilingualism and biculturalism as applied to those communities.

Prerequisite: SPN 222.
Fall, 3 credits

SPN 462 Contrastive Spanish-English Phonology

A study of Spanish and English phonology and phonetics from a

contrastive linguistics perspective. Its relation to the analysis of bilingualism.

Prerequisites: SPN 222 and permission of instructor.
Spring, 3 credits

SPN 463 Contrastive Spanish-English Morphology

A study of Spanish and English morphology and syntax from a contrastive linguistics perspective. Its relation to the analysis of bilingualism.

Prerequisites: SPN 301 and permission of instructor.
Fall, 3 credits

SPN 475 Undergraduate Teaching Practicum in Spanish

Each student will conduct a regular practice section that will supplement a regular Spanish language instruction course. The student will receive regularly scheduled supervision from the instructor. Responsibilities may include preparing material for practice sessions, initial correction of homework and tests, and helping students with problems. Grading

in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Upper division Spanish major, preferably senior standing, and permission of instructor and department chairman.

Fall and spring, 3 credits

SPN 495 Spanish Honors Seminar

See description and prerequisites of the Honors Program in Spanish, p. 97.

Spring, 3 credits

Department of History

Professors

Werner T. Angress, Ph.D. University of California, Berkeley (Modern Europe; Germany). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1974-75

David B. Burner, Ph.D. Columbia University (Twentieth-century U.S. political and social)

Ernesto Chinchilla-Aguilar, Ph.D. Escuela Nacional de Antropología de México (Colonial Latin America)

Daniel Fox, Adjunct, Ph.D. Harvard University (Social welfare and government)

Richard F. Kuisel, Ph.D. University of California, Berkeley (Modern Europe; France)

Eric E. Lampard, Ph.D. University of Wisconsin (Economic and urban)

Robert M. Levine, Ph.D. Princeton University (Latin America; Brazil)

Jackson T. Main, Ph.D. University of Wisconsin (U.S. Colonial)

Joel T. Rosenthal, Ph.D. University of Chicago (Medieval Europe; England)

Eli Seifman, Ph.D. New York University (History of education)

Bernard Semmel, Ph.D. Columbia University (Modern British social and intellectual)

William R. Taylor, Ph.D. Harvard University (Nineteenth- and twentieth-century U.S. cultural and intellectual)

Fred Weinstein, Ph.D. University of California, Berkeley (Psychohistory; Russia)

Associate Professors

Per A. Alin, Ph.D. University of Vienna (Ancient; pre-Classical archaeology)

Karl S. Bottigheimer, Chairman, Ph.D. University of California, Berkeley (England and Ireland)

Hugh G. Cleland, Ph.D. Case-Western Reserve University (U.S. labor). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1979-80

Ruth Schwartz Cowan, Ph.D. Johns Hopkins University (History of biology and technology; women in modern society)

Elizabeth Garber, Ph.D. Case-Western Reserve University (History of physics and thermodynamics; European intellectual and social)

Herman E. Lebovics, Ph.D. Yale University (Modern European intellectual and social)

Robert H.G. Lee, Ph.D. Columbia University (China and the Far East)

Helen Rodnite Lemay, Ph.D. Columbia University (Medieval and Renaissance intellectual; paleography)

Clara E. Lida, Joint with Hispanic Languages and Literature, Ph.D. Princeton University (Spain and Latin America; labor)

Wilbur R. Miller, Ph.D. Columbia University (Nineteenth-century U.S.)

Leslie Owens, Ph.D. University of California, Riverside (Afro-American history)

John W. Pratt, Ph.D. Harvard University (U.S. Constitutional and political; New York State)

Stephen Stein, Ph.D. Stanford University (Latin American social history and popular culture)

Ruben E. Weltsch, Ph.D. University of Colorado (Eastern Europe; Hapsburg Empire)

John A. Williams, Director of Undergraduate Studies, Ph.D. University of Wisconsin (British Empire; Africa; the Commonwealth; expansion of Europe)

Assistant Professors

Michael Barnhart, Ph.D. Harvard University (U.S. foreign policy; twentieth-century U.S. and modern Japan)

Ned Landsman, Ph.D. University of Pennsylvania (U.S. Colonial)

Gary Marker, Ph.D. University of California, Berkeley (Eighteenth- and nineteenth-century Russian social history)

Nancy Tomes, Ph.D. University of Pennsylvania (U.S. social and women's history)

W. Burghardt Turner, Emeritus, M.A. Columbia University (Afro-American and Native American history)

Lecturer

Karl W. Demuth, Adjunct, M.A. Harvard University (Modern Europe; France)

Teaching Assistants

Estimated Number: 30

The offerings in history concentrate on the fields of United States, Europe, and Latin America, though courses are offered regularly in other areas such as the Far East and the history of science. Courses numbered in the 100's include general surveys, especially suitable for freshmen, and others designed to introduce students to the methods and problems of history. Two-hundred level courses are basic surveys of areas and periods. The 300-level series deals with special topics and problems on a more advanced level, usually involving more intellectual content and written work (although the student must expect written work in every course). Four-hundred level colloquia are intended to offer the student an opportunity to do more intensive reading, research, and writing, usually in small classes, and with closer contact with the instructor.

Though the department does not set prerequisites for many of its courses, it does recommend that students interested in a certain area move from lower to higher number courses as they gain experience. History majors, history minors, and other students taking history courses as electives are advised to try a number of fields of history, at various levels of course offerings.

Each semester the department issues a booklet with a detailed description of its offerings. Students interested in history, whether as a major, a minor, a related social science course, or for general liberal arts purposes, are invited to read this booklet and to seek advice from the department's Director of Undergraduate Studies and other faculty members.

Requirements for the Major in History

A. Study Within the Area of the Major

Ten one-semester courses of which at least twelve credits must be selected from the 300- and 400-level, excluding HIS 397 and 398. At least three of these credits must be from the 400-level.

Credits

30

Notes on Group A

1. Included in the total 30 hours as prescribed above must be nine credits in non-U.S. history. No more than twelve credits from the 100-level may be applied toward the major. At least six credits must be taken from those offerings numbered HIS 100-104.

2. At least twelve credits must be taken within the Department of History at Stony Brook.

3. No transfer grade lower than C may be applied toward the major requirements.

B. Study in a Related Area

Two one-semester courses at the 300-level in a related discipline or disciplines to be chosen with the approval of the departmental advisor.

6

Total 36

Notes on Groups A and B

1. All courses taken to meet requirements A and B must be taken for a letter grade.

2. No grade lower than a C in an upper division course may be applied toward the major requirements.

The Honors Program in History

Departmental majors with a 3.0 average in history courses and related disciplines as specified in the major requirements are eligible to enroll in the History Honors Program at the beginning of their senior year.

The student, after asking a faculty member to be a sponsor, must submit a proposal to the department indicating the merit of the planned research. The supervising faculty member must

also submit a statement supporting the student's proposal. This must be done in the semester prior to the beginning of the project.

The honors paper resulting from a student's research will be read by two historians and a member of another department, as arranged by the Director of Undergraduate Studies. If the paper is judged to be of unusual merit and the student's record warrants such a determination, the department will recommend honors.

The Minor in History

The minor, which requires 18 credits, is organized around the student's interest in a particular area of history, defined either by geography (e.g., United States, Latin America) or topic (e.g., imperialism, social change). Courses must be taken for a letter grade. The specific distribution of the credits should be determined in consultation with the Director of Undergraduate Studies. An example of an acceptable distribution would be the following:

	Credits
A. One two-semester survey course in the period of the student's interest (100- or 200-level)	6
B. One (additional) course at the 200-level	3
C. Three courses at the 300- or 400-levels, at least one of which must be at the 400-level	9
Total	18

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

HIS 100 The Ancient World

A broad survey of the development of the Near Eastern and Mediterranean civilizations of Mesopotamia, Egypt, and neighboring areas as well as Greece and Rome from their earliest beginnings to the decline of the Roman Empire.

Fall or spring, 3 credits

HIS 101 Introduction to European History: Pre-Industrial

A study of continuity and change in European ideas and institutions between the Middle Ages and the French Revolution. Feudal society, the rise of cities, the Reformations, and the Old Regime will be discussed.

Fall, 3 credits

HIS 102 Introduction to European History: Modern Europe

A study of European ideas and institutions during the nineteenth and twentieth centuries: the growth of industrialism and of democracy; the Marxist challenge and the Russian Revolution; the great world wars and the waning of European hegemony.

Spring, 3 credits

HIS 103 American History to 1877

A survey of American history from the Age of Discovery to the end of Reconstruction. Topics to be treated will include such subjects as the transplantation of European culture to America, the rise of American nationalism, the democratization of American society, the institution of slavery, and the emergence of an industrial society.

Fall, 3 credits

HIS 104 United States Since 1877

A survey of modern American history from the end of Reconstruction to the present. The course will focus upon the impact of industrialization upon social, cultural, and political life; the emergence of the U.S. as a world power; and the adaptation of that power to the crises of the later twentieth century.

Spring, 3 credits

HIS 107 America in the 1960's

An introduction to the study of history through an analysis of contemporary American politics and culture from the Eisenhower years to the present.

Fall, 3 credits

HIS 135 Science in History

An examination of scientific ideas in their influence on concepts of man and society, from the Cartesian-Newtonian mechanical model to Freudian psychology. Topics covered will be: mechanism and Lockeian psychology applied to law, government and citizenship; evolution and the struggle for existence applied to economic and political theory; Freudian psychology applied to social theory.

Fall, 3 credits

HIS 136 Technology in History

An examination of technological developments in their influence on social structure and social values. Topics covered will be: the industrial revolution; the role of tech-

nology in the formation of feudal society; the technological utopias of the nineteenth century; technology in the development of the American West, etc.
Spring, 3 credits

HIS 201 England from 1066 to 1688

The development of English society will be traced from the Norman Conquest to the "Glorious Revolution" with special attention to the feudal constitution, the evolution of Parliament, the Civil War, and the Commercial Revolution.
Fall, 3 credits

HIS 202 England Since 1688

The transformation of English society by the Industrial Revolution, the development of parliamentary politics and democracy, the growth of imperial power, and the readjustment to twentieth-century realities.
Spring, 3 credits

HIS 208 Ireland from St. Patrick to the Present

A survey of the history of Ireland with emphasis upon its colonization and the subsequent emergence of an independent, though troubled and fragmentary, national state.
Alternate years, 3 credits

HIS 209 Imperial Russia

The political, social, and cultural developments from Peter the Great to the Russian Revolution with emphasis on the unique institutional structure of Tsarist Russia and the problem of its relations with the West.
Fall, 3 credits

HIS 210 Soviet Russia

The ideological and social background of the Russian Revolution and the evolution of Soviet rule: the problem of industrialization, the relations with the capitalist West, and totalitarian control over society.
Spring, 3 credits

HIS 213 Latin America to 1825

The Spanish and Portuguese colonies in the New World, with emphasis on exploration, settlement, institutions, and the struggle for independence.
Alternate years, 3 credits

HIS 214 Latin America Since 1825

The evolution of Latin America since independence, with emphasis on political, economic, and social problems.
Spring, 3 credits

HIS 219 Far Eastern Civilization: Origins and Development

A survey of the history of the Far Eastern countries of China, Japan, and Korea from prehistory to the mid-nineteenth century. Emphasis will be on social and political changes in these countries and the enduring elements of their cultures.
Fall, 3 credits

HIS 220 Far Eastern Civilization: The Modern Transformation

A survey of the modern history of the Far Eastern countries of China, Japan, and Korea from the mid-nineteenth century to present day. Emphasis will be on the impact of the West, reform movements, wars, and revolutions that transformed their traditional society into modern states.

Prerequisite: HIS 219 recommended.
Spring, 3 credits

HIS 225 Civilization of Israel I

The course of Jewish history and the development of Judaism during the Persian, Hellenistic, and Roman periods (ca. 500 B.C.E.-ca. 500 C.E.). The course begins with the close of the Hebrew Bible, examines the varieties of Judaism which then arose, and ends with the consolidation of Rabbinic Judaism on one hand and Christianity on the other. This course is identical with JDS 225.
Fall, 3 credits

HIS 226 Civilization of Israel II

The history of the Jews and of Judaism since the fall of the Roman Empire and the rise of Islam. The course concludes with a study of the Holocaust and the creation of the State of Israel, and includes a survey of the major forms of American Jewish life. This course is identical with JDS 226.
Spring, 3 credits

HIS 227 Modern Mexico

The emergence of the Mexican nation in the nineteenth century and its Revolution. The course provides an overview of Mexican history since Independence, stressing the Reform, the 1910-20 conflict, the role of the Church, land reform, and the modern one-party state.
Spring, 3 credits

HIS 230 The Ancient Near East

The development of early civilizations in Mesopotamia, Egypt, and neighboring areas from the Stone Age to the rise of the Persian Empire.
Fall or spring, 3 credits

HIS 231 History of Greece

A survey of Greek history from the Stone Age beginnings with special emphasis on the achievements of the Greeks in the Archaic and Classical periods.
Fall or spring, 3 credits

HIS 232 History of Rome

The development of the Roman Republic and Empire with an emphasis upon the institutions which bound the Roman Mediterranean together and upon the Greco-Roman civilization of the Empire.
Spring, 3 credits

HIS 233 Medieval History, 300-1100

European history from the decline of Rome to the eleventh century, including the rise of Christianity, Byzantium, Islam, the Gregorian reform, and feudalism.
Fall, 3 credits

HIS 234 The High Middle Ages, 1100-1400

The High Middle Ages, including the crusades, courtly love, the twelfth-century Renaissance, scholasticism, Franciscanism, and the Inquisition.
Spring, 3 credits

HIS 235 Humanism and Renaissance

The study of the Italian Renaissance with particular emphasis on the intellectual history of the period. Non-Italian thinkers who played a role in the intellectual movements of the time will also be considered.
Fall, 3 credits

HIS 236 The Age of the Reformation

A study of pre-Reformation currents such as mysticism and humanism, followed by an examination of the sixteenth-century reformations. The course also includes economic and political changes in the sixteenth century.
Spring, 3 credits

HIS 237 Europe in the Seventeenth Century

A comparative examination of the societies of western Europe in a period of marked stress and change.
Alternate years, 3 credits

HIS 238 Europe, 1815-1914

European history from the Congress of Vienna to the outbreak of the First World War, with emphasis on political and social developments, but also including economic and cultural trends.
Alternate years, 3 credits

HIS 239 Europe, 1914-1945

European history from the outbreak of the First World War to the post-World War II period, with emphasis on political and social developments, but also including economic and cultural trends.
Fall, 3 credits

HIS 240 Europe Since 1945

A study of contemporary Europe emphasizing political developments beginning with the Cold War, decolonization, the problems of post-industrial society, managed capitalism, and intellectual and cultural movements like existentialism and Marxist humanism.
Spring, 3 credits

HIS 241 The Holocaust: The Destruction of European Jewry, Causes and Consequences

The rise of modern anti-Semitism and its political application in Nazi Germany. Topics covered include the destruction process, ghetto

life, resistance, foreign response, and the war crimes trials. This course is identical with JDS 241.
Prerequisite: JDS/HIS 226.
Fall, 3 credits

HIS 242 Women in European History

The role and position of women in European history. The course will consider, among other topics, Roman prostitution, barbarian women, courtly love, and witchcraft.
Fall or spring, 3 credits

HIS 252 The British Commonwealth

Examines British control over dependencies in Africa, Asia, and the Pacific since the eighteenth century, through comparative study of imperial advance, colonial policy, plural societies, resistance, transfer of power.
Alternate years, 3 credits

HIS 262 American Colonial Society

Political, economic, social, and cultural characteristics of the colonies during the eighteenth century.
Spring, 3 credits

HIS 263 Age of the American Revolution

The social, economic, and political history of the period 1763-1800. The course stresses social and economic changes, the causes and results of the revolution, the formation of new state and national governments, and the first party system.
Fall, 3 credits

HIS 264 The Young Republic

Political, economic, social, and cultural developments from 1800 to 1840. Stresses economic expansion, the westward movement, the fall of the first party system and the beginning of the second, and significant changes in religion and society.
Fall, 3 credits

HIS 265 Civil War and Reconstruction

The course deals with the crisis of sectionalism, the rise of Southern nationalism and of the Republican Party, secession, the Civil War, abolition, and the Reconstruction period.
Spring, 3 credits

HIS 267 Recent U.S. History, 1877-1918

The growth of industrialism in the United States and its impact on political, economic, and intellectual life, and on American relations with the outside world through World War I.
Fall or spring, 3 credits

HIS 268 Recent U.S. History, 1919 to the Present

The 1920's, the Great Depression and the impact of Keynesian thought, the New Deal, the rise of industrial unionism, World War II, the Cold War, and technological and social change are among the topics.

Spring, 3 credits

HIS 271 History of New York State

A general introduction to the history of New York State from its colonial origins to the present. The course surveys major political, economic, and social developments within their geographical setting.

Fall, 3 credits

HIS 277 History of American Labor to 1900

A history of working people from colonial times through the industrial revolution to 1900. The influence of immigration and of utopians, anarchists, and socialists is considered. Lectures are illustrated with paintings, photographs, blueprints, and other visual data from the period. There are recitation sections. Emphasis is on reasoning from evidence rather than on the presentation of facts.

Fall, 3 credits

HIS 278 History of American Labor Since 1900

A history of working people during the twentieth century. The course considers such topics as AFL, IWW, mass production, scientific management, the rise and decline of the Communist Party, the CIO, and labor in politics. Lectures are illustrated with photographs, newsreels, paintings, and other visual data from the period. There are recitation sections. Emphasis is on reasoning from evidence rather than on the presentation of facts.

Spring, 3 credits

HIS 282 History of Biology

The course will examine ancient Greek ideas about the nature of life, the development of taxonomy, embryology, cytology, Darwinism, biochemical biology, and the debate between vitalism and mechanism. This course is identical with BIO 282.

Prerequisite: BIO 151, 152.

Fall, 3 credits

HIS 284 Sex in History (Formerly HIS 283)

A study of the role of sex in various historical periods and civilizations. This course aims to introduce the student to comparative history—the study of different historical periods and civilizations through a theme that is common to them all.

Fall or spring, 3 credits

HIS 295 History of Africa South of the Sahara

Africa, 800-1800; the quickening pace of internal change and external contact, 1800-1880; Euro-

pean conquest and administration, 1800-1945; the end of empire and the recovery of independence.

Alternate years, 3 credits

HIS 296 Modern Latin America Through Film

The course will use feature films to study major topics in the development of modern Latin America. The films will provide both substantive information and an often polemical ground for class discussion. The films will vary in perspective from conservative to revolutionary.

Fall or spring, 3 credits

HIS 300 The Prehistoric Aegean

A study of the prehistoric cultures of Greece, Crete, and Troy, with a particular emphasis on the Minoan and Mycenaean palace centers of the late Bronze Age, primarily using the rich archaeological material but also contemporary and later written sources.

Fall or spring, 3 credits

HIS 301 Historical Research and Writing

Historical interpretation, analysis, research methods, and writing; criticism of the work of selected historians. Application of these skills to individual student research paper.

Prerequisite: Six credits of history.

Fall or spring, 3 credits

HIS 302 Kievan and Muscovite Russia

Russian history from tenth-century origins through the seventeenth century. Particular attention will be centered in Kievan civilization, the Tatar yoke, the rise of the Muscovite service state, and the Time of Troubles.

Fall, 3 credits

HIS 303 Medieval Culture and Society

An in-depth study of medieval culture and society, focusing on intellectual or social factors during the early, middle ages, high middle ages, or Renaissance.

Fall or spring, 3 credits

HIS 304 Early Modern England: Change and Reformation, 1509-1603

The development of English society from the reign of Henry VIII to the death of Elizabeth; the decline of medieval institutions, the course of the Reformation and its impact upon political, economic, and cultural life.

Prerequisite: HIS 201.

Alternate years, 3 credits

HIS 305 Early Modern England: Revolution and War, 1603-1714

An inquiry into the source, nature, and outcome of the English Revolu-

tion of the mid-seventeenth century. Various interpretations will be examined along with representative contemporary documents.

Prerequisite: HIS 201.

Alternate years, 3 credits

HIS 306 The Old Regime and the French Revolution

An examination of the evils of the Old Regime, of the excitement of the Revolution, and of the rise and fall of the Empire under Napoleon.

Alternate years, 3 credits

HIS 307 History of the Physical Sciences I: Theories of the Universe

The development of theories of the universe from ancient Greece to the present day, emphasizing changes in ideas which occurred during the late Renaissance. Einstein's ideas and modern cosmologies will also be discussed. This course is intended for students with a scientific background.

Fall, 3 credits

HIS 308 History of the Physical Sciences II: The Structure of Matter

The growth of alchemy in the Arabic Empire and the European Renaissance, chemistry in the nineteenth century, and quantum mechanics in the twentieth century. The general patterns of change which emerged in physics and chemistry will be emphasized. This course is intended for students with a scientific background.

Spring, 3 credits

HIS 309 Modern France, 1815-1900

The French nation's search for political democracy, economic and social stability, grandeur, and cultural preeminence in the nineteenth century.

Prerequisite: HIS 102.

Alternate years, 3 credits

HIS 310 Modern France, 1900 to the Present

The French nation's response to the traumas of world wars, depression, decolonization, and the challenge of industrial society from the Dreyfus Affair to the Fifth Republic.

Prerequisite: HIS 102.

Alternate years, 3 credits

HIS 311 The Rise of Imperial Germany, 1806-1890 (Formerly HIS 203)

The course of German history from the Napoleonic to the Bismarckian era. Major theme: The power struggles of traditional authoritarianism vs. liberalism and socialism in an age of drastic economic transformation.

Alternate years, 3 credits

HIS 312 From Empire to Third Reich: Germany, 1890-1945 (Formerly HIS 204)

From Bismarck's dismissal through Wilhelmian Empire, the First World War and Revolution to Germany's unsuccessful experiment with democracy—the Weimar Republic—accompanied

by the rise of Hitler's Nazi movement, which culminated in the Third Reich and the Second World War.

Alternate years, 3 credits

HIS 313 Eighteenth-Century England, 1714-1830

The emergence of Modern England: aristocracy and parliamentary rule; wars for empire; hierarchical society and industrialism; the Augustan and Romantic ages; evangelical revival; French Revolution and reaction. The age of Chatham, Wesley, Burke, Johnson, Adam Smith, Bentham, Wordsworth, Coleridge, and Shelley.

Alternate years, 3 credits

HIS 314 Victorian England, 1830-1901

The era of British economic and political preeminence. The establishment of a modern industrial society, flowering of liberalism, imperial expansion, rise of democracy and socialism. The age of Gladstone and Disraeli; Dickens and Kipling; Mill, Darwin, and Marx.

Alternate years, 3 credits

HIS 315 Twentieth-Century Britain

The decline and fall of British preeminence and imperial power. The crisis of liberalism, two world wars, trade unionism, socialism, and the welfare state. The age of Lloyd George and Churchill; Shaw; Russell, Orwell, and Keynes.

Alternate years, 3 credits

HIS 316 The Healer and the Witch in History

Female healers, their association with "diabolic" powers, and the progressive development of a mechanism for their repression and control. The course will also treat the development of organized medicine and its impact upon female healers and patients.

Fall or spring, 3 credits

HIS 317 Expansion of Europe

The European influence on the wider world during the industrial age. Forms of European overseas settlement, conditions of conquest, local responses to European domination, and decolonization will be studied. The course emphasizes comparisons and original documents.

Prerequisite: 200-level course on Modern Europe.

Alternate years, 3 credits

HIS 318 Social and Intellectual History of Europe

An examination of the great movements of ideas in their social and historical contexts in modern European history. Sample themes include liberalism, conservatism, romanticism, nineteenth-century realism, and the discovery of the unconscious.

Alternate years, 3 credits

HIS 319 U.S. Urban History

Historical studies of urbanization in the United States, with special reference to demographic, economic, and organizational features of urban and rural populations.

Prerequisites: HIS 103, 104.
Alternate years, 3 credits

HIS 321 History of Science Fiction as Social Criticism

A study of the beginning of science fiction with the advent of Copernican astronomy, and its use from the very beginning as a vehicle for social criticism and the construction of alternative societies. The development of this literature and the role of science in the solution, or as one of the sources, of social problems will be traced.

Prerequisite: 12 credits of natural science or mathematics.
Fall or spring, 3 credits

HIS 325 The Civil Rights Movement

A detailed study of the movement for civil rights from its origins, examining the establishment of NAACP, race relations between whites and blacks since 1900, the role of the Supreme Court and the federal government, and the turn to militancy in the 1950's and after. This course is identical with AFS 325.

Fall, 3 credits

HIS 327 The Culture of American Cities

The character of American culture from the Civil War to the present and its changes will be illustrated and discussed. Special attention will be given to the city as a cultural habitat and to the social and visual arts: theatre, film, and architecture. The examples chosen for study will necessarily be selective and are designed to suggest how popular culture was expressed at a particular time.

Fall, 3 credits

HIS 328 American Constitutional Origins

An examination of the English and colonial foundations of American constitutionalism, the political thought of the Revolution and creation of republican governments, the formation of the federal Constitution, and the rise of nineteenth century political democracy in the United States.

Prerequisite: HIS 103 recommended.
Fall, 3 credits

HIS 329 American Constitutional Development

A study of constitutional change, ranging from the dispute over the nature of the Union in the nineteenth century through the Civil War and Reconstruction and the problems associated with industrial growth, to the rise of big government in the present century.

Spring, 3 credits

HIS 330 Latin American Society

An examination of the basic elements in the evolution of Latin American society since independence. Topics will include authoritarianism, social control, social deviance, and role of the middle class, the Church, and education.

Fall, 3 credits

HIS 331 Cultural and Intellectual History of Latin America

A thematic study of major currents in Latin American cultural and intellectual history, emphasizing the competition between indigenous cultural influences and the foreign influences imparted by European *conquistadores* and settlers. The course will consider, in depth, such themes as *indigenismo*, *hispanidad*, positivism, modernism, and cultural nationalism. Major works of Latin American authors will be read in translation and analyzed.

Alternate years, 3 credits

HIS 333 Politics and Political Change in Latin America

A thematic study of the major political currents in the history of Latin America, concentrating on the efforts of the independent Latin American republics to interpret their national goals in terms of economic and social reality. Such themes as *caudillismo*, military intervention in civilian governance, authoritarianism, parliamentary democracy, and revolutionary ideologies will be examined in depth.

Alternate years, 3 credits

HIS 334 Modern Brazil (Formerly HIS 228)

The historical evolution of Brazilian society since Independence, stressing the period since 1922. Themes will include race and slavery; economic development and nationalism; authoritarianism and social control; popular culture and high culture.

Fall, 3 credits

HIS 337 The Hapsburg Empire, 1867-1918

An examination of Austria-Hungary in the age of imperialism. Major topics will be the adaptation and resistance to social change; economic development in East Central Europe; the rise of mass movements; the shaping of new national societies in a multinational structure; and the significance of Vienna in twentieth-century culture.

Prerequisite: HIS 102.
Alternate years, 3 credits

HIS 338 Modern Russian Intellectual History

The development of modern Russian thought from the Enlightenment of the late eighteenth century until the revolution of 1917. Emphasis will be placed on the relationship between ideas and society as well as the role of ideas in leading to the revolution of 1917. Political and social ideas (such as gentry radicalism, Hegelianism,

nihilism, populism, Marxism, and anarchism, will be given consideration primarily, but aesthetic and literary concepts will receive attention as well.

Prerequisite: At least one course in modern European history.
Alternate years, 3 credits

HIS 339 Russian Social History, 1825-1929

An in-depth review of the transformation of Russian society "from the bottom up." The course will examine the effects of economic and social transformation on large socio-economic groups in Russia from the end of the old society, through the emancipation of the serfs, to industrialization. It will then proceed to the revolutionary years of 1905-1917* and to the past revolutionary era to examine how the turmoil and the new society affected the lives of common people in Russia.

Prerequisite: At least one course in modern European history.
Alternate years, 3 credits

HIS 340 Intellectual History of China

A survey of major intellectual trends from ancient to contemporary China.

Spring, 3 credits

HIS 341 Twentieth-Century China

The history of China from the collapse of the monarchy to the triumph of communism, emphasizing the revolutionary, political, social, and economic changes in China today. Special attention will be given to the theory and practice of Chinese communism.

Fall, 3 credits

HIS 344 Twentieth-Century Japan

The history of Japan from the beginning of its imperialistic expansion in 1895 to World War II and postwar reconstruction, including such contemporary topics as educational issues, economic policies, and foreign relations.

Prerequisite: HIS 220 recommended.
Alternate years, 3 credits

HIS 361 Population and the Family

An examination of demographic and family history and the effect of political, economic, and technological change upon the basic and traditional entities. Focus will be either upon Europe or the United States.

Alternate years, 3 credits

HIS 362 History of Marxist Thought

The main traditions of Marxist theory and praxis. The roots of Marxism in the first half of the nineteenth century, the young Marx, and aspects of the work of the mature thinker. The various

and divergent traditions of Marxism up to present controversies will be emphasized. Readings will also include Karl Kautsky, Eduard Bernstein, George Lukacs, Louis Althusser, as well as Lenin and Rosa Luxemburg.

Alternate years, 3 credits

HIS 369 American Social History to 1860

An analysis of American social history from the first settlements to the beginnings of industrialization with special emphasis on changes in social structure and institutions such as the community, family, church, and school.

Prerequisite: HIS 103.
Fall, 3 credits

HIS 370 U.S. Social History, 1860-1929

The development of American society from the Civil War to the Great Depression, with special emphasis on the evolution of social institutions—primarily the family, church, school, welfare organizations, business, and professions—in response to industrial and urban growth.

Spring, 3 credits

HIS 371 American Roots

The roots of Americans through the immigration or migration experiences of WASPS, Blacks, Irish, Germans, Slavs, Jews, Italians, Asians, and Latins will be examined, emphasizing common elements of the immigration process as well as the unique history of the racial and ethnic groups. Homeland conditions, migration experiences, rejection and assimilation in the new land, and generational conflict will form the main themes.

Prerequisites: HIS 103 and 104 recommended.
Spring, 3 credits

HIS 375 History of U.S. Foreign Relations, 1774-1917 (Formerly HIS 275)

American foreign policy and diplomacy from 1774 to 1917 in terms of acquisition and confirmation of independence, geographical expansion and economic growth, and achievement of great power capabilities.

Fall, 3 credits

HIS 376 History of U.S. Foreign Relations, 1917 to the Present (Formerly HIS 276)

American foreign policy and diplomacy from 1917 to the present in terms of the cycle of violence associated with two world wars and developments since World War II.

Spring, 3 credits

HIS 377 American Economic History to 1860 (Formerly HIS 269)

The economic and social development of North America and the United States from colonial settlement through early industrialization. The emphasis is on changing population patterns, use of natural resources, technological advances in production and transport, the development of markets, and the role of public policy.

Alternate years, 3 credits

HIS 378 American Economic History Since 1860 (Formerly HIS 373)

The industrial transformation of the American economy and its consequences since 1860. Emphasis is on factors contributing to economic growth and instability, the development of corporate organization, and the changing character of public policy. *Alternate years, 3 credits*

HIS 379 American Legal History

The role of law and legal institutions in American society from the colonial period to the present with emphasis on the relations between the legal system and the processes of economic and social change in the United States. *Prerequisite: HIS 103 or 104. Fall and spring, 3 credits*

HIS 395 History of South Africa

An analysis of the development of South African society; expansion of white settlement since the seventeenth century; British imperialism, frontier conflicts, Afrikaner nationalism in the nineteenth century; patterns of race relations in the twentieth century; apartheid and African resistance. *Prerequisite: HIS 295 recommended. Spring, 3 credits*

HIS 397 The Teaching of History

A study of history as a subject in secondary schools: the nature of discipline, curricula models, scope and sequence of topics offered, new programs of history instruction, etc. Designed for prospective teachers of history in secondary schools. *Prerequisite: Five courses in history. Fall, 3 credits*

HIS 398 History Teaching Strategies

An examination of the instructional methods and materials for teaching history at the secondary

school level. Designed for prospective teachers of history in secondary schools. *Prerequisite: HIS 397. Spring, 3 credits*

HIS 401, 402, 403 Colloquia in European History

Subjects and periods, which will vary with student demand and faculty interest, will include such topics as the Renaissance, the Reformation, Conservatism, the French and Russian Revolutions, Fascism, population, and topics in particular national histories. May be repeated. *Prerequisite: Varying with subject. Consult departmental list of courses. Schedule to be announced, 3 credits each*

HIS 409 Colloquium in Russian History

A seminar in Russian history intended for history majors and other students who have taken courses in Russian studies. The topics will vary from year to year, depending upon the interests of the instructor. Emphasis will be placed on reading and discussion; lectures will be kept to a minimum. May be repeated as subject matter differs. *Prerequisite: HIS 209 or 210 or 321 or 322. Fall or spring, 3 credits*

HIS 411-414 Colloquia in American History

Subjects and periods, which will vary with student demand and faculty interest, will include such topics as colonial society, the revolutionary era, progressivism, urbanization, Afro-American history, constitutional history, social and intellectual movements, labor history, and the history of Native Americans. May be repeated as subject matter differs. *Prerequisite: Varying with subject. Consult departmental list of courses. Schedule to be announced, 3 credits each*

HIS 421, 422 Colloquia in Latin American History

Subjects and periods, which will vary with student demand and faculty interest, will include such topics as cultural history, the inde-

pendence movements, slavery and race relations, land tenure, the Catholic Church, and contemporary society and revolutions. May be repeated as subject matter differs. *Prerequisite: Varying with subject. Consult departmental list of courses. Schedule to be announced, 3 credits each*

HIS 431 Colloquium in Asian History

Subjects and periods, which will vary with student demand and faculty interest, will include such topics as Japanese nationalism and expansion, Far Eastern diplomatic history, nationalism in Southeast Asia. May be repeated as subject matter differs. *Prerequisite: Varying with subject. Consult departmental list of courses. Schedule to be announced, 3 credits each*

HIS 441 Colloquium in World History

Subjects and periods, which will vary with student demand and faculty interest, will include such topics as the expansion of Europe, theories of imperialism, revolutionary and religious movements, the psychoanalytical interpretation of history, and slavery. May be repeated as subject matter differs. *Prerequisite: Varying with subject. Consult departmental list of courses. Schedule to be announced, 3 credits each*

HIS 447 Independent Readings in History

Qualified juniors and seniors may read independently in an approved program under the supervision of a faculty member. No student will be allowed to enroll in this course more than once in each semester of the junior and senior years. *Prerequisite: Permission of department. Fall and spring, 1 to 3 credits*

HIS 451 Colloquium in Medieval History

Selected topics in medieval history will be studied with attention to primary sources and current historiographic controversies and developments. May be repeated as subject matter differs. *Prerequisite: Varying with subject. Consult departmental list of courses. Schedule to be announced, 3 credits each*

HIS 461 Colloquium in the History of Science

Topics, which will vary with student demand and faculty interest, will include such subjects as the history of American science, the social history of science, the impact of Darwinism, modern physics, and technology and social change. May be repeated as subject matter differs. *Prerequisite: Varying with subject. Consult departmental list of courses. Schedule to be announced, 3 credits each*

HIS 488 Internship

Participation in local, state, and national public and private agencies and organizations. Students will be required to submit written progress reports and a final written report on their experience to the faculty sponsor and the department. Grading in this course shall be Satisfactory/Unsatisfactory only. May be repeated up to a limit of nine credits. *Prerequisites: 15 credits in history and permission of instructor, department, and Undergraduate Studies Office. Fall and spring, 3 to 9 credits*

HIS 495-496 Senior Honors Project in History

A two-semester project for history majors who are candidates for the degree with honors. Arranged in consultation with the department, the project involves independent study and the writing of a paper under the close supervision of an appropriate instructor on a suitable topic selected by the student. Students enrolled in HIS 495 are obliged to complete HIS 496. *Prerequisite: Admission to the history honors program. Fall and spring, 3 credits each semester*

Interdisciplinary Program in the Humanities

Program Director

Louise Vasvari Fainberg (Hispanic Languages and Literature). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1975-76

Faculty Advisory Committee

Art—Claire Lindgren

Comparative Literature—Hugh Silverman. Recipient of the State University Chancellor's Award for Excellence in Teaching, 1976-77

English—Bruce Bashford

French and Italian—Mia Cocco

Germanic and Slavic Languages and Literatures—Ferdinand Ruplin

History—Herman Lebovics

Music—Anne Marie de Zeeuw

Philosophy—Donn C. Welton

Religious Studies—Robert Neville

Theatre Arts—Gordon Armstrong

The Interdisciplinary Program in the Humanities is designed for undergraduates attracted to humanistic study—art, history, languages, literature, music, philosophy, theatre—who prefer not to specialize in any single field. It involves introductory and upper division work in several departments, described in the requirements below.

Potential majors are strongly urged to consult the Program Director to help them prepare individual programs.

Requirements for the Major in the Humanities

The interdisciplinary major in the humanities leads to the Bachelor of Arts degree. The following courses are required. In choosing courses to satisfy requirements I, II, and IV, the student majoring in humanities should be careful to consider the relevant prerequisites for the clusters chosen for requirement III.

I. Two elementary courses (6 credits) in a foreign language not offered for college admission or one course above the elementary level (3 credits).

3 or 6 credits

II. One course from each group lettered A-C below. The student's choice of courses to satisfy this requirement will influence his or her choice of clusters for requirement III below. Those clusters most directly related to the following introductory courses are listed in parentheses following the course number.

9 credits

Group A: Literature

- HUM 107, 121-124
- CLT 109 or CLT 110 (All CLT courses in Requirement III)
- CLS/CLT 113 (Cluster A, Requirement III)
- EGL 204 (All EGL courses, Requirement III)
- Any survey course on foreign literature in the original language (Foreign literature courses in Requirement III)

Group B: The Arts

- ARH 101 (ARH courses in Clusters A and B, Requirement III)
- ARH 102 (ARH courses in Clusters C-F, Requirement III)
- MUS 101 (All MUS courses, Requirement III)
- THR 281 (All THR courses in Clusters A-D, Requirement III)
- THR 282 (All THR courses in Clusters E and F, Requirement III)

Group C: History and Philosophy

- HUM 176
- HIS 101 (HIS courses in Clusters B-D, Requirement III)
- HIS 102 (HIS courses in Clusters E and F, Requirement III)
- PHI 101 (PHI courses in Clusters A-C, Requirement III)
- PHI 102 (PHI courses in Clusters D-F, Requirement III)
- RLS 101 (RLS courses in Requirement III)

III. From any two of clusters A-F below, a minimum of three courses from each cluster chosen. No more than one course from a single department may count toward the three courses required within a given cluster.

Note that the following list of courses is meant to be representative and does not exclude the possibility of substituting others in consultation with the student's advisor. In particular, there are available a number of additional courses that cover the chronological period of two adjacent clusters (especially of Clusters E and F).

18 credits

Cluster A: The Ancient World

- ARH 207 Art of the Ancient Near East
- ARH 209 Ancient Celtic Art and Architecture
- ARH 300 Greek Art and Architecture
- ARH 301 Roman Art and Architecture
- ARH 317 Pre-Columbian Art
- CLS 215 Classical Mythology
- CLS 311 Classical Drama and Its Influences
- CLS 313 The Classical Tradition
- CLT/CLS 113 Greek and Latin Literature in Translation
- EGL 261, 262 The Bible as Literature
- GRK 251, 252 Readings in Greek Literature

- HBW 295 Readings in Talmud
- HIS 230 The Ancient Near East
- HIS 231 History of Greece
- HIS 232 History of Rome
- HIS 300 The Prehistoric Aegean
- JDH 297 Classical Midrashic Literature
- JDH 298 Midrash in Translation
- JDS/HIS 225 Civilization of Israel I
- LAT 251, 252 Readings in Latin Literature
- LAT 353 Literature of the Roman Republic
- LAT 354 Literature of the Roman Empire
- LAT 355 Early Medieval Latin
- LAT 356 Late Medieval Latin
- PHI 111 Introduction to Eastern Philosophy: Classical Texts
- PHI 112 Introduction to Eastern Philosophy: Interpretations
- PHI 200 Ancient Philosophy
- PHI 301 Hellenistic and Roman Philosophy
- RLS 240 Confucianism and Taoism
- RLS 260 Buddhism
- RLS 270 Christianity

Cluster B: The Middle Ages

- ARH 206 The Art and Architecture of the High Middle Ages (1050-1400)
- ARH 303 The Art and Architecture of the Early Middle Ages (400-1050)
- EGL 300 Old English Literature
- EGL 302 Medieval Literature in English
- EGL 340 Chaucer
- HIS 233 Medieval History, 300-1100
- HIS 234 The High Middle Ages, 1100-1400
- HIS 303 Medieval Culture and Society
- PHI 304 Medieval Philosophy
- RLS 280 Islam
- RLS 321 Christian Classics
- RLS 370 Tibetan Buddhism
- RLS 372 Buddhist Classics
- Any course on Medieval literature in a foreign language

Cluster C: The Renaissance

- ARH 211 The Early Renaissance in Italy
- ARH 212 Early Netherlandish Painting
- ARH 307 High Renaissance and Mannerism in Central Italy
- ARH 309 Northern Renaissance Art
- EGL 241 Shakespeare I
- EGL 242 Shakespeare II
- EGL 243 Shakespeare: the Major Works
- EGL 304 Renaissance Literature in English
- EGL 341 Special Studies in Shakespeare
- EGL 344 Major Writers of the Renaissance Period in England
- HIS 235 Humanism and Renaissance
- HIS 236 The Age of Reformation
- Any course on Renaissance literature in a foreign language

Cluster D: Classicism and Enlightenment

- ARH 214 Northern Baroque Art
- ARH 218 Art of the Eighteenth Century
- ARH 312 Baroque Art and Architecture in Italy and Spain
- CLT 211 Literary Period: Baroque and Enlightenment
- EGL 306 English Literature of the Seventeenth Century
- EGL 308 The Age of Dryden
- EGL 310 Neo-Classical Literature in English
- EGL 316 American Colonial and Federal Writers
- EGL 342 Milton
- EGL 345 Major Writers of the Seventeenth Century in England
- EGL 347 Major Writers of the Neo-Classical Period in England
- HIS 237 Europe in the Seventeenth Century
- HIS 262 American Colonial Society
- HIS 263 Age of the American Revolution
- HIS 305 Early Modern England: Revolution and War, 1603-1714
- HIS 306 The Old Regime and the French Revolution
- MUS 301 Music of the Baroque
- MUS 302 The Music of J.S. Bach
- Any course on seventeenth- or eighteenth-century literature in a foreign language

Cluster E: *Romanticism and Realism*

- ARH 221 Art of the Nineteenth Century
 ARH 327 Theoretical Foundations of Nineteenth Century Art
 EGL 217 American Literature I
 EGL 312 Romantic Literature in English
 EGL 314 Victorian Literature
 EGL 318 Nineteenth Century American Literature
 EGL 348 Major Writers of the Romantic Period In England
 EGL 349 Major Writers of the Victorian Period in England
 HIS 203 The Rise of Imperial Germany, 1806-1890
 HIS 238 Europe, 1815-1914
 HIS 264 The Young Republic
 HIS 309 Modern France, 1815-1900
 HIS 337 The Hapsburg Empire, 1867-1918
 HIS 338 Modern Russian Intellectual History
 HIS 369 American Social History to 1860
 HIS 370 U.S. Social History, 1860-1929
 MUS 303 The Music of Beethoven
 MUS 305 Music in the Romantic Era
 MUS 307 Music and Drama
 PHI 308 Nineteenth-Century Philosophy
 Any course in nineteenth-century literature in a foreign language

Cluster F: *Modern Society*

- ARH 224 Art of the Twentieth Century
 ARH 322 American Art Since 1947
 ARH 324 Modern Architecture and Design
 ARH 328 Theoretical Foundations of Twentieth-Century Art
 CLT/EGL 266 The Modern Novel
 EGL 226 Contemporary English and American Literature
 EGL 350 Major Writers of American Literature
 EGL 352 Major Writers of Modern British and American Literature
 EGL 353 Major Writers of Contemporary British and American Literature
 HIS 210 Soviet Russia
 HIS 227 Modern Mexico
 HIS 239 Europe, 1914-1945
 HIS 240 Europe Since 1945
 HIS 268 Recent U.S. History, 1919 to the Present
 HIS 310 Modern France, 1900 to the Present
 HIS 315 Twentieth-Century Britain
 HIS 334 Modern Brazil
 HIS 339 Russian Social History, 1825-1929
 HIS 341 Twentieth-Century China
 JDH/RLS 230 Judaism
 JDH/RLS 465 Judaic Responses to Catastrophe
 JDS/HIS 241 The Holocaust: The Destruction of European Jewry, Causes and Consequences
 MUS 107 History of Jazz
 MUS 109 Rock Music
 MUS 309 Music of the Twentieth Century
 PHI 247 Existentialism
 PHI 405 Contemporary Philosophy
 PHI 408 Phenomenology
 RLS 122 Goodness and Godliness
 RLS 246 Korean and Japanese Religions
 RLS 301 Sources and Methods
 RLS 302 Contemporary Theology
 RLS 341 Meditation and Enlightenment
 RLS 350 Philosophical Theology
 THR 357 Topics in Film and Television
 Any course in twentieth-century literature in a foreign language

IV. Any four additional courses from any department in the humanities division, of which at least two must be numbered 300 or above.

12 credits

Total: 42 or 45 credits

Honors Program in Humanities

Humanities majors who have maintained a grade point average of 3.5 in the major and a 3.0 overall through their junior year may attempt the degree in humanities with honors.

The honors program requires an additional three credits above the 42 or 45 required for the major. These three additional credits will be earned in a special research project pursued in the final semester of the senior year. The project involves the completion of a senior thesis.

Students who are eligible for the honors program must find a member of the Humanities Faculty Advisory Committee or an appropriate faculty member to act as thesis advisor. The student, with the approval of the supervising faculty member, must submit a proposal of the project in writing to the program director by the last day of classes of the first semester of the senior year. Students who have obtained permission from the Program Director to pursue the project must enroll in HUM 495 while writing the thesis.

The thesis will be evaluated by the thesis advisor, another member of the Humanities Faculty Advisory Committee, and a third reader from outside the program.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

HUM 107 The Literature of Commitment

A study of works in several national literatures tending to illustrate the concern for social and political commitment of the artist. The writer is viewed as the "living conscience" addressing important issues of his time and of all times.

Fall, 3 credits

HUM 121 Death in Literature

Through discussion of representative contemporary and classical texts, this course addresses the topic of how human beings have chosen to live with one certainty of their existence, its eventual conclusion in death.

Fall, 3 credits

HUM 122 Images of Women in Fiction

An examination of a series of representations of women in world fiction ranging from the fantasy literature of the fairy tales to modern studies of women's changing social role and the rise of feminine self-consciousness.

Spring, 3 credits

HUM 123 Sin and Sexuality in Literature

Lectures and discussions will focus upon the interpretation of the ideas of sexuality and of evil by exploring literary treatments of such notions as sexual gratification, adultery, and deviance.

Fall, 3 credits

HUM 124 Childhood and Family in Literature

An analytic survey of the literary presentation of the emergence of the bourgeois family and the notion of childhood.

Spring, 3 credits

HUM 176 Freedom, Consent, and Human Values

This course seeks to establish the minimal features essential to a contemporary philosophy of freedom. Topics include: the centrality of freedom, personal and social freedom, freedom and necessity, civil disobedience, freedom as a basic value.

Fall, 3 credits

HUM 291 Seminar on Contemporary Issues

(For course description, see alphabetical listing, Unaffiliated Courses.)

HUM 491 Seminar on Contemporary Issues

(For course description, see alphabetical listing, Unaffiliated Courses.)

HUM 495 Humanities Honors Project

A one-semester project for humanities majors who are candidates for the degree with honors. Arranged during the first semester of the senior year, to begin the following semester, the project involves independent study and the writing of a senior thesis under the close supervision of an appropriate faculty member.

Prerequisites: Permission of instructor and Program Director.
 Fall and spring, 3 credits

Judaic Studies

Associate Professors

Samuel Berr, Ph.D. New York University (Older Germanic languages and Yiddish). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1973-74

Louise Vasvari Fainberg, Director, Ph.D. University of California, Berkeley (Medieval Spanish literature; Romance philology; linguistics). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1975-76

Robert Goldenberg, Ph.D. Brown University (Jewish thought; history of Judaism; Talmudic literature)

Assistant Professor

Ruth Beizer-Bohrer, Ph.D. Columbia University (Modern Hebrew literature)

Detailed information and advice about the program may be obtained from the director.

Courses designated HBW (191 and higher) and JDH are appropriate to satisfy the college distribution requirement in arts and humanities; courses designated JDS are appropriate for the requirement in social and behavioral sciences.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

HBW 111, 112 Elementary Hebrew

An introduction to modern Hebrew as currently spoken and written in Israel, stressing pronunciation, speaking, listening comprehension, reading, and writing. No student who has had two or more years of Hebrew in high school (or who has otherwise acquired an equivalent proficiency) may receive credit for HBW 111 without written permission from the supervisor of the course.
Fall and spring, 3 credits each semester

HBW 115 Introduction to Classical Hebrew

The fundamentals of classical Hebrew grammar and syntax, with readings in Biblical prose narrative. This course will enable students to read classical Biblical and post-Biblical texts; it does not teach modern conversational Hebrew.
Fall, 3 credits

HBW 191, 192 Intermediate Hebrew

An intermediate course in conversation, composition, and the reading of texts in modern Hebrew.
Prerequisite: HBW 112.
Fall and spring, 3 credits

HBW 221 Advanced Hebrew I

A course in the active use of spoken and written Hebrew. Reading of classics in the Hebrew language. Discussion is conducted mainly in Hebrew.
Prerequisite: HBW 192.
Fall, 3 credits

HBW 222 Advanced Hebrew II

Readings in modern Hebrew authors. Oral and written reports. Discussion is conducted mainly in Hebrew.
Prerequisite: HBW 221.
Spring, 3 credits

HBW 295 Readings in Talmud

An introduction to Talmud. Reading of selected passages in the original. Modern and medieval Hebrew commentaries will be referred to. May be repeated once with permission of instructor.
Prerequisite: HBW 221.
Spring, 3 credits

HBW 305 Readings in Twentieth-Century Israeli Authors

Readings and discussions of the short stories of two generations of representative Israeli masters including Agnon, Hazzaz, Yishar, and Megged. Different authors will be studied each semester. The course will acquaint students with the ideological, cultural, and literary background of the literature of Israel. May be repeated once.
Prerequisite: HBW 221.
Spring, 3 credits

HBW 447 Directed Readings in Hebrew

Intensive study of a particular author, period, or genre of Hebrew literature in the original under close faculty supervision. May be repeated.
Prerequisite: Permission of the director.
Fall, 3 credits

JDS 225 Civilization of Israel I

The course of Jewish history and the development of Judaism during the Persian, Hellenistic, and Roman periods (ca. 500 B.C.E.-ca. 500 C.E.). The course begins with the close of the Hebrew Bible, examines the varieties of Judaism which then arose, and ends with the consolidation of Rabbinic Judaism on one hand and of Christianity on the other. This course is identical with HIS 225.
Fall, 3 credits

JDS 226 Civilization of Israel II

The history of the Jews and of Judaism since the fall of the Roman Empire and the rise of Islam. The course concludes with a study of the Holocaust and the creation of the State of Israel, and includes a survey of the major forms of American Jewish life. This course is identical with HIS 226.
Spring, 3 credits

JDH 230 Judaism (Formerly JDS 230)

A critical introduction to the scripture, the oral law, the traditions, the history, and the religious practices and beliefs of Judaism. This course is identical with RLS 230.
Fall, 3 credits

JDS 241 The Holocaust: The Destruction of European Jewry, Causes and Consequences

The rise of modern anti-Semitism and its political application in Nazi Germany. Topics covered include the destruction process, ghetto life, resistance, foreign response, and the war crimes trials. This course is identical with HIS 241.
Prerequisite: JDS/HIS 226.
Fall and spring, 3 credits

JDH 297 Classical Midrashic Literature (Formerly JDS 297)

A study of classical midrashic literature in both the Jewish literary and the general historical contexts.
Spring, 3 credits

JDH 298 Midrash in Translation

Selected passages from classical rabbinic exposition of the Bible, chosen for intrinsic interest and for their value for understanding classical Judaism. Each passage will be examined with a view to its

underlying theology and its techniques for interpreting Scripture, as well as with attention to the historical milieu from which the texts emerged.

Fall or spring, 3 credits

JDH 447 Readings in Judaic Studies (Humanities Emphasis)

Qualified juniors and seniors may read independently in the areas of Jewish religion, philosophy, and literature in an approved program under the supervision of a faculty member. May be repeated.
Prerequisites: Two JDH courses, or one course each in JDH and JDS, and permission of the Program Director.
Fall and spring, 1 to 3 credits

JDS 447 Readings in Judaic Studies (Social Science Emphasis)

Qualified juniors and seniors may read independently in the areas of Jewish history, culture, and society, in an approved program under the supervision of a faculty member. May be repeated.
Prerequisites: Two JDS courses, or one course each in JDS and JDH, and permission of the Program Director.
Fall and spring, 1 to 3 credits

JDH 465 Judaic Responses to Catastrophe

The response of Judaic thinkers from the Bible to the Second World War to the problem of historical disaster and the need to understand and respond to it. Particular attention will be given to the question of long-term continuity and the appearance of innovation in such responses. This course is identical with RLS 465.
Prerequisite: JDH/RLS 230 or JDS/HIS 225 or 226.
Fall or spring, 3 credits

The Liberal Arts Major Program

This major, which offers no courses of its own, allows the student to design his or her own program of study drawing upon all the offerings of the University. It requires careful planning and should be undertaken only after thorough exploration of academic goals with advisors in the Undergraduate Studies Office.

Requirements for the Liberal Arts Major (LIB)

To fulfill the requirements for this major, which leads to a Bachelor of Arts degree, the student must complete 60 credits of work in courses numbered 200 and above. (In compliance

with the University graduation requirement, at least 39 credits will be in courses numbered 300 and above.) The student must choose three areas or departments and distribute the 60 credits as follows:

Department or area A	Credits
Department or area B	12
Department or area C	12
Any department(s) or area(s)	9
	27
	Total 60

Note: At least 45 of the 60 credits must be in courses in the College of Arts and Sciences, and at least 36 of the 60 credits must be taken for a letter grade.

Program in Linguistics

Professor

Aaron S. Carton, Ph.D. Harvard University (Psychlinguistics)

Associate Professor

Mark Aronoff, Director, Ph.D. Massachusetts Institute of Technology (Phonology, morphology)

Lecturer

Susan Chanover, M.A. New York University (Teaching English as a second language)

Assistant Professors

Frank Anshen, Ph.D. New York University (Sociolinguistics)

Beatrice L. Hall, Ph.D. New York University (Historical and comparative linguistics)

S.N. Sridhar, Ph.D. University of Illinois (Applied linguistics; Davidian syntax)

The program in Linguistics is concerned with the study of language as a central human attribute. Courses are offered in the major areas of modern linguistic theory.

Requirements for the Major in Linguistics

The major in linguistics leads to the Bachelor of Arts degree. The following courses are required.

1. LIN 101 Introduction to Linguistics and LIN 211 Introduction to Syntax.	Credits
2. Seven additional linguistics courses to be selected after consultation with the student's advisor. These should include LIN 201, 301, 311, and 321.	6
3. One year of a non-Indo-European language. This requirement may be met by CHI 111, 112; HBW 111, 112; LIN 115, 116.	21
4. Two years of a modern foreign language. (Students should bear in mind that graduate programs in linguistics usually require reading proficiency in both German and French.)	6
	12
	Total 45

Note: All linguistics courses must be taken for letter grade. The attention of students majoring in linguistics is directed to the following courses of interest to them in other departments:

ANT 102, 203, 204, 354, 371
EEL 111, 112
EGL 207, 300, 302
FLA 339
GER 202, 337
MSC 112
PHI 220, 325
POL 332
PSY 370
RUS 302, 394
SGL 111, 112
SPN 462, 463
SWE 111, 112

Requirements for the Minor in Linguistics

LIN 101 Introduction to Linguistics

LIN 201 Phonetics

LIN 211 Introduction to Syntax

and three upper division linguistics courses, to be chosen to complement the student's major subject. In addition, the student must fulfill at least one of the following requirements:

(1) one year (or more) of study of a foreign language at the college level;

(2) a project in the student's major field which deals with some aspect of language. This project must be proposed as an original project by the student and be approved by the Linguistics Program. It will be carried out under the direction of a faculty member in LIN 447 Directed Readings.

Note: One of the courses required for the minor may be taken for pass/no credit.

For further information about the linguistics program, consult the Program Director.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

LIN 101 Introduction to Linguistics

An introduction to the fundamental areas and concepts of modern linguistics. Sounds and their structure, word structure, and sentence structure will be discussed. Other topics covered may include historical linguistics (how languages change over time), dialects, writing systems, and psycholinguistics (especially the question of how children acquire a language).

Fall and spring, 3 credits

LIN 105 Nonstandard Varieties of English

An investigation of the phonological and grammatical structures used by speakers of some of the significant social minority groups in the New York area. Special attention will be paid to Black English, Puerto Rican English, and the English of white migrant workers.

Fall and spring, 3 credits

LIN 109 The Nature of Language (Formerly LIN 111)

Topics to be considered will include: the defining characteristics of human language, the acquisition of first and second languages by humans, the teaching of human languages to non-humans, the nature of rule-governed behavior, linguistic competence, and the interrelationships between human language and culture and society.

Fall and spring, 3 credits

LIN 115, 116 Selected Languages (Elementary)

An introduction to a language not offered elsewhere in the University; speaking, comprehension, reading, and writing. Selected texts will be read. Practice in the language laboratory supplements class work. May be repeated for different languages. No student who has had two or more years of the language offered in high school (or who has otherwise acquired an equivalent proficiency)

may receive credit for LIN 115 without written permission from the supervisor of the course.

Fall and spring, 3 credits each semester

LIN 201 Phonetics

Introduction to the sounds used in human language and their production. Practice will be included in the production and recognition of the more commonly used sounds of the languages of the world; the structure of the human vocal tract, including the larynx, and the physical properties of sounds are discussed.

Prerequisite: LIN 101.
Fall, 3 credits

LIN 211 Introduction to Syntax

An introduction to transformational-generative grammar: the formal theory of sentence structure.

Fall and spring, 3 credits

LIN 220 Introduction to Communication Disorders

An overview of language pathologies adding insights into normal language by examining organic and functional disorders. Exposure to the working problems of professional therapists and to the consequences of communication disorders for social and intellectual functioning.

Prerequisite: LIN 101 or 109.
Fall, 3 credits

LIN 301 Phonology

The theory of sound systems of languages and the interaction of sounds in language.

Prerequisite: LIN 201.
Spring, 3 credits

LIN 305 Introduction to Sociolinguistics

An examination of the interaction between language and society. Examples will be drawn largely from English.

Prerequisites: LIN 101 and 211.
Fall and spring, 3 credits

LIN 311 Advanced Syntax

A detailed consideration of syntactic problems in English and other languages. Introduction to generative semantics.

Prerequisite: LIN 211.
Fall, 3 credits

LIN 320 Psycholinguistics

An examination of the psychology of language and the relations among languages, behavior, and cognitive processes.

Prerequisites: LIN 101 and 211.
Fall and spring, 3 credits

LIN 321 Linguistic Analysis

The application of methods of linguistic analysis to major bodies of data from a variety of languages.

Prerequisites: LIN 211 and 301.
Fall, 3 credits

LIN 333 Mathematical Aspects of Linguistics

An introduction to the mathematical concepts and procedures which underlie much contemporary linguistic practice.

Prerequisite: LIN 211.
Fall and spring, 3 credits

LIN 340 Introduction to Historical Linguistic Methodology

The application of linguistic theory to the comparative reconstruction of language systems.

Prerequisites: LIN 211 and 301.
Fall, 3 credits

LIN 342 The Development of Linguistics in the Twentieth Century

The major advances in linguistics from Saussure to Ross.

Prerequisites: LIN 101, 211, and 301.
Spring, 3 credits

LIN 351 Advanced Phonology

A direct sequel to LIN 301, covering advanced phonological theory and recent developments in phonology and related areas.

Prerequisite: LIN 301.
Fall, 3 credits

LIN 363 Language and Culture

The study of linguistic behavior and its interrelationship with other aspects of culture. Topics include sociolinguistics, language acquisition, non-verbal behavior, and linguistic acculturation. This course is identical with ANT 363.

Prerequisites: LIN 101 or ANT 102 and either ANT 200 or two other courses in the social sciences.
Spring, 3 credits

LIN 375 Introduction to the Methods of Teaching English as a Second Language

The application of linguistic methodology to teaching English to non-native speakers. Students will be given an opportunity to observe TESL classes on campus.

Prerequisites: LIN 101 and two years of a modern foreign language.
Spring, 3 credits

LIN 376 Principles of Language Testing

The principles, methods, functions, uses, and commonly en-

countered misuses in: (a) assessing aptitude for acquiring a second language; (b) measuring achievement in foreign language study; (c) assessing the ability to communicate within one's native linguistic community or in a foreign community; and (d) the use of tests in research and evaluation.

Prerequisite: LIN 375 or FLA 339.
Spring, 3 credits

LIN 390 Advanced Historical Linguistics

Examination of selected problems in the historical development of languages of interest to members of the seminar.

Prerequisite: LIN 340.
Fall and spring, 3 credits

LIN 405 Field Methods in Sociolinguistics

Problems of sampling, interview techniques, construction and scoring of linguistic variables, and presentation of results will be studied in the context of a study by the class of the sociolinguistic patterns of a nearby community.

Prerequisite: LIN 305.
Spring, 3 credits

LIN 421 Field Methods in Linguistics

Students will learn techniques of writing a grammar of a language unknown to them by working with a speaker of that language.

Prerequisites: LIN 201 and 211.
Spring, 3 credits

LIN 425 Special Topics in Linguistics

A seminar for advanced linguistics students, the topic of which will vary with student demand and faculty interest and which will include such topics as: naturalness in phonology, markedness theory; relative clause systems; direction of historical change; variation theory. Topics will be announced each semester. The course may be repeated if the topic differs.

Prerequisite: Varying with subject matter.
Fall and spring, 3 credits

LIN 431 The Structure of an Uncommonly Taught Language

An investigation of the phonology and syntax of either some language or some family of languages. May be repeated if a different language is covered.

Prerequisites: LIN 301, 311, and 321.
Fall, 3 credits

**LIN 447 Directed Readings
in Linguistics**

Qualified juniors and seniors in linguistics will be offered an opportunity to do independent work on topics in linguistics under the guidance of a faculty member. May be repeated.

Prerequisite: Permission of department.

Fall and spring, 1 to 4 credits

**LIN 475 Practicum
in Teaching English
as a Second Language—
Oral/Aural Skills**

Students will have the opportunity to apply the methodology learned in LIN 375 in small tutorial sections under the direction of a master teacher. They will work with students in the oral/aural EFL courses, emphasizing communicative competency. There will be a seminar component to the course, meeting weekly. Grading in this

course shall be Satisfactory/Unsatisfactory only.

Prerequisites: LIN 375 and permission of instructor.

Fall and spring, 3 credits

**LIN 476 Practicum
in Teaching English
as a Second Language—
Reading/Composition Skills**

Students will have the opportunity to apply the methodology learned

in LIN 375 in small tutorial sections under the direction of a master teacher. They will work with students in the reading/composition skills EFL courses, emphasizing preparation for university writing. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: LIN 375 and permission of instructor.

Fall and spring, 3 credits

Department of Mathematics

Professors

Alfred Adler, Ph.D. University of California, Los Angeles (Differential geometry and mathematical economics)

James Ax, Ph.D. University of California, Berkeley (Algebraic number theory and logic and foundations of physics)

William Barcus, Ph.D. Oxford University (Algebraic topology)

Leonard S. Charlap, Ph.D. Columbia University (Homological algebra; differential geometry)

Jeff Cheeger, Ph.D. Princeton University (Differential geometry)

Raouf Doss, Ph.D. University of Cairo (Harmonic analysis)

Ronald Douglas, Ph.D. Louisiana State University (Operator theory; functional analysis)

David Ebin, Ph.D. Massachusetts Institute of Technology (Global analysis)

Hershel Farkas, Adjunct, Ph.D. Yeshiva University (Complex analysis)

Israel Gohberg, Adjunct, Ph.D. Moscow State University (Operator theory and integral equations)

Detlef Gromoll, Ph.D. University of Bonn (Differential geometry)

Mikhail Gromov, Ph.D. Moscow State University (Differential topology and geometry)

C. Denson Hill, Ph.D. New York University (Partial differential equations; several complex variables)

Irwin Kra, Chairman, Ph.D. Columbia University (Complex analysis; Kleinian groups)

Michio Kuga, Ph.D. University of Tokyo (Complex manifolds, algebraic groups)

Henry Laufer, Ph.D. Princeton University (Several complex variables)

H. Blaine Lawson, Ph.D. Stanford University (Differential geometry; topology)

William Lister, Ph.D. Yale University (Algebra)

Bernard Maskit, Ph.D. New York University (Complex analysis; Kleinian groups)

Wolfgang Meyer, Adjunct, Ph.D. University of Bonn (Differential geometry)

Anthony Phillips, Ph.D. Princeton University (Differential topology)

Joel Pincus, Ph.D. New York University (Operator theory and integral equations)

Chih-Han Sah, Ph.D. Princeton University (Group theory and its applications)

James Simons, Adjunct, Ph.D. University of California, Berkeley (Differential geometry)

E. Rapoport Strasser, Ph.D. New York University (Combinatorial group theory)

Peter Szűsz, Ph.D. University of Budapest (Analytic number theory)

John Thorpe, Ph.D. Columbia University (Differential geometry). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1972-73

Associate Professors

William Fox, Ph.D. University of Michigan (Complex analysis)

Lowell Jones, Ph.D. Yale University (Topology)

Paul G. Kumpel, Director of the Undergraduate Program, Ph.D. Brown University (Algebraic topology)

M. Dusa McDuff, Ph.D. University of Cambridge (Operator theory; topology)

Joel Spencer, Ph.D. Harvard University (Combinatorics)

Eugene Zaustinsky, Ph.D. University of Southern California (Differential geometry)

Assistant Professors

Daryl Geller, Ph.D. Princeton University (Real analysis)

Jerrold Kleinstein, Ph.D. Cornell University (Algebra and mathematical education)

J. Peter Matelski, Ph.D. Princeton University (Complex analysis)

Marie-Louise Michelsohn, Ph.D. University of Chicago (Topology; differential geometry)

Walter Parry, Ph.D. University of California, Berkeley (Number theory)

Instructors

Jane Hawkins, Ph.D. University of Warwick (Ergodic theory)

Claude Le Brun, Ph.D. University of Oxford (Complex analysis/mathematical physics)

Lecturers

Barry Fox, Director of Mathematics Learning Center, M.A. State University of New York at Stony Brook (Mathematics education)

Eugene Vinegrad, part-time, M.A. New York University (Mathematics education)

Teaching Assistants

Estimated Number: 42

Undergraduate programs in the mathematical sciences are offered by the three departments of Applied Mathematics and Statistics, Computer Science, and Mathematics. Each department encourages its majors to take courses in the other two departments as well as in related fields in the social and physical sciences. For descriptions of courses, major requirements, and the list of faculty members of the former two departments, see the College of Engineering and Applied Sciences section.

Students majoring in either applied mathematics and statistics or mathematics may participate in the Mathematics Secondary Teaching Preparation Program.

The undergraduate program in mathematics is designed to prepare the student for graduate study, for secondary school teaching, or for certain positions in industry. Since the needs and interests of students will be at least as varied as their professional plans, the department requirements are designed to allow the student a great deal of flexibility in selecting courses. The department has designed two tracks for its majors: a standard track especially appropriate for students preparing for a Ph.D. program in pure mathematics and a track for students preparing for a career in high school teaching; both lead to the Bachelor of Science degree.

Requirements for the Major in Mathematics

The major in mathematics leads to the Bachelor of Science degree. The following courses are required.

	<i>Credits</i>
1. Four semesters of calculus, ordinarily MSM 131, 132 or MSM 141, 142 followed by MSM 231 or 241 and by MSM 306 or 307.	14
2. MSM 313 Algebra I and either MSM 320 Analysis or MSM 321 Analysis I.	6
3. Fifteen additional credits in MSM courses numbered above 300 (MSM 300 and 475 excluded). MSE 301 may be substituted for three of these credits.	15
4. Six additional credits in mathematically oriented courses selected from the following list: any MSM, MSA, or MSC course (MSM 475 excluded) numbered 300 or above; CHE 301, 302, 355; ECO 321, 349; ESS 341, 351, 352; PHI 330; PHY 301, 302, 303, 306, 308, 443, 444. Additions may be made to this list by written permission of the Director of the Undergraduate Program in Mathematics.	6
<i>Total</i>	<u>41</u>

Students may earn an exemption from MSM 231 by passing both MSM 310 and MSM 350. Students may earn an exemption from MSM 306 by passing both MSM 321 and MSM 322. However, only students with unusual ability in mathematics should bypass MSM 231 or MSM 306 in this way, and only on the advice of the department.

Note: All courses in the mathematical sciences used to fulfill the requirements for the major in mathematics must be taken for letter grade.

Recommendations for Students Majoring in Mathematics

The department encourages students majoring in mathematics to begin advanced work in the sophomore year, by enrolling for MSM 313 in the second semester of that year, for example.

Prospective graduate students are encouraged to take graduate courses in mathematics during the junior and senior years, particularly MSM 530, 542, and 550.

For entering students with above average interest and ability in mathematics, the department directs attention to its theoretically oriented calculus sequence MSM 141, 142. In particular, students entering with advanced placement in calculus are encouraged to consider MSM 142. Any student who does exceptionally well in MSM 142 will be permitted, if he or she wishes, to bypass Calculus III and Calculus IV, proceeding directly to upper division courses MSM 310, 350 and MSM 321, 322.

All students majoring in mathematics are encouraged to include in their program:

1. Introductory computer science courses MSC 112 and 120.
2. Two years of a foreign language, preferably French, German, or Russian.
3. A year or more of physics (for example, the sequence PHY 101, 102, 251, 252).
4. The following advanced mathematics courses:
 - a. For students in the standard track: MSM 314, 321, 322, 335, 362, 365.
 - b. Students in the secondary school teacher preparation track should see the recommendations and requirements of the Secondary Teacher Preparation Program in Mathematics, described on p. 115.

Honors Program in Mathematics

The honors program in mathematics is open to junior and senior mathematics majors who have maintained a 3.0 G.P.A. overall, and a 3.0 or more in the required courses for the major.

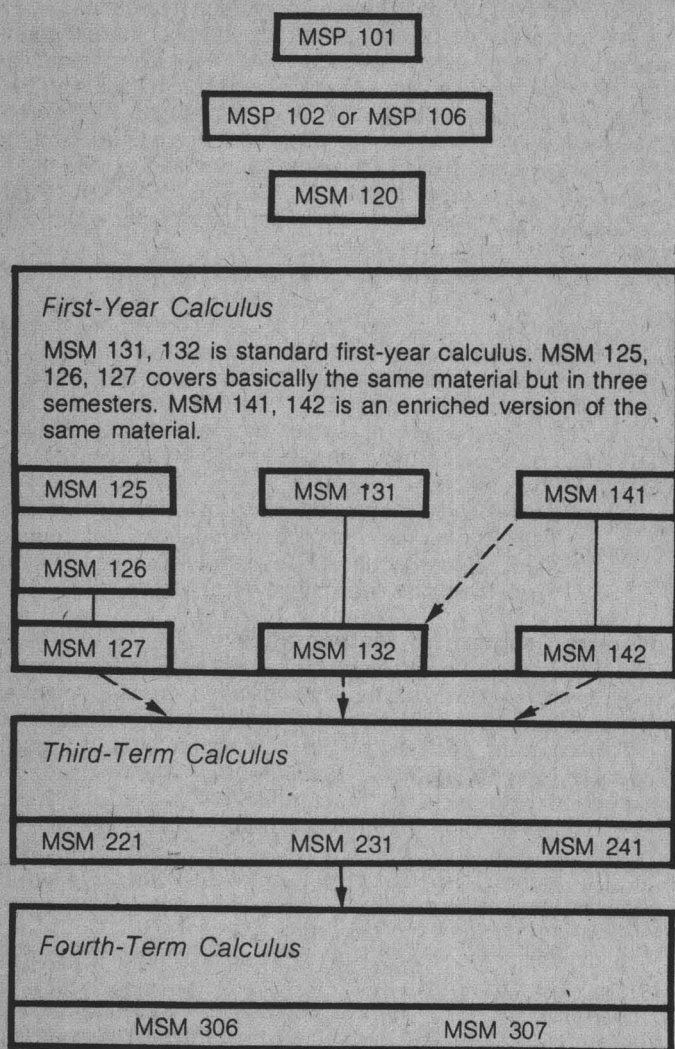
The program consists of the completion of a set of six courses, including MSM 491 Senior Seminar. The six courses in the honors program normally are: MSM 314, 322, 335, 362, 365, and 491. Substitution of first-year graduate courses for the corresponding 300-level courses is permitted. Other variations must be approved by the Director of the Undergraduate Program in Mathematics.

Conferral of honors is contingent on:

1. Completion of the set of six designated courses with an average of 3.5.
2. Active participation in Senior Seminar, including at least two lectures on a topic chosen by the professor in charge of Senior Seminar.
3. Approval for honors by both the student's Senior Seminar professor and the Director of the Undergraduate Program or a designee, both of whom will listen to and evaluate the two required lectures.

Note: Requirements 2 and 3 may be satisfied alternatively by participation in a graduate course or graduate seminar, including two lectures to a committee of at least two faculty members. Recommendation for honors is then subject to approval by this committee.

Basic Mathematics Sequences



Notes

1. This is an outline—read *Bulletin* description.
2. *Caution:* Some majors require particular sequences.
3. Successful completion of any of the above courses except MSP 101 satisfies the mathematics proficiency requirement.
4. Incoming students usually begin at the first-year-calculus-level. Students with a weak background in mathematics may begin with lower-level courses.
5. Either MSM 127 or 132 or 142 is an acceptable prerequisite for MSM 221 or 231 or 241. Either MSM 221 or 231 or 241 is an acceptable prerequisite for MSM 306 or 307.

Requirements for the Minor in Mathematics

The minor in mathematics is available to all students not majoring in either mathematics or applied mathematics. Each student selects a concentration in algebra, analysis, or geometry. The following courses are required for completion of the minor

1. MSM 231 or 241 and 306 or 307 or MSM 221 and MSA 362.
2. Either:
 - a. (Algebra Option) MSM 313 plus two courses selected from MSM 310, 311, 312, 314, 315.
 - b. (Analysis Option) MSM 321 plus two courses selected from MSM 322, 335, 350, 353.
 - c. (Geometry Option) MSM 321 plus two courses selected from MSM 322, 360, 361, 362, 365.
3. Six additional courses numbered 300 or above.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

Note: No mathematics course may be taken for credit after credit has been obtained in a course for which it is a prerequisite. Exceptions will be made only with written permission of the Director of the Undergraduate Program in Mathematics.

MSP 101 Fundamentals of Arithmetic and Algebra (Formerly MSM 101)

Arithmetic: fractions, decimals, and percent. *Algebra:* signed numbers, monomials, linear equations in one unknown, and word problems. This course is intended for students who have never studied algebra. May not be counted toward the College requirement in natural science. Does not satisfy the mathematics proficiency requirement for graduation. Students who have otherwise satisfied the mathematics proficiency requirement may not register for this course. Overqualified students as determined by a placement test may be deregistered and directed to transfer to another course.

Fall and spring, 3 credits

MSP 102 College Algebra (Formerly MSM 102)

Intended for students whose preparation in the area of basic mathematics is inadequate for their chosen programs of study. Signed numbers; polynomial manipulation; linear, quadratic, and fractional equations in one variable; graphing; radicals; and right triangle trigonometry. May not be counted toward the College requirement in natural science. Students who have otherwise satisfied the mathematics proficiency requirements may not register for this course. Overqualified students as determined by a placement test may be deregistered and directed to transfer to another course.

Fall and spring, 3 credits

MSP 103 Mathematics for Chemistry Students I (Formerly MSM 103)

Measurements, metric system, review of arithmetic, exponential no-

tation and calculations, solving equations, graphs, calculator usage. Intended for students whose preparation in the area of basic mathematics is inadequate for studies in basic chemistry. Problems and examples will come directly from the chemistry course and text. May not be counted toward the College requirement in natural science. Does not satisfy the College mathematics proficiency requirement.

Prerequisite: Permission of chemistry instructor. *Corequisite:* CHE 111.

Fall, 2 credits

MSP 104 Mathematics for Chemistry Students II (Formerly MSM 104)

A continued review of the mathematical skills necessary for the CHE 112 or CHE 131 course. Problems and examples will come directly from the chemistry course. May not be counted toward the College requirement in natural science. Does not satisfy the College mathematics proficiency requirement.

Prerequisite: Permission of chemistry instructor. *Corequisite:* CHE 112 or 131.

Fall and spring, 3 credits

MSP 106 Proficiency Mathematics (Formerly MSM 106)

Intended for students who have just missed passing the SUBS mathematics proficiency examination. Beginning after examination results are posted, it offers an eight-week review of the mathematics covered on the test. Students who need an in-depth review should register for either MSM 101 or MSM 102. May not be counted toward the College distribution requirement in the natural sciences. Students who have otherwise satisfied the mathematics proficiency requirement may not take this course. May not be taken in addition to any other MSM course in the same se-

mester. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisite: Posted recommendation to take this course.
Fall and spring, 1 credit

MSM 111 Introductory Mathematics I

A course designed to acquaint the student with the flavor of mathematics, what mathematics is, and what modern mathematicians do, through consideration of specific topics chosen from: logic, set theory, elementary number theory, algebraic systems. MSM 111 and MSM 112 are intended primarily for those who do not plan to take more advanced courses in mathematics and may be taken in any order. May not be taken for credit after MSM 313 or 320 or 321. Does not satisfy the mathematics proficiency requirement.
Fall, 3 credits

MSM 112 Introductory Mathematics II

A course designed to acquaint the student with the flavor of mathematics, what mathematics is, and what modern mathematicians do, through consideration of specific topics chosen from: the limit concept (area, length, rates of change); combinatorial topology; geometric structures. MSM 111 and MSM 112 may be taken in any order, but may not be taken for credit after MSM 313 or 320 or 321. Does not satisfy the mathematics proficiency requirement.
Spring, 3 credits

MSM 120 Elementary Functions

Trigonometric functions, exponential and logarithmic functions, basic analytic geometry, graphing, composition, and inverse functions. May not be taken after any college calculus course has been passed with a grade of C or higher.

Fall and spring, 3 credits

MSM 125 Calculus A (Formerly MSM 121)

Functions and graphs. Derivatives, Extremal problems. Exponential and trigonometric functions. Integration. Area. Volume.

Fall and spring, 3 credits

MSM 126 Calculus B

Techniques of integration. Logarithms. Inverse trigonometric functions. Approximation methods. Taylor series. Sequences and convergence.

Prerequisite: MSM 125.

Fall and spring, 3 credits

MSM 127 Calculus C

Analytic geometry. Polar coordinates. Space geometry. Vector functions. Curvature. Partial derivatives. Gradients. Double integrals.

Prerequisite: MSM 126.

Fall, 3 credits

MSM 131 Calculus I

Differentiation and integration of polynomial and elementary transcendental functions, with emphasis on computations and applications. Recommended for

students going into the physical sciences or engineering and for other students who plan to take more than one year of calculus. Students interested in a more theoretical approach to calculus are advised to consider MSM 141 rather than this course. May not be taken for credit in addition to MSM 125 or MSM 141.

Fall and spring, 4 credits

MSM 132 Calculus II

Continuation of MSM 131. Integration techniques; further applications of the derivative and integral; infinite series; Taylor's formula; introduction to two-variable calculus. May not be taken for credit in addition to MSM 126 or 142.

Prerequisite: MSM 131 or 141.

Fall and spring, 4 credits

MSM 141 Calculus Alpha

Same material as in MSM 131, but covered from a somewhat more theoretical point of view. Recommended for students interested in understanding why calculus works. It is especially useful for students considering a major in mathematics, applied mathematics and statistics, computer science, or physics.

Fall, 4 credits

MSM 142 Calculus Beta

Continuation of MSM 141. Covers the same material as MSM 132, but with more attention to theory. Students will learn what constitutes a rigorous mathematical proof. Infinite series will be studied in somewhat more depth than in MSM 132. May not be taken for credit in addition to MSM 126 or MSM 132.

Prerequisite: MSM 141.

Spring, 4 credits

MSM 221 Calculus III: Differential Equations

Techniques for the solution of elementary ordinary differential equations; special first order equations, elements of vector spaces and matrix algebra; linear equations with constant coefficients; linear systems; power series solutions. May not be taken for credit in addition to MSM 231 or 241. Especially recommended for engineering majors.

Prerequisite: MSM 127 or 132 or 142.

Fall and spring, 3 credits

MSM 231 Calculus III: Linear Algebra

Introduction to linear algebra; real vector spaces, subspaces, linear independence, bases, dimension, linear transformations, matrices. Applications are to systems of linear equations and to linear differential equations. May not be taken for credit in addition to MSM 221 or 241.

Prerequisite: MSM 127 or 132 or 142.

Fall and spring, 3 credits

MSM 241 Calculus Gamma: Linear Algebra

Same material as MSM 231, but covered from a more rigorous point of view. Students will learn proofs of all theorems as well as applications. May not be taken for credit in addition to MSM 221 or 231.

Prerequisite: MSM 142 or 132 or 127.

Fall, 3 credits

MSM 300 History of Mathematics

A study of the development of mathematics from the Greeks through the development of calculus. Special attention will be devoted to the origins of calculus and to the contributions of nineteenth-century mathematicians who put it on a firm foundation.

Prerequisite: MSM 127 or 132 or 142.

Spring, 3 credits

MSM 306 Calculus IV: Multivariate Calculus

Differential and integral calculus in 2- and 3-space: directional derivatives, differential, Jacobian matrix, chain rule, multiple integrals, line and surface integrals, applications.

Prerequisite: MSM 221 or 231 or 241.

Fall and spring, 3 credits

MSM 307 Calculus Delta: Multivariate Calculus

Same material as MSM 306, but covered from a more theoretical point of view. Students completing this course will be exceptionally well prepared for advanced work in mathematics and for the mathematical aspects of advanced courses in theoretical physics. May not be taken for credit in addition to MSM 306.

Prerequisite: MSM 221 or 231 or 241.

Spring, 3 credits

MSM 310 Linear Algebra

A basic investigation of finite dimensional vector spaces dealing primarily with the action of a linear transformation, the behavior of a symmetric bilinear function, and the special cases arising in the presence of an inner product.

Prerequisite: MSM 221 or 231 or 241.

Fall and spring, 3 credits

MSM 311 Number Theory

Congruences, quadratic residues, quadratic forms, continued fractions, Diophantine equations, number-theoretical functions, and properties of the prime numbers.

Prerequisite: MSM 221 or 231 or 241.

Fall, 3 credits

MSM 312 Finite Mathematical Structures

Topics in applied algebra, concentrating on applications to computer science; sets and binary relations, Boolean algebra, finite state machines, formal languages,

groups, modular arithmetic, and finite fields. This course is identical with MSA 302.

Prerequisites: MSC 201 and MSM 221 or 231 or 241.

Fall and spring, 3 credits

MSM 313 Algebra I

Basic concepts in abstract algebra: groups and rings together with their homomorphisms and quotient structures. Other topics include integral domains, unique factorization domains, and principal ideal domains, fields and polynomial domains over fields.

Prerequisite: MSM 221 or 231 or 241.

Fall and spring, 3 credits

MSM 314 Algebra II

Structure theory of finitely generated modules over principal ideal domains. Applications are to group theory and to linear algebra. Further topics include homological algebra, field theory, structure of rings.

Prerequisite: MSM 313.

Fall and spring, 3 credits

MSM 315 Theory of Polynomials

The application of properties of groups, fields, and vector spaces to specific problems involving polynomials and algebraic numbers; e.g., Euclidean constructibility and the solution of cubic equations.

Prerequisite: MSM 313.

Fall, 3 credits

MSM 320 Analysis

The topology of the real line, limits, continuity, differentiability, mean value theorems, the Riemann integral. This course is intended for students needing only one semester of analysis. Students contemplating graduate study in mathematics should take MSM 321, 322 rather than this course.

Prerequisite: MSM 221 or 231 or 241.

Fall and spring, 3 credits

MSM 321, 322 Analysis I, II

The topology of metric spaces, continuity, differentiability of functions of one and several real variables, the Riemann integral on \mathbb{R}^n inverse and implicit function theorems, differential forms, Stokes' theorem. MSM 321 may not be taken for credit in addition to MSM 320.

Prerequisite: MSM 306 or 307.

Fall and spring, 3 credits each semester

MSM 335 Introduction to Complex Analysis

Holomorphic functions, Cauchy-Riemann equations, Cauchy theory, maximum modulus principle, Taylor series expansions, differential forms, meromorphic functions, Laurent series expansion.

sions, evaluation of integrals by the method of residues. Topics are chosen from: harmonic functions, Dirichlet problem for the disc, Hilbert transforms.
Prerequisite: MSM 321.
Fall, 3 credits

MSM 341 Advanced Calculus: Differential Equations

Ordinary differential equations; integration by power series; Bessel and Legendre functions; expansion in series of orthogonal functions, including Fourier series; introduction to partial differential equations of mathematical physics; Laplace's equation; calculus of variations.
Prerequisite: MSM 306 or 307.
Fall and spring, 3 credits

MSM 342 Advanced Calculus: Complex Functions

Functions of a complex variable, calculus of residues including evaluation of real integrals, power and Laurent series, conformal mappings and applications, Laplace and Cauchy-Riemann equations, the Dirichlet and Neumann problems, the Laplace and Hilbert transforms and their applications to ordinary and partial differential equations.
Prerequisite: MSM 306 or 307.
Fall and spring, 3 credits

MSM 350 Ordinary Differential Equations

Description of differential equations and systems: linear and non-linear cases, reduction of higher order systems to first order, vector fields and flows, discussion of existence and uniqueness of solutions, initial and boundary value problems. Well-posed problems. Review of linear systems with constant coefficients. Green's function and solution of inhomogeneous systems. Stability of linear systems and asymptotic behavior. Non-linear autonomous systems; analysis of critical points and limit cycles, Liapunov functions, Hamiltonian systems; exist-

ence theorems and iteration procedures for construction of solutions.

Prerequisite: MSM 221 or 231 or 241.
Spring, 3 credits

MSM 353 Partial Differential Equations

Boundary value problems for partial differential equations, from the point of view of modern mathematics, especially the wave, heat, and potential equations. Existence, uniqueness, and regularity of solutions. The functional analysis needed will be developed in the course and is not assumed.
Prerequisite: MSM 321 or 341.
Fall and spring, 3 credits

MSM 360 Geometric Structures

Formal geometries, their relationship and interpretations; projective, affine, Euclidean, and non-Euclidean geometries.
Prerequisite: MSM 313.
Spring, 3 credits

MSM 361 Geometry of Space Curves

Differential geometry of curves in the plane and in n -space; winding number, Jordan curve theorem, Borsuk-Ulam theorem, 4-vertex theorem, isoperimetric inequality, curvature of a knot.
Prerequisite: MSM 306 or 307 or MSA 362.
Fall, 3 credits

MSM 362 Introduction to Differential Geometry

Geometry of surfaces in 3-space; introduction to manifolds and to Riemannian geometry.
Prerequisite: MSM 322.
Spring, 3 credits

MSM 365 Introduction to Topology

Introduction to point set topology: connectedness, compactness, continuity, etc. The fundamental group and covering spaces.
Prerequisites: MSM 313 and 321.
Fall, 3 credits

MSM 371 Logic

A survey of the logical foundations of mathematics: development of propositional calculus and quantification theory; the notions of a proof and of a model; the completeness theorem.
Corequisite: MSM 313.
Fall, 3 credits

MSM 475 Undergraduate Teaching Practicum in Mathematics

Each student will work in the Mathematics Learning Center. The student's work will be regularly supervised by a faculty member. In addition, a weekly seminar will be conducted. Responsibilities may include: preparation of materials for student use and discussions, helping students with problems, and involvement in 'alternative' teaching projects. Intended for upper division mathematics majors (applied mathematics, physics, engineering also considered). Not for major credit. Grading in this course shall be Satisfactory/Unsatisfactory only.
Prerequisite: Permission of the Director of the Undergraduate Program.
Fall and spring, 3 credits

MSM 487 Independent Study in Special Topics

A reading course for juniors and seniors. The topics may be chosen by the student with the approval of a supervising member of the faculty who will also take responsibility for evaluation. A topic that is covered in a course regularly offered by the department is not appropriate for independent study. May be repeated.
Prerequisite: Permission of the Director of the Undergraduate Program.
Fall and spring, 3 credits

MSM 491 Senior Seminar

This course is designed for seniors who are majoring in mathematics and who have a serious interest in mathematical research. Each term a topic will be selected comprising material not presented in undergraduate courses. By the end of the term students will be acquainted with a limited area of current research interest. The material will be presented in seminar style with students giving the lectures. May be repeated.
Prerequisite: Permission of department.
Fall and spring, 3 credits

Graduate Courses

Junior and senior mathematics students of above average ability are encouraged to take appropriate graduate courses in mathematics. Permission of the instructor is a prerequisite for registering in a graduate course. See *Graduate Bulletin* for details. The graduate courses open to qualified undergraduates are:

- MSM 530 Topology/Geometry I
- MSM 531 Topology/Geometry II
- MSM 532 Topology/Geometry III
- MSM 534 Algebra I
- MSM 535 Algebra II
- MSM 542 Complex Analysis I
- MSM 543 Complex Analysis II
- MSM 544 Analysis
- MSM 546 Differential Equations I
- MSM 547 Differential Equations II
- MSM 550 Real Analysis I
- MSM 551 Real Analysis II
- MSM 566 Differential Topology
- MSM 568, 569 Differential Geometry
- MSM 602, 603 Topics in Algebra
- MSM 608, 609 Topics in Number Theory
- MSM 614, 615 Topics in Algebraic Geometry
- MSM 620, 621 Topics in Algebraic Topology
- MSM 626, 627 Topics in Complex Analysis
- MSM 632, 633 Topics in Differential Equations
- MSM 638, 639 Topics in Real Analysis
- MSM 644, 645 Topics in Differential Geometry
- MSM 662, 663 Advanced Topics in Algebra
- MSM 666, 667 Advanced Topics in Algebraic Topology
- MSM 670, 671 Advanced Topics in Complex Analysis
- MSM 674, 675 Advanced Topics in Differential Equations
- MSM 678, 679 Advanced Topics in Real Analysis
- MSM 682, 683 Advanced Topics in Differential Geometry

Mathematics Secondary Teacher Preparation Program

Students may enroll in either a four-year or a five-year program. The four-year program leads to a Bachelor of Science degree in either mathematics or applied mathematics and statistics and to New York State provisional certification for teaching mathematics, grades 7-12. The five-year program leads to Bachelor of Science and Master of Arts degrees in mathematics and to New York State permanent certification for teaching mathematics, grades 7-12.

Students wishing to enroll in the program should register with the Mathematics Department's Director of Teacher Preparation by the end of the freshman year, if possible, and at the latest before registering for the junior year. Students interested in the five-year program should also register with the Mathematics Department's Associate Director of the Graduate Program by the beginning of the junior year and, in addition, apply for admission to the Graduate School. The fifth year of the program may be taken part time in the evening and summers, spread over a period of two years. Full-time students will be eligible to apply for teaching assistantships for the fifth year.

Requirements for the Four-Year Program

1. Completion of either the MSM (mathematics) or the MSA (applied mathematics and statistics) major.
2. Credit for, or exemption from, the following courses:
MSM 313, 320 (or 321), 360
MSA 310 (or 311, 312)
MSE 301, 302, 311, 312, 450, 454
MSC 112
3. Nine credits in courses chosen from:
MSM 310, 311, 315, 342 (or 335), 350, 361, 371
MSA 301, 311, 326, 341, 342
MSC 201, 205
4. Six credits of foundations of education courses and SSI 265. See the department's Director of Teacher Preparation for details.

The program includes three semesters of practical work in the teaching of mathematics. In the fall of the junior year, students will observe classes in local secondary schools (MSE 311). In the spring, students will engage in a supervised program of limited classroom participation (MSE 312). In one semester of the senior year, students will carry out supervised student teaching (MSE 450) and participate in an associated student teaching seminar (MSE 454).

Students in the program are strongly encouraged to include MSA 301 and MSM 315 among their electives and to take a one-year sequence which uses mathematics in physics, chemistry, biology, engineering science, or economics. Other courses which are useful are the history of mathematics course, MSM 300, and the logic course, PHI 220.

Sample Program (required courses only)

Freshman: Fall—MSM 131 (or 141), MSC 112; Spring—MSM 132 (or 142).

Sophomore: Fall—MSM 231 or 241, MSA 310 (or MSA 311, 312); Spring—MSM 306 or 307, MSM 313, foundations of education courses.

Junior: Fall—MSM 320 (or 321), MSE 301, MSE 311, mathematics electives required for MSM or MSA degree; Spring—MSM 360, MSE 302, MSE 312, mathematics electives required for MSM or MSA degree, SSI 265.

Senior: Fall—MSE 450, MSE 454, mathematics electives required for MSM or MSA degree; Spring—Mathematics electives required for MSM or MSA degree.

Fall and spring semester of the senior year will be reversed for some students.

Requirements for the Five-Year Program

1. Completion of the requirements of the four-year program, with a major in mathematics (MSM). MSA 310 may be replaced in these requirements by MSM 516 or by any graduate course in statistics.
2. Admission to the Graduate School.
3. MSA 301 and either MSM 315 or MSM 512.
4. Thirty (30) graduate credits in courses approved by the Department of Mathematics, which will ordinarily include MSM 513, 514, 515, 519, a graduate course in computer science, and six credits of MSM 690.
5. Passing the comprehensive examination, which will consist of the final examinations in four of the courses in the program, ordinarily MSM 513, 514, 515, and either 512 or 516.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

The following courses are for students registered in the secondary teacher preparation program in mathematics and are open to others only by permission of the Mathematics Department's Director of Teacher Preparation.

MSE 301 Foundations of Secondary School Mathematics

A reexamination of elements of school mathematics, including topics in algebra, geometry, and elementary functions. Competence in basic secondary level ideas and techniques will be tested. Oral and written presentations will be required.

Prerequisite: MSM 221 or 231 or 241. *Corequisite:* MSM 313.

Fall, 3 credits

MSE 302 Methods of Teaching Secondary School Mathematics

An introduction to the dynamics of the classroom for the student preparing to teach secondary school mathematics. Various aspects of teaching are considered: goals of mathematics education, learning theories, mathematics curricula, lesson planning, evaluation, teaching strategies. Reports are required on observations made in the schools. Lesson plans are drawn up and presented to the group.

Prerequisite: MSE 301. *Pre- or co-requisite:* MSM 320 or 321.

Spring, 3 credits

MSE 311 Classroom Observations

Individual weekly visits to local secondary schools to observe mathematics classes. All types and levels (7-12) of mathematics teaching will be included. Debriefing and analysis will follow each visit. Term paper required. *Prerequisite:* MSM 221 or 231 or 241. *Corequisites:* MSE 301 and MSM 313.

Fall, 3 credits

MSE 312 Micro-Teaching

Twice weekly supervised classroom experience, tutoring, or working with small groups of students as a teacher's aide.

Prerequisite: MSM 311. *Corequisite:* MSE 302.

Spring, 2 credits

MSE 450 Student Teaching

Intensive supervised teaching in a secondary school. Students will work in the school under the supervision of an experienced teacher. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: MSE 312 and permission of Mathematics Director of Teacher Preparation. *Corequisite:* MSE 454.

Fall and spring, 12 credits

MSE 454 Student Teaching Seminar

Biweekly discussions of teaching techniques and experiences, learning theory, curriculum content, and classroom problems.

Prerequisites: MSE 312 and permission of Mathematics Director of Teacher Preparation. *Corequisite:* MSE 450.

Fall and spring, 3 credits

Department of Music

Professors

Bulent Arel, Director of Electronic Music Studio, Diploma, State Conservatory of Ankara (Composition; theory)

Samuel Baron, B.S. Juilliard School of Music; pupil of George Barrere and Arthur Lora (Flute; chamber music)

Bernard Greenhouse, Diploma, Juilliard Graduate School (Cello; chamber music)

Billy Jim Layton, Ph.D. Harvard University (Composition; theory)

John Lessard, Diploma, École Normale; Diploma, Longy School of Music (Composition; theory)

Charles Rosen, Ph.D. Princeton University (History; interdisciplinary studies in music, literature, art, and philosophy)

Leo Treitler, Chairman, Ph.D. Princeton University (Medieval, Renaissance, and twentieth-century history)

Associate Professors

E. Antony Bonvalot, Ph.D. Harvard University (Renaissance history)

Sarah Fuller, Ph.D. University of California, Berkeley (Medieval and Renaissance history)

Richard Kramer, Director of Graduate Studies, Ph.D. Princeton University (Eighteenth-century history; Beethoven)

David Lawton, Director of the University Orchestra, Ph.D. University of California, Berkeley (Orchestral and opera conducting; nineteenth-century history)

Daria Semegen, M.Mus. Yale University (Composition; theory; electronic music)

Peter Winkler, Director of Undergraduate Studies, M.F.A. Princeton University (Composition; theory; popular music). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1976-77

Assistant Professors

Marguerite Brooks, Director of Choral Organizations, M.Mus. Temple University (Choral conducting)

Eric Chafe, B.Mus. University of Toronto (Baroque history; Bach)

James McCalla, Ph.D. University of California, Berkeley (Twentieth-century history and criticism)

Sheila Silver, Ph.D. Brandeis University (Composition; theory)

Instructor

Anne Marie de Zeeuw, M.Mus. University of Texas at Austin (Theory; musicianship)

Performing Artists in Residence

Adele Addison, B.Mus. Westminster Choir College; New England Conservatory of Music (Voice; vocal repertory)

Ronald Anderson, M.S. Juilliard School of Music; Ed.D. Columbia University (Trumpet, chamber music)

Martin Canin, M.S. Juilliard School of Music (Piano; chamber music)

Raymond Des Roches, M.Mus. Manhattan School of Music (Percussion; chamber music)

Timothy Eddy, M.Mus. Manhattan School of Music (Cello; chamber music)

David Glazer, B.Ed. University of Wisconsin at Milwaukee (Clarinet; chamber music)

John Graham, B.A. University of California, Berkeley (Viola; chamber music)

Gilbert Kalish, B.A. Columbia University (Piano; chamber music)

Simon Karasick, Emeritus, B.Mus. Eastman School of Music (Trombone)

Jack Kreiselman, Director of the University Wind Ensemble, Manhattan School of Music, pupil of Simeon Bellison and Simon Kovar (Clarinet; chamber music)

Julius Levine, B.S. Juilliard School of Music (String bass; chamber music)

William Purvis, Coordinator of Chamber Music, M.Mus. Hunter College (Horn)

Ronald Roseman, B.S. Queens College (Oboe; chamber music)

Arthur Weisberg, Conductor of the University Chamber Orchestra, Juilliard School of Music; pupil of Simon Kovar (Bassoon; orchestral conducting)

Jerry Willard, Cleveland Institute of Music, study with John Williams and Misha Mishakoff (Guitar; chamber music)

Teaching Assistants

Estimated Number: 80

The undergraduate major in music is designed as a balanced educational program which serves as preparation for professional careers and advanced training in performance, composition, scholarship, and teaching.

Requirements for the Major in Music

A. Admittance to the Major

Any student wishing to major in music must pass an audition in voice or instrument and a theory placement examination which tests aural skills and musical literacy (that is, the ability to read music and to hear the sound of a score from the written page alone). Students should consult the department office for dates of the theory placement examination and to make an appointment for an audition.

B. Study Within the Area of the Major

1. Theory

MUS 221 Musicianship II	3
MUS 222 Modal Counterpoint I	3
MUS 321, 322 Tonal Harmony I, II	6
MUS 421 Analysis of Tonal Music	3
MUS 422 Analysis of Twentieth-Century Works	3

2. History and Literature

MUS 241 Western Music Before 1600	3
MUS 341 Western Music from 1600 to the Early Nineteenth Century	3
MUS 342 Western Music of the Nineteenth and Twentieth Centuries	3
Three additional courses numbered 441 to 478 to be chosen in consultation with the student's advisor. The courses should be distributed among a range of historical periods.	9

3. Performance

At least one course from the groups	
MUS 161-187 Secondary Instrument or Voice or MUS 361-387 Primary Instrument or Voice for a minimum of four semesters.	8-16
MUS 261 University Chorus or MUS 262 University Orchestra or MUS 263 University Wind Ensemble or MUS 393 Chamber Chorus for four semesters. (MUS 390 Collegium Musicum may count for two semesters of this requirement.) Students who play instruments used both in orchestra and wind ensemble must spend at least one semester in each of these groups.	4-8

Total 48-60

Note: No more than 30 credits of individual instruction in instrument or voice may be included in the 120 credits required for the B.A. degree.

C. Piano Proficiency

Each student will be expected to pass a piano proficiency test at the end of the first year as a music major.

D. Foreign Language

Students who intend to continue their studies beyond the B.A. degree are advised that most graduate music programs require a reading knowledge of French or German, often both. (Language courses may be taken under the P/NC option.)

Note: All courses used to fulfill the requirements for the major in music must be taken for letter grade.

Honors Program in Music

Candidates for honors in music must be nominated by a faculty member who will agree to act as sponsor for the honors project. An eligible student may submit a proposal for a project to the proposed sponsor, who will forward the proposal together with a letter of nomination to the Music Department's Undergraduate Studies Committee. To be eligible, a student must have maintained at least a 3.0 grade point average overall, and a 3.0 average in music. After entering the honors program, a student must maintain at least a 3.5 average in music.

The project may be in the area of performance, composition, history, or theory, carried out under the supervision of the sponsor. The completed project will be reviewed by an evaluating committee consisting of the sponsor, another member of the music faculty, and an outside evaluator.

Complete guidelines for the honors program are available in the department office.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

Courses for Students Majoring in Other Fields

MUS 101 Introduction to Music

The factors which create form and coherence in music will be studied from the listener's point of view. Concepts such as melody, harmony, counterpoint, and rhythm will be illustrated by examples representing diverse historical periods and musical styles. No previous musical training is assumed. Fall and spring, 3 credits

MUS 107 History of Jazz

A survey of jazz from its Afro-American roots in the late nineteenth century to the present. Emphasis will be on musical characteristics—styles, forms, types of ensemble, important performers—with some attention to the cultural and social position of jazz in this country and its interaction with other musics. Fall, alternate years, 3 credits

MUS 109 Rock Music

A study of the development of Rock from the end of World War II to the present. Emphasis will be upon the music and its connection with earlier folk and popular styles, with special attention to various syntheses of African and European traditions. Fall, alternate years, 3 credits

MUS 119 The Elements of Music

The notation of intervals, scales, chords, rhythms, and meters; practical exercises and ear training. Fall and spring, 3 credits

MUS 261 University Chorus

Study and performance of a repertory from the Middle Ages to the present. More than four unexcused absences from rehearsals eliminates credit. May be repeated. Prerequisite: Auditions. Fall and spring, 1 credit

MUS 262 University Orchestra

Study and performance of works from the repertory of the concert orchestra. More than four unexcused absences from rehearsals eliminates credit. May be repeated. Prerequisite: Auditions. Fall and spring, 1 credit

MUS 263 University Wind Ensemble

Study and performance of works for ensembles of woodwinds, brass, and percussion in various combinations. More than four unexcused absences from rehearsals eliminates credit. May be repeated. Prerequisite: Auditions. Fall and spring, 1 credit

Note: One course from the group MUS 301-309, will be offered every semester. Consult the Class Schedule for current offerings.

MUS 301 Music of the Baroque

The development during the late Renaissance of a new style will be traced, in Italy and elsewhere, through opera and oratorio, cantata and chorale, concerto, suite, and trio sonata, to its ultimate expression in the works of Handel, Bach, and their contemporaries. Prerequisite: MUS 101 or 119. 3 credits

MUS 302 The Music of J.S. Bach

The vocal and instrumental works of Johann Sebastian Bach and the cultural and musical traditions in which they were grounded. Prerequisite: MUS 101 or 119. 3 credits

MUS 303 The Music of Beethoven

An exploration of the meaning and continuing relevance of one of the pivotal composers of the western world by the study of his symphonies, string quartets, piano sonatas, and other works.

Prerequisite: MUS 101 or 119.
3 credits

MUS 304 Piano Music Since Mozart

A historical survey of piano music, emphasizing the solo repertory, from the late eighteenth century to the present day.

Prerequisite: MUS 101 or 119.
3 credits

MUS 305 Music in the Romantic Era

The expressive art of the century between the birth of Schubert and the death of Brahms is examined in selected works of these and other figures, such as Berlioz, Mendelssohn, Chopin, Schumann, Liszt, Wagner, and Verdi.

Prerequisite: MUS 101 or 119.
3 credits

MUS 306 The Symphony

Study of important symphonic works from the eighteenth century to the present. The course will concentrate on the development of styles from Haydn, Mozart, and Beethoven through the Romantics, Brahms, and Mahler, concluding with the transformation of the symphonic idea in works of Stravinsky and Webern.

Prerequisite: MUS 101 or 119.
3 credits

MUS 307 Music and Drama

The ritual and dramatic uses of music from antiquity to the modern lyric theatre, with emphasis upon the operatic repertory from Mozart to Berg.

Prerequisite: MUS 101 or 119.
3 credits

MUS 309 Music of the Twentieth Century

An introduction to the variegated and rapidly changing trends of the present century, including impressionism, expressionism, neoclassicism, twelve-tone and other serialism, constructivism, chance music, electronic and computer music, as well as styles derived from folk music, jazz, and other forms of popular music.

Prerequisite: MUS 101 or 119.
3 credits

MUS 315, 316 The Structural Principles of Music I, II

An introduction to the language and basic structural concepts of the art through the study of such elements as melody, rhythm, harmony, counterpoint, and form; analysis, written exercises, and discussion of theoretical principles.

Prerequisite to MUS 315: MUS 119. *Prerequisite to MUS 316:* MUS 315.

Fall and spring, 3 credits

Courses for Music Majors**MUS 121 Musicianship I**

Beginning music theory including notation of rhythms, scales, intervals, chords, sight singing, and simple rhythmic exercises. Elementary melodic, rhythmic, and harmonic dictation. Intended for students who are not prepared to enter MUS 221.

Prerequisite: Placement examination. Consult department as early as possible concerning dates. *Prerequisite or corequisite:* MUS 160 or passing piano proficiency examination.

Fall and spring, 3 credits

MUS 160 Basic Piano

Instruction in keyboard skills for beginners, intended for music majors who are unable to pass the department's piano proficiency examination. Two students meet forty-five minutes a week with the instructor, with four hours of individual practice required. May be repeated.

Prerequisite: Permission of instructor.

Fall and spring, 1 credit

MUS 161 to 187 Secondary Instrument or Voice

A forty-five minute individual lesson or one-hour group lesson each week, with five hours practice required. At least half of the semester will be devoted to individual lessons, which may be taught by a graduate teaching assistant or a faculty instructor; group lessons will be given by faculty instructors only. Open to music majors and, enrollment permitting, to other students with a serious interest in music. May be repeated.

Prerequisites: Audition and permission of instructor. *Prerequisite to MUS 187:* Approval of department Undergraduate Studies Committee.

Fall and spring, 2 credits

MUS 161 Piano
MUS 163 Harpsichord
MUS 165 Violin
MUS 166 Viola
MUS 167 Cello
MUS 168 String Bass
MUS 169 Guitar
MUS 170 Flute
MUS 171 Oboe
MUS 172 Clarinet
MUS 173 Bassoon
MUS 175 Horn
MUS 176 Trumpet
MUS 177 Trombone
MUS 178 Tuba
MUS 180 Percussion
MUS 182 Voice
MUS 187 Performance Project I

MUS 221 Musicianship II

Intended to develop the student's aural perception. Problems in melodic, rhythmic, and harmonic dictation; sight singing exercises including complex rhythms, tonal and modal melodies, modulation; elementary analysis of a few basic musical forms.

Prerequisite: MUS 121. Consult department as early as possible concerning date of placement examination. *Prerequisite or corequisite:* MUS 160 or passing piano proficiency examination.

Fall and spring, 3 credits

MUS 222 Modal Counterpoint I

Counterpoint in sixteenth-century style for two voices.

Prerequisite or corequisite: MUS 221.

Fall and spring, 3 credits

MUS 237 Composition in Popular Styles

Individual projects in songwriting, jazz composition, and related work. Students will arrange for performance of their work in a concert at the end of the semester. Some previous composing experience and an adequate background in theory is required. Enrollment limited to eight. May be repeated once.

Prerequisite: Permission of instructor.

Spring, 3 credits

MUS 239 Beginning Composition

Individual projects in composition discussed and criticized in class. Enrollment limited to eight. May be repeated once.

Prerequisite: Permission of instructor.

Alternate years, 3 credits

MUS 241 Western Music Before 1600

The history of western music from antiquity to the late sixteenth century.

Prerequisite or corequisite: MUS 222.

Fall, 3 credits

MUS 261 University Chorus

Study and performance of a repertory from the Middle Ages to the present. More than four unexcused absences from rehearsals eliminates credit. May be repeated.

Prerequisite: Auditions.

Fall and spring, 1 credit

MUS 262 University Orchestra

Study and performance of works from the repertory of the concert orchestra. More than four unexcused absences from rehearsals eliminates credit. Primary students are eligible for MUS 565. May be repeated.

Prerequisite: Auditions.

Fall and spring, 1 credit

MUS 263 University Wind Ensemble

Study and performance of works for ensembles of woodwinds, brass, and percussion in various combinations. More than four unexcused absences from rehearsals eliminates credit. May be repeated.

Prerequisite: Auditions.

Fall and spring, 1 credit

MUS 321, 322 Tonal Harmony I, II

Practice in homophonic writing, including the harmonization of chorales.

Prerequisite to MUS 321: MUS 222. *Prerequisite to MUS 322:* MUS 321.

Fall and spring, 3 credits each semester

MUS 331 Musicianship III

Sight singing and dictation (one to four voices) of tonal, modal, and atonal examples with progressively complex rhythms. Exercises in aural analysis.

Prerequisite: MUS 221.

Spring, 3 credits

MUS 341 Western Music from 1600 to the Early Nineteenth Century

A survey of style and form from early opera through the late quartets of Beethoven.

Prerequisite: MUS 241. *Prerequisite or corequisite:* MUS 321.

Spring, 3 credits

MUS 342 Western Music of the Nineteenth and Twentieth Centuries

A survey of music from the early nineteenth century until the present day, with emphasis on major currents of stylistic development.

Prerequisite: MUS 341. *Prerequisite or corequisite:* MUS 322.

Fall, 3 credits

MUS 361 to 387 Primary Instrument or Voice

One-hour individual lesson each week, with 15 hours practice required. Open only to students with adequate preparation who demonstrate a professional commitment to the performance of music. May be repeated.

Prerequisites: Audition and permission of instructor. *Prerequisite to MUS 387:* Approval of department Undergraduate Studies Committee.

Fall and spring, 4 credits

MUS 361 Piano
MUS 365 Violin
MUS 366 Viola
MUS 367 Cello
MUS 368 String Bass
MUS 369 Guitar
MUS 370 Flute
MUS 371 Oboe
MUS 372 Clarinet
MUS 373 Bassoon
MUS 375 Horn
MUS 376 Trumpet
MUS 377 Trombone
MUS 378 Tuba
MUS 380 Percussion
MUS 382 Voice
MUS 387 Performance Project II

MUS 390 Collegium Musicum

A workshop in the performance of music scored for small vocal and instrumental ensembles, with emphasis upon the repertory from the Middle Ages to 1750. May be repeated but will count toward fulfillment of major requirements only twice.

Prerequisite: MUS 221.
Spring, 1 credit

MUS 391 Chamber Music—Secondary

Ensembles formed by students enrolled in secondary instrument or voice, receiving approval of a faculty instructor and assignment of a repertory, who will rehearse two hours a week under the supervision of a graduate trainee. May be repeated.

Prerequisite: Permission of instructor.
Fall and spring, 1 credit

MUS 392 Workshop in Orchestral Ensemble

Rehearsal of the orchestral repertory for brass, woodwinds, or percussion in separate groups or combined. May be repeated.

Prerequisite: Permission of instructor.
Fall and spring, 1 credit

MUS 393 Chamber Chorus

Performance of works for small chorus. Repertory to be chosen from all periods. May be repeated.

Prerequisites: Audition and permission of instructor.
Fall and spring, 2 credits

MUS 394 Secondary Instrumental Master Class

Performance and coaching of solo works for a specified instrument under the instruction of a member of the performance faculty. May be repeated for credit.

Prerequisites: Audition and permission of instructor. *Corequisite:* The appropriate course from MUS 161-180.
Fall or spring, 2 credits

MUS 421 Analysis of Tonal Music

An examination, through the study of selected works, of the action and interaction of harmonic progression, rhythm, meter, motive, and line in defining and articulating tonal structures.

Prerequisite: MUS 322.
Fall, 3 credits

MUS 422 Analysis of Twentieth-Century Works

Music to be studied will be selected from representative works by Debussy, Bartok, Schoenberg, Stravinsky, Webern, and others.

Prerequisite: MUS 421.
Spring, 3 credits

MUS 431 Modal Counterpoint II

Counterpoint in sixteenth-century style for three or more voices.

Prerequisite: MUS 222.
Alternate years, 3 credits

MUS 432 Tonal Counterpoint

A study of the art of combining voices under the conditions of tonal harmony as observed in works from Bach through the Romantic composers.

Prerequisite: MUS 322.
Alternate years, 3 credits

MUS 434 Orchestration

The possibilities and limitations of the commonly used instruments; conventions of notation; practice in scoring for various ensembles.

Prerequisite: MUS 322.
Spring, 3 credits

MUS 439 Composition

Open only to students demonstrating sufficient aptitude and capacity for original work. May be repeated.

Prerequisite: Permission of instructor.
Fall and spring, 3 credits

Note: Five courses from the group MUS 441-478 will be offered every year. Consult the Class Schedule for current offerings.

MUS 441 Secular Music of the Renaissance (Formerly MUS 444)

A survey of secular vocal music from the songs of Dowland through the airs of Dowland. The sixteenth-century Italian madrigal and the French chanson will receive particular attention. A central concern will be shifting relationships between music and poetry.

Prerequisite: MUS 241.
3 credits

MUS 443 Johann Sebastian Bach (Formerly MUS 446)

A study of selected vocal and instrumental works.

Prerequisites: MUS 322 and 341.
3 credits

MUS 451 Dramatic Music of the Baroque

Opera and oratorio of the seventeenth and eighteenth centuries with emphasis on specific works by Monteverdi and Handel. Topics for discussion will include changing operatic conventions and relationships between opera and oratorio in the period.

Prerequisites: MUS 322 and 341.
3 credits

MUS 452 Mozart

Mozart as catalyst to the development of the important genres (vocal and instrumental) in late eighteenth-century Vienna: symphony, keyboard concerto, music for smaller ensemble, the various species of opera.

Prerequisites: MUS 322 and 341.
3 credits

MUS 453 Beethoven

Works of differing scope and medium drawn from every period of Beethoven's life.

Prerequisites: MUS 322 and 341.
3 credits

MUS 456 Classical Chamber Music

The string quartets of Haydn, Mozart, and Beethoven provide a central point of reference in the course.

Prerequisites: MUS 322 and 341.
3 credits

MUS 458 Orchestral Music of the Nineteenth Century

The development of orchestral music from Beethoven's Ninth Symphony to the symphonies of Gustav Mahler and the tone poems of Richard Strauss. Solutions of composers who continued to work along classical lines—Schubert, Mendelssohn, and Brahms—will be contrasted with those of composers who explored new relations between music and literature—Berlioz, Liszt, Strauss, and others.

Prerequisites: MUS 322 and 342.
3 credits

MUS 460 Opera

Study of a specific topic in opera such as the work of a single composer (Mozart, Verdi, Wagner), a national opera tradition (nineteenth-century Italian opera, German opera), a genre (comic opera), or a problem (foundations of opera conventions).

Prerequisite: MUS 322. *Prerequisite or corequisite:* MUS 342.
3 credits

MUS 462 The Lied from Schubert to Wolf

The exploration of a peak of German tradition in the matching of text and music.

Prerequisites: MUS 322 and 342.
3 credits

MUS 464 The Generation of 1830

Chopin, Schumann, Liszt, Mendelssohn, and Berlioz, including their stylistic sources in earlier music and influence on later generations.

Prerequisites: MUS 322 and 342.
3 credits

MUS 468 Stravinsky

The changing stylistic manners adopted by a pivotal composer of the twentieth century.

Prerequisites: MUS 322 and 342.
3 credits

MUS 470 Schoenberg, Berg, Webern

Major topics for consideration will be Schoenberg's historical position and his influence as a teacher, the similarities and differences among the three composers, and the influence of each on later developments.

Prerequisites: MUS 322 and 342.
3 credits

MUS 472 Major Twentieth-Century Composers

An intensive study of one or more of those composers who have shaped the musical language of our epoch. May be repeated.

Prerequisites: MUS 322 and 342.
3 credits

MUS 474 Music Since 1945

A broad survey of contemporary music, stressing the contributions of a large number of composers. The development of an analytical and critical vocabulary appropriate for this music will be a major concern. Problems posed by new media and new methods of notation and the question of historical roots for the new music will also be considered.

Prerequisites: MUS 322 and 342.
3 credits

MUS 477 American Popular and Folk Styles (Formerly MUS 476)

The development of the various vernacular musical styles of twentieth-century America. Focus will be on the nature of blues, jazz, rhythm-and-blues, popular song, country music, and rock, and on the cross-influences among them.

Prerequisites: MUS 322 and 342.
3 credits

MUS 478 History of Electronic Music

A survey of the development of electronic music, and a demonstration of the techniques of sound production and modification in the electronic music studio.

Prerequisites: MUS 322 and 342.
3 credits

MUS 487 Independent Project

Individual study under the guidance of a staff member leading to a major essay or composition. May be repeated.

Prerequisites: Permission of instructor and approval of department's Undergraduate Studies Committee.
Fall and spring, 1 to 6 credits

MUS 490 Vocal Repertory

Performance and analysis of works from the vocal repertory. May be repeated.

Prerequisite: Permission of instructor. *Corequisite:* MUS 182 or MUS 382.
Fall and spring, 2 credits

MUS 491 Choral Conducting

Manual technique and the analysis and preparation of vocal scores for performance. May be repeated.

Prerequisites: MUS 322 and permission of instructor.
Fall or spring, 3 credits

MUS 492 Orchestral Conducting

Baton technique and the analysis and preparation of orchestral scores for performance.

Prerequisites: MUS 434, 491, and permission of instructor.
Fall or spring, 3 credits

Department of Philosophy

Distinguished Professor

Justus Buchler, Ph.D. Columbia University (Metaphysics; moral philosophies)

Professors

Edward S. Casey, Ph.D. Northwestern University (Philosophy of psychology; psychoanalysis; phenomenology)

Antonio de Nicolas, Ph.D. Fordham University (Critical philosophy; Indian philosophy; psychology; comparative literature)

Sidney Gelber, Ph.D. Columbia University (Political philosophy)

Patrick Aidan Heelan, Ph.D. University of Louvain; Ph.D. St. Louis University (Philosophy of science)

Dick Howard, Ph.D. University of Texas (Political and social philosophy; Marxian and continental thought; nineteenth-century philosophy)

Don Ihde, Chairman, Ph.D. Boston University (Phenomenology; philosophy and technology; perception)

Donald B. Kuspit, Ph.D. University of Michigan; D.Phil. University of Frankfurt (Aesthetics)

Robert Neville, Joint with Religious Studies, Ph.D. Yale University (Philosophy of religion; process philosophy). Recipient of the State University Chancellor's Award for Excellence in Teaching 1974-75

Marshall Spector, Ph.D. Johns Hopkins University (Philosophy of science; logic)

Robert Sternfeld, Ph.D. University of Chicago (Metaphysics; epistemology; twentieth-century philosophy)

Victorino Tejera, Ph.D. Columbia University (Greek philosophy, aesthetics; philosophy of history; philosophy of myth)

Harold Zyskind, Ph.D. University of Chicago (Philosophy of rhetoric; history of philosophy)

Associate Professors

David B. Allison, Ph.D. Pennsylvania State University (Phenomenology; existentialism; Nietzsche)

David A. Dilworth, Ph.D. Fordham University (Chinese and Japanese philosophy; philosophy of religion)

Patrick J. Hill, Ph.D. Boston University (Philosophy of communication; philosophy of community; philosophy of education)

Clyde Lee Miller, Ph.D. Yale University (Ancient and Medieval philosophy; contemporary moral issues; history of philosophy). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1979-80

Rita D. Nolan, Ph.D. University of Pennsylvania (Theory of knowledge; philosophy of language)

Hugh J. Silverman, Joint with Comparative Literature, Ph.D. Stanford University (Contemporary European philosophy; philosophy and literature; philosophical psychology). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1976-77

Michael Simon, Ph.D. Harvard University (Philosophy of mind; philosophy of biology and of the social sciences)

Walter Watson, Ph.D. University of Chicago (Metaphysics; history of philosophy)

Donn Welton, Ph.D. Southern Illinois University (Phenomenology; philosophical anthropology; perception)

Assistant Professors

Patricia Athay, Ph.D. Princeton University (Seventeenth- and eighteenth-century philosophy; philosophy of science; philosophy of social sciences)

Patrick Grim, Ph.D. Boston University (Philosophy and anthropology; philosophy and social science)

Eva Feder Kittay, Ph.D. City University of New York (Philosophy of language; philosophy and feminism; modern philosophy)

David Pomerantz, Ph.D. Vanderbilt University (Social and political philosophy; ethics)

Mary C. Rawlinson, Ph.D. Northwestern University (Continental philosophy; psychoanalytic theory; philosophy of medicine)

Peter Williams, J.D., Ph.D. Harvard University (Philosophy of law; ethics; philosophy and medicine). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1977-78

Susan Wood, Ph.D. State University of New York at Buffalo (Logic; philosophy of language)

Lecturer

Sheldon Ackley, Adjunct, Ph.D. Boston University (Philosophy of law)

Teaching Assistants

Estimated Number: 30

Requirements for the Major in Philosophy

The major in philosophy leads to the Bachelor of Arts degree. The following courses are required.

A. Study Within the Area of the Major

Philosophy courses distributed among five categories (eligible courses are identified by a category number I through V which appears in parentheses after the title of the course).

Category I. Two courses in the history of philosophy, each devoted to a different historical period (PHI 200 and 206 are recommended)

6

Category II. Two courses defined in terms of topics or skills basic to all disciplines and common to various philosophic styles

Credits

6

Category III. One course defined in terms of a particular style, approach, movement, or tradition

3

Category IV. Two courses relating philosophy to particular disciplines

6

Category V. One course devoted to a single philosopher or text

3

Two additional courses chosen from any of the five categories

6

PHI 435 Senior Seminar

3

Sub-Total 33

B. Study in Related Areas

Three courses in disciplines related to the philosophy courses chosen from Category IV above.

9

Total 42

To fulfill the above requirements, no more than two 100-level philosophy courses may be taken; at least three courses at the 300 level or higher must be taken. Students who expect to pursue graduate study in philosophy should include in their programs PHI 200, 206, 220, and one senior reading course chosen from PHI 487, 488, and 489.

Honors Program in Philosophy

To qualify for the honors program a student must be a junior or a senior major with an overall average of at least 3.0 and an average in philosophy of 3.5. The student must maintain this average through the course of the honors program. To seek honors, a student must plan a program not later than first semester of senior year with a faculty advisor and the Director of Undergraduate Studies. The program shall consist of three courses at the 300 level or higher, concentrated on related aspects of a central problem. At least one of the courses should be independent study under the direction of the advisor and lead to a senior paper. This paper will be reviewed by the advisor and one other member of the philosophy faculty and by a faculty member from outside the department. The senior paper will then be the focus of an oral examination. Honors will be awarded upon passage of the examination.

Minor in Philosophy

Depending upon the emphasis chosen, the minor in philosophy requires either 18 or 21 credits. Emphases from which to choose are: History of Philosophy (21 credits); Language, Logic, and Science (18 credits); Social, Moral, and Legal Issues (18 credits); The Person and the Arts (18 credits); or Eastern and Western Thought (21 credits). Interested students should consult with the Director of Undergraduate Studies in Philosophy for details about specific courses contributing to each emphasis and for help in planning their schedules.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

For details of staffing, specific content, and reading lists, the student should consult schedules posted by the Philosophy Department before registration each semester.

Lower Division Courses

These courses offer the student various ways to become acquainted with the nature and variety of philosophical inquiries. There are no prerequisites for any 100-level course.

PHI 100 Concepts of the Person (II)

An introduction to philosophy through readings and discussion on topics such as human identity, human understanding, human values.
Fall and spring, 3 credits

PHI 101 Introduction to Ancient and Medieval Philosophy (I)

Readings and discussion of selected texts of philosophers such as Plato, Aristotle, Plotinus, Augustine, Aquinas.
Fall and spring, 3 credits

PHI 102 Introduction to Modern and Contemporary Philosophy (I)

Readings and discussion of selected texts of philosophers such as Descartes, Hume, Kant, Hegel, Nietzsche, Wittgenstein, and Sartre.
Fall and spring, 3 credits

PHI 103 Philosophic Problems (II)

An introduction to philosophy through an inquiry into one or more of the basic problems of philosophy.
Fall and spring, 3 credits

PHI 104 Contemporary Morality (IV)

An introduction to philosophy through inquiry into moral questions raised by contemporary personal and social issues such as political protest, sexual freedom, war and peace, new life-styles. Methods of philosophical analysis will be employed in studying these moral issues.
Fall and spring, 3 credits

PHI 106 Radical Thought (IV)

A systematic historical and critical introduction to Marxism as a political theory and as a theory of action. Course concentrates on Marx's work and on its relation to other Marxists (e.g., Lenin, Trotsky, Luxemburg, Mao) and to the New Left.
Fall and spring, 3 credits

PHI 108 Logical and Critical Reasoning (II)

The principal aim of this course is to help a student acquire the skills of thinking, reading, and writing critically. The student will develop a sensitivity to language and argumentation that will be applicable to a wide range of situations and subject matters (newspaper editorials, advertisements, books, legal arguments, and puzzles).
Fall and spring, 3 credits

PHI 109 Literature and Human Life (IV)

A survey in translation of major authors and works of Western culture, focused around such problems as the self and moral values. This course is identical with CLT 109.
Fall, 3 credits

PHI 110 Literature and Artistic Creation (IV)

A survey in translation of major authors and works of Western culture, focused around the artist's perception of the world and his creative activity. This course is identical with CLT 110.
Spring, 3 credits

PHI 111 Introduction to Eastern Philosophy: Classical Texts (III; Formerly PHI 231)

A study of the main classical texts of Hinduism, Buddhism (Indian, Chinese, Japanese), Taoism, Confucianism, and Neo-Confucianism (2500 B.C. to 300 B.C.). The emphasis will be upon the structural and contextual background of these traditions and on relating them to what may be implicit in the American experience.
Fall, 3 credits

PHI 112 Introduction to Eastern Philosophy: Interpretations (III; Formerly PHI 232)

Analysis of texts from the Eastern tradition in an effort to recover the different modes of knowledge, language, identification, liberation, etc., and a study of different systems of Eastern philosophy that have dealt with these problems (600 B.C. to present).
Spring, 3 credits

PHI 200 Ancient Philosophy (I)

Study of the major thinkers from Thales to Aristotle.
Prerequisite: Sophomore standing or one course in philosophy; PHI 101 recommended.
Fall and spring, 3 credits

PHI 206 Modern Philosophy (I)

The shifting relationships between philosophy and science that characterize the modern period (1600-1800), with special attention to these issues: rationalism vs. empiricism, necessity vs. contingency, reason vs. skepticism, God vs. nature, metaphysics vs. experience. Extensive readings from Descartes, Vico, Spinoza, Leibniz, Locke, Berkeley, Hume, Kant.
Prerequisite: Sophomore standing or one course in philosophy; PHI 102 recommended.
Fall and spring, 3 credits

PHI 220 Introduction to Symbolic Logic (II)

This first course in logic emphasizes the development of systematic techniques for assessing the validity of arguments: truth tables and truth values analysis, Venn diagrams, elementary quantification theory, and deduction in both the propositional calculus and quantification theory.
Prerequisite: Sophomore standing or one course in philosophy.
Fall and spring, 3 credits

PHI 223 Introduction to Metaphysics (II)

An introduction to philosophy through study of some of the main topics of metaphysics, for example, mind and matter, appearance and reality, freedom and determinism.
Prerequisite: Sophomore standing or one course in philosophy; PHI 103 recommended.
Fall and spring, 3 credits

PHI 236 Introduction to Chinese Philosophy (III)

A philosophical introduction and analysis of the main stages and modes of Chinese thought, both as reflective of the high attainment of civilization in the Chinese cultural matrix and as contributing to the contemporary dialogue between world philosophical perspectives: classical Confucianism and Taoism; the development of Chinese Buddhism; Neo-Confucian reaction and integration in the Sung and Ming; China's reaction to the West and contemporary Maoism.
Prerequisite: Sophomore standing or one course in philosophy.
Spring, 3 credits

PHI 239 Japanese Philosophy and Aesthetics (III)

This course traces the philosophical process of "modernization" in Japan, focusing on such philosophical and literary authors as Fukuzawa, Natsume, Mori, Watsuji, Nishida and the Kyoto School, and more recent thinkers such as Tanizaki, Kawabata, Mishima.
Prerequisite: Sophomore standing or one course in philosophy.
Spring, 3 credits

PHI 247 Existentialism (III)

Readings in existential philosophy and literature with special emphasis on such themes as alienation, anxiety, nihilism, absurdity, the self, value, death, and immediacy. Existentialist categories will be used to interpret contemporary life-styles and culture.
Prerequisites: Sophomore standing and one course in philosophy; PHI 100 or 102 recommended.
Fall and spring, 3 credits

PHI 261 Philosophy and Medicine (IV)

An investigation of the role that philosophical concepts play in medical thinking and practice. The course will focus on the philosophical foundations of concepts of health and disease; concepts of right, responsibility, and justice relevant to medical practice; promise-keeping and truth-telling in the doctor-patient relation; and specific moral problems that arise in medical practice.

Prerequisite: Sophomore standing or one course in philosophy; PHI 104 or 106 recommended.
Fall and spring, 3 credits

PHI 264 Philosophy of Art (IV)

A reflective and foundational study of the experience, nature, and functions of art. Different hypotheses about the creative process are reviewed and tested for their ability to extend the enjoyment of art, for their appreciation of the multiple assumptions of the artist, and for the basis they offer for critical judgments.

Prerequisite: ARH 101 or 102 and sophomore standing or one course in philosophy.
Spring, 3 credits

PHI 268 Philosophy of Religion (IV)

An inquiry into the function of philosophical principles in religious thought. The course examines basic philosophic structures for such thought. It makes use of readings drawn from such writers as Augustine, Hume, Kant, Whitehead, and Buber.

Prerequisite: Sophomore standing or one course in philosophy; PHI 102 or 103 recommended.
Fall and spring, 3 credits

PHI 273 Philosophy of Myth (IV)

An examination of the structural forms of myth, the relation of myth to language, and the role of myth in social and self-interpretation. In addition to the central emphasis upon a philosophy of myth, occasional lectures will be given by experts in other areas.

Prerequisite: Sophomore standing or one course in philosophy; PHI 109 or 110 recommended.
Fall, 3 credits

PHI 277 Political Philosophy (IV)

An inquiry into the function of philosophical principles in political thought and action, with readings drawn from such authors as Plato, Aristotle, Machiavelli, Spinoza, Hobbes, Locke, Kant, Hegel, Mill,

and Dewey. Either semester may be taken independently of the other.

Prerequisite: Sophomore standing or one course in philosophy; PHI 106 recommended.

Fall and spring, 3 credits

PHI 285 The Uses of Philosophy (IV)

Introductory study of the bearing of philosophic considerations on the special arts and sciences. May be repeated as subject matter differs.

Prerequisite: Sophomore standing or one course in philosophy.
Fall, 3 credits

Upper Division Courses**PHI 301 Hellenistic and Roman Philosophy (I)**

Study of representative writings of Stoicism, Epicureanism, Skepticism, and Neo-Platonism.

Prerequisite: One philosophy course; PHI 101 or 200 recommended.

Spring, 3 credits

PHI 304 Medieval Philosophy (I)

Study of the writings of major thinkers from Augustine to William of Ockham.

Prerequisite: One philosophy course; PHI 101 or 200 or 301 recommended.

Spring, 3 credits

PHI 308 Nineteenth-Century Philosophy (I)

Study of major representative figures of the nineteenth century such as Hegel, Schopenhauer, Marx, Mill, Nietzsche, Kierkegaard, Spencer, and Comte.

Prerequisite: One philosophy course; PHI 102 or 206 recommended.

Fall, 3 credits

PHI 320 Metaphysics (I)

An inquiry into the first principles of all science, art, and action as these are treated in representative classical and modern authors.

Prerequisite: One philosophy course; PHI 206 or 223 recommended.

Spring, 3 credits

PHI 323 Philosophy of Perception (II)

An inquiry into the philosophical problems pertaining to the sensing, perceiving, and observing of the world. Various historical solutions (e.g., phenomenism, representationalism, scientific realism, naïve realism, etc.) will be examined. Special attention is given to contemporary views and to the impact of recent research (e.g., in the psychological and the biological sciences) on the issue in question.

Prerequisite: One philosophy course or PSY 101; PHI 103 recommended.

Spring, 3 credits

PHI 324 Twentieth-Century Philosophies of Experience (II)

A study of leading twentieth-century thinkers for whom experience is a primary unifying philosophical theme. Different concepts of experience and the relationships between various approaches such as those of Dewey, Bradley, Husserl, Sartre, Santayana, etc. will be included.

Prerequisite: One philosophy course; PHI 102 or 206 recommended.

Fall, 3 credits

PHI 325 Contemporary Philosophies of Language (II)

A discussion of current topics in the philosophy of language.

Prerequisite: One philosophy course; PHI 103 or 220 recommended.

Fall, 3 credits

PHI 330 Advanced Symbolic Logic (II)

A study of such topics as: a natural deduction system of quantification theory including consistency and completeness proofs; axiomatic formal systems and associated concepts of consistency, completeness, and decidability; elementary modal logic; and introductory set theory.

Prerequisite: PHI 220.

Spring, 3 credits

PHI 332 Theories of Knowledge (II)

A study of a variety of conceptions of the structure of knowledge, the roles of the knower, and the various kinds and status of objects known, as found in classical and contemporary epistemologies.

Prerequisite: One philosophy course or PSY 101; PHI 100 or 102 or 103 recommended.

Fall, 3 credits

PHI 340 Indian Buddhism: Its Essence and Development (III)

The relation between the Buddhist model of knowledge (with its historical variations) and its dependence on and variations from the previous Indian cultural idea of knowledge will be examined against the background of Western models of philosophical knowledge in their historical constitution. Materials studied will range from Buddha to Tantra.

Prerequisite: One philosophy course; PHI 111 or 112 recommended.

Spring, 3 credits

PHI 342 Chinese and Japanese Buddhism (III)

The main philosophical and institutional stages of Chinese and Japanese Buddhism, with emphasis on the latter. Topics in-

clude: the transmission of Indian Mahayana Buddhism to China; the formation of such Chinese schools as T'ien-t'ai, Hua-yen, Pure Land, and Ch'an (Zen); the further transmission of such schools to Japan, their assimilation within, and formative influence on Japanese culture. Japanese schools treated include Teudai, Shingon, Pure Land, Nichiren (Lotus), and Zen.

Prerequisite: One philosophy course; PHI 236 recommended.
Spring, 3 credits

PHI 353 Philosophy of Mind (III)

Techniques of contemporary analytic philosophy are applied to problems in the philosophy of mind. Among the topics discussed are: the logical status of discourse about psychological phenomena and events and of discourse about other minds; philosophical materialism (the identity thesis) philosophical behaviorism and the thesis of physicalism; and the distinction between thoughts and sensations.

Prerequisite: One philosophy course; PHI 206 or 223 recommended.

Spring, 3 credits

PHI 360 Philosophy of Education (IV)

An inquiry into the function of philosophical principles in educational theories and institutions. The inquiry centers on the purposes of knowledge and education, the relations among the sciences and their organization into curricula, and the ways in which knowledge is acquired and transmitted.

Prerequisite: One philosophy course or one course related to education; PHI 104 or 106 recommended.

Fall and spring, 3 credits

PHI 363 Philosophy of the Social Sciences (IV)

A study of the philosophical foundations of the social sciences, focusing on questions concerning the structures of social reality and the methodological and epistemological status of the social sciences.

Prerequisites: One philosophy course and one course in the social sciences.

Spring, 3 credits

PHI 364 Philosophy and Technology (IV)

A systematic study of how human beings experience the surrounding world of life-space, technological artifacts, and nature. The present impact of technological culture on man's perception of his world and his beliefs about himself will be explored. This course will be interdisciplinary in

scope, with readings from philosophy, architecture, technology, anthropology, and literature.

Prerequisite: One philosophy or physics or engineering course; PHI 104 or 106 or 261 recommended.
Spring, 3 credits

PHI 366 Philosophy of Science: History (IV)

An historical study of the reciprocal relationships that have existed between natural science and philosophy in the west from ancient Greece to modern times. An understanding will be sought of the character of scientific and philosophical explanation through the study of various cosmological models of man, nature, and God, especially the mechanistic models and the collapse of this model in the first half of the twentieth century.

Prerequisites: One philosophy course and one course in natural science or history of science; PHI 206 recommended.
Fall, 3 credits

PHI 368 Philosophy of Science: Current Issues (IV)

An introductory philosophy of science course dealing with topics selected from contemporary issues. The focus may be upon certain methodological issues, such as the nature of scientific explanation and prediction, the structure of theories, the nature of scientific revolutions, the role of laws in science; or the course may concern itself with philosophical problems in understanding specific sciences, such as the nature of space and time; or it may focus on the relations of various sciences to one another and to other areas of investigation, such as metaphysics.

Prerequisites: Two philosophy courses and one natural science course; PHI 220 recommended.
Spring, 3 credits

PHI 370 Philosophical Psychology (IV)

An examination of traditional philosophical theories concerning the nature of a person and their connection to such theories in psychology as psychoanalysis, medical models of mental illness; and theories of behavior modification.

Prerequisites: Two philosophy courses and PSY 101.
Fall and spring, 3 credits

PHI 372 Ethical Inquiry (IV)

An investigation of selected ethical problems.

Prerequisite: One philosophy course; PHI 104 recommended.
Spring, 3 credits

PHI 375 Philosophy of Law (IV)

An examination of the concept of law and the nature of legal reasoning. The course will explore

the relationship of law to other central philosophical and social ideas, such as freedom, rights, morality, authority, welfare, property, justice, equality, and constitutionalism.

Prerequisite: One philosophy course; PHI 104 or 372 recommended.

Fall and spring, 3 credits

PHI 378 Philosophy of History (IV)

A critical examination of theories about historical processes and developments and an evaluation of such concepts as progress, cause, purpose, and meaning in history. Pertinent materials will be drawn from historical and philosophical writings of such figures as Hegel, Nietzsche, Berdyaev, Collingwood, and Randall.

Prerequisites: One philosophy and one history course.
Fall, 3 credits

PHI 380 Literature of Philosophy (IV)

A study of the relations between literature and philosophy through an analysis of primary texts selected to demonstrate the precise nature of the relationship between the two disciplines. Topics will vary from term to term.

Prerequisites: One philosophy course and one literature course; PHI 109 or 110 recommended.
Spring, 3 credits

PHI 382 Poetics and Rhetoric (IV)

A comparative study of philosophic concepts of poetics and rhetoric. Poetic theory will be studied as variously treating literature as expressive, imitative, pragmatic, and "pure" or objective. Rhetoric will be treated as stylistic ornamentation, propaganda, practical reasoning, and the basis of community. Special attention will be given to the distinction, identity, and overlap of poetics and rhetoric. Readings are from classical and contemporary authors such as Plato, Aristotle, Sartre, and Perelman.

Prerequisite: One philosophy or one literature course; PHI 109 or 110 recommended.

Spring, 3 credits

PHI 384 Philosophy and Feminism (IV; Formerly PHI 279)

A course directed at isolating and critically analyzing conceptual issues of feminist concern such as "the other," "the feminine," patriarchy, the nature/culture dichotomy, as well as power, equality, oppression, and liberation. These will be related to such specific forms of human activity as work, sexuality, violence, marriage, family, education, love, language, art, myth, and religion. The course demands an active participation in class discussion.

Prerequisite: One philosophy course; PHI 100 or 106 recommended.

Spring, 3 credits

PHI 391, 392 Individual Systems of the Great Philosophers (V)

A detailed study of the works of a single great philosopher. May be repeated.

Prerequisite: One philosophy course.

Fall and spring, 3 credits each semester

PHI 393, 394 Analysis of Philosophic Texts (V)

Detailed analysis of a major philosophical text. May be repeated.

Prerequisite: One philosophy course.

Fall and spring, 3 credits each semester

PHI 405 Contemporary Philosophy (II)

A study of leading figures and themes in contemporary (twentieth century) philosophy. Readings from authors such as Wittgenstein, Heidegger, Merleau-Ponty, and Quine.

Prerequisites: Two philosophy courses; PHI 206 or 247 or 308 recommended.

Fall, 3 credits

PHI 408 Phenomenology (III)

An investigation of the methods, concepts, and history of phenomenology with particular emphasis upon its philosophical basis. Readings from the major works of representative phenomenologists such as Husserl, Scheler, Heidegger, Merleau-Ponty, and Ricoeur are to be balanced by applications of phenomenological analysis to contemporary philosophical problems.

Prerequisites: Two philosophy courses; PHI 206 or 247 or 308 or 405 recommended.

Fall and spring, 3 credits

PHI 415 The Philosophical Methodology of the Rig Veda (V)

Primary focus is upon a method for bringing out the implied philosophy of the Rig Veda on topics such as knowledge, expression, the need to structure experience, and the different forms and insights generated by such structures: the embodied vision historical insights generate to guarantee man's possession of what constitutes his humanity.

Prerequisites: PHI 111 or 112 and one other philosophy course.

Fall, 3 credits

PHI 420 Advanced Topics in Philosophy (II, III, IV)

An advanced course treating a specialized issue or topic in philosophy or in philosophy and another discipline. The content of the course will be announced before the start of the term. May be

repeated as subject matter differs.

Prerequisites: Senior major standing or five courses in philosophy.

Fall and spring, 3 credits

PHI 435 Senior Seminar

An intensive study of an issue, topic, figure, or historical period in philosophy intended to provide both a culminating experience and final integration for senior philosophy majors. This seminar will emphasize careful reading, rigorous discussion, and extensive writing at an advanced level. The content of the seminar will be announced before the start of the term, and students will be consulted on the content as it proceeds.

Prerequisites: Senior major standing and six courses in philosophy.
Fall and spring, 3 credits

PHI 487 Readings and Research in Methodology (Normally III)

Advanced level inquiry with individualized instruction in one particular philosophical style of reasoning. Consult undergraduate advisor for specific details. May be repeated.

Prerequisites: Senior major standing and permission of department.
Fall and spring, 1 to 6 credits

PHI 488 Readings and Research in the Uses of Philosophy (Normally IV)

Advanced level inquiry with individualized instruction in the application of philosophical tools to one of the special disciplines. Consult undergraduate advisor for specific details. May be repeated.

Prerequisites: Senior major standing and permission of department.
Fall and spring, 1 to 6 credits

PHI 489 Readings and Research in the History of Philosophy (Normally V)

Advanced level inquiry with individualized instruction in the great philosophies of the past. Consult undergraduate advisor for specific details. May be repeated.

Prerequisites: Senior major standing and permission of department.
Fall and spring, 1 to 6 credits

Graduate Courses

Qualified seniors may take 500-level courses with the permission of the Directors of Undergraduate and Graduate Studies. Please consult the bulletin boards outside the departmental offices for course descriptions and prerequisites.

Physical Education

Professor

A. Henry von Mechow, Chairman, M.S. State University College at Cortland (Aquatics; general physical education)

Associate Professors

John W. Ramsey, Director of Men's Athletics, M.S. Hofstra University (General physical education)

Leslie F. Thompson, Ed.D. Columbia University (Tennis; general physical education)

Sandra Weeden, Director of Women's Athletics, M.Ed. University of North Carolina at Greensboro (Basketball; general physical education)

Assistant Professors

Paul H. Dudzick, M.A. State University of New York at Stony Brook (Cross-country; general physical education)

Colin A. Martindale, Ph.D. City University of New York (General physical education)

Robert B. Snider, B.S. College of William and Mary (Squash; general physical education)

Instructors

David B. Alexander, Part-time, M.S. Adelphi University (Aquatics)

John DeMarie, M.A. Adelphi University (Aquatics; general physical education)

Claire Dorgan, Part-time, M.S. C.W. Post College (Dance)

Leslie Hickcox, M.A. University of the Pacific, M.Ed. Columbia University (General physical education; yoga)

Nobuyoshi Higashi, Part-time, M.A. New York University (Self defense; judo)

Kim Hovey, M.S. Springfield College (Track and field; general physical education)

Francine Kalafat, M.A. State University of New York at Stony Brook (Volleyball; general physical education)

Richard Kendall, Part-time, M.S. University of Florida (Basketball)

George Lukemire, Part-time, B.S. Cornell University (Horsemanship)

Masataka Mori, Part-time, B.A. Takushoku University (Karate)

Lecturers

Peter G. Angelo, Part-time, Ph.D. State University of New York at Stony Brook (Aquatics)

Christopher W. Tyson, B.S. State University College at Cortland (Soccer)

Gary A. Westerfield, Part-time, M.A. State University of New York at Stony Brook (Track and field)

Physical education courses are devised to develop knowledge, understanding, and skills of a sport or dance activity selected by the student from a wide range of offerings.

Students in the College of Arts and Sciences may include at most four credits of 100-level courses toward the 120 credits required for the baccalaureate degree.

Facilities

Physical education facilities include twelve tennis courts, a one-quarter-mile track, a baseball field, a soccer field, four softball and intramural football fields, and general activity areas. The Gymnasium building contains a swimming pool, a large gym, a small gym, four squash courts, four handball courts, an exercise room, a universal gym room, and a dance studio.

Most physical education facilities may be used for recreational purposes when they are not scheduled for classes, intramural or intercollegiate events, or special events. Schedule of information covering recreation hours may be obtained in the Physical Education Office.

Medical Clearance for Participants

Students having health problems that limit their participation in physical activities must inform the Department of Physical Education of these limitations in writing each school year before participating in any activities. Those students who are unsure as to whether or not they can safely participate in a particular program should be evaluated at the University Health Service.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

Individual and Team Sports, Self Defense, and Physical Conditioning

PEC 101 Paddleball/Squash

PEC 102 Racquetball/Squash

PEC 106 Basic Karate

PEC 107 Intermediate Karate

PEC 109 Self Defense

PEC 113 Basic Fencing

PEC 151 Tennis/Badminton

PEC 152 Tennis/Volleyball

PEC 154 Archery/Volleyball

PEC 159 Badminton

PEC 164 Volleyball

Safety goggles must be worn by all students in PEC 101 and 102. Students may not receive credit for both PEC 101 and 102.

Fall and spring, 1 credit each semester

PEC 105 Weight Control

A course designed for the overweight to investigate various methods of weight and body control and figure improvement by way of such group activities as evaluation of current diet programs, group discussion, mild

forms of physical exercise, and individual counseling.

Prerequisite: Students must have the written approval of their family physicians.

Fall or spring, 1 credit

PEC 108 Judo

Instruction in and practice of the fundamentals of judo: breakfalls, throws, and grappling techniques. Limited application of skills to competitive randori (sparring) and shiai (contest).

Fall and spring, 1 credit

PEC 110 Basic Aikido (Tomiki-Style)

The concept of Aikido as the spirit that carries the mind and controls the body will be studied. Aiki means making your spirit "fit in" with your opponent's as "the principle of gentleness." Course material includes fundamentals of principal arts of attacking, bending and twisting the joints, escape and defense against multiple attacks, and use of minimum strength.

Spring, 1 credit

PEC 112 Bowling

A basic course in bowling including rules, scoring, and basic techniques of the game. This is an extra fee course.

Fall and spring, 1 credit

PEC 117 Basic Gymnastics

A basic course covering the four Olympic pieces: free exercise, uneven parallel bar, horse, and balance beam.

Fall and spring, 1 credit

PEC 147 Aerobic Fitness

A fundamental course in body conditioning with stress on cardiovascular endurance, muscular endurance, and flexibility. Students will develop an ability to maintain a high degree of aerobic fitness through such activities as long distance running and high repetition-low resistance weight training.

Fall and spring, 1 credit

PEC 161 Beginning Tennis

Complete introduction to tennis for the beginning player. Introductory approach to the game of tennis involving the description and selection of racquets, utilization of various grips, development of footwork, ground strokes, singles and doubles play. Knowledge of court areas, tennis terminology, proper tennis etiquette, rules, and scoring procedures. Special emphasis on the basic fundamentals of the four major strokes: service, forehand, backhand, and volley.

Fall and spring, 1 credit

PEC 168 Introduction to Yoga (Hatha)

This activity will include instruction in various postures that are designed to enhance the physical condition of the individual through the use of breathing, relaxation, and meditation techniques.

Fall and spring, 1 credit

PEC 171 Adapted Physical Education

Designed primarily for handicapped/disabled students to allow them to participate in a formal course of physical education activities. Students will confer with the instructor to decide on a program best suited to individual needs.

Prerequisites: Approval of student's physician and permission of instructor.

Fall and spring, 1 credit

Swimming, Water Safety, and Boating**PEC 120 Basic Swimming**

Designed to equip students at the beginner level with basic swimming skills and knowledge. (See also PEC 128.)

Fall and spring, 1 credit

PEC 121 Intermediate Swimming

Designed to equip the deep-water swimmer with more advanced strokes and water skills.

Fall and spring, 1 credit

PEC 122 Advanced Swimming and Basic Rescue

This course will cover swimming strokes and related water skills at the level of Red Cross swimmers and advanced swimmers and will also include instruction in basic rescue and water safety.

Prerequisites: PEC 121 and skill proficiency test.

Fall and spring, 1 credit

PEC 123 Life Saving

This course is designed to help the student meet the requirements for the Red Cross certification in Advanced Life Saving.

Prerequisites: PEC 122 and skill proficiency test.

Fall and spring, 1 credit

PEC 128 Basic Swimming for Non-Swimmers

Basic swimming course limited to non-swimmers. (See also PEC 120.)

Fall and spring, 1 credit

PEC 129 Fundamentals of Spring Board Diving

Prerequisite: PEC 120.

Fall and spring, 1 credit

PEC 175 Sailing

An introduction to sailing using a series of classroom lectures to learn fundamentals followed by a one-week cruise on Long Island Sound. This is an extra fee course.

Prerequisite: Intermediate swimming ability.

Summer, 2 credits

PEC 223 Water Safety Instructor

This course is designed to help the student meet the requirements for certification as a Red Cross water safety instructor.

Prerequisites: PEC 123 and skill proficiency test.

Fall and spring, 2 credits

PEC 226 Instructor of Adapted Aquatics

This course is designed to help the student meet the requirements for certification as a Red Cross Instructor of Adapted Aquatics. The work includes practical experience in teaching swimming to handicapped persons.

Prerequisite: PEC 223.

Fall, 2 credits

Dance**PEC 130 Beginning Modern Dance**

A study of the fundamentals of modern dance, including an analysis of movement, conditioning, and simple compositional forms.

Fall and spring, 1 credit

PEC 131 Intermediate Modern Dance

Development of modern dance techniques and movement awareness.

Prerequisite: PEC 130.

Fall and spring, 1 credit

PEC 133 Aerobic Dancing

A rigorous body conditioning course based on the use of energetic dance forms set to music coupled with a moderate amount of jogging. This activity is designed to strengthen the cardiovascular system and increase flexibility, stamina, and muscle tone.

Spring, 1 credit

PEC 135 Folk and Square Dance

This course will cover both European and American folk dances including American square dance.

Fall, 1 credit

PEC 136 Social Dance

This is a basic course covering fundamental steps in such ballroom dances as fox trot, waltz, rumba, cha-cha, tango, and lindy.

Fall and spring, 1 credit

Horsemanship**PEC 180 Beginning Horsemanship**

Designed for the student with little or no experience in English riding and will cover basic controls and techniques employed in Hunter seat equitation. The theory program will begin the study of the environmental needs of the horse. This is an extra fee course.

Fall and spring, 1 credit

PEC 181 Advanced Beginning Horsemanship

Designed for the student who has acquired the basic skills in Hunter seat equitation. Techniques will be refined and cross-country and beginning jumping will be covered. Theory will include breeds, colors, and sports. This is an extra fee course.

Prerequisite: PEC 180.

Fall and spring, 1 credit

PEC 182 Intermediate Horsemanship

A stable management course: the care of the horse and the control of his environment; first-aid and training of the young horse. Riding will cover sophisticated jumping techniques in the ring and in the hunt course. This is an extra fee course.

Prerequisite: PEC 181.

Fall and spring, 1 credit

Teaching Practice**PEC 475 Undergraduate Teaching Practicum**

Selected upper division undergraduates will assist faculty members teaching physical education activity classes. In addition to working as tutors during instructional periods, students will meet once a week with a faculty supervisor to discuss problems and general teaching methods. Grading in this course shall be Satisfactory/Unsatisfactory only, and students shall be limited to a total of three credits in this department. Credit granted will be the same as that of the course to which the student is assigned.

Prerequisites: Advanced skill level, recommendation of instructor, and permission of chairman.

Fall and spring, 1 or 2 credits

Department of Physics

Professors

Akito Arima, Ph.D. University of Tokyo (Theoretical nuclear physics)

Nandor L. Balazs, Ph.D. University of Amsterdam (Theoretical physics; statistical mechanics; general relativity)

Martin Blume, Part-time, Ph.D. Harvard University (Theoretical solid state physics; magnetic properties of matter)

Gerald E. Brown, Ph.D. Yale University, D.Sc. University of Birmingham (Theoretical nuclear physics). Member, Institute for Theoretical Physics

Ernest D. Courant, Part-time, Ph.D. University of Rochester (Theory of high-energy accelerator design). Member, Institute for Theoretical Physics

Max Dresden, Executive Officer of the Institute for Theoretical Physics, Ph.D. University of Michigan (Theoretical physics: field theory, statistical mechanics, particle physics).

Leonard Eisenbud, Ph.D. Princeton University (Theoretical physics: nuclear theory, foundations of quantum theory)

Roderich Engelmann, Ph.D. University of Heidelberg (Experimental elementary particle physics)

Arnold M. Feingold, Ph.D. Princeton University (Theoretical physics: nuclear structure, beta decay)

Guido Finocchiaro, Ph.D. Catania University (Experimental particle physics)

David B. Fossan, Ph.D. University of Wisconsin (Experimental nuclear physics: nuclear structure and reactions)

David Fox, Ph.D. University of California, Berkeley (Theoretical physics: solid state theory, properties of molecular crystals)

Daniel Z. Freedman, Ph.D. University of Wisconsin (Scattering theory). Member, Institute for Theoretical Physics

Alfred S. Goldhaber, Ph.D. Princeton University (Theoretical physics; nuclear theory; particle physics). Member, Institute for Theoretical Physics

Maurice Goldhaber, Adjunct, Ph.D. Cambridge University (Nuclear and particle physics). Member, Institute for Theoretical Physics

Myron L. Good, Ph.D. Duke University (Experimental elementary particle physics)

Paul D. Grannis, Ph.D. University of California, Berkeley (Experimental high-energy physics: elementary particle reactions)

Andrew D. Jackson, Ph.D. Princeton University (Nuclear theory)

Peter B. Kahn, Chairman, Ph.D. Northwestern University (Theoretical physics: the many-body problem, statistical properties of spectra; curriculum development)

Yi-Han Kao, Ph.D. Columbia University (Experimental solid state physics: electronic structure of metals and semimetals, superconductivity)

János Kirz, Ph.D. University of California, Berkeley (Experimental particle physics). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1975-76

T.T.S. Kuo, Ph.D. University of Pittsburgh (Nuclear theory)

Edward D. Lambe, Ph.D. Princeton University (Experimental atomic and nuclear physics, beta and gamma decay; curriculum development)

Linwood L. Lee, Jr., Ph.D. Yale University (Experimental nuclear structure)

Juliet Lee-Franzini, Ph.D. Columbia University (Experimental particle physics)

John H. Marburger, III, Ph.D. Stanford University (Theoretical laser physics)

Barry M. McCoy, Ph.D. Harvard University (Statistical mechanics). Member, Institute for Theoretical Physics

Herbert R. Muether, Director of the Undergraduate Program in Physics, Ph.D. Princeton University (Experimental nuclear physics; neutron physics). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1977-78

Robert Nathans, Ph.D. University of Pennsylvania (Experimental solid state physics)

Hwa-Tung Nieh, Ph.D. Harvard University (Theoretical physics; elementary particles). Member, Institute for Theoretical Physics

Peter Paul, Ph.D. University of Freiburg (Experimental nuclear physics)

T. Alexander Pond, Ph.D. Princeton University (Positron processes; beta and gamma decay)

Henry B. Silsbee, Director of Graduate Studies in Physics, Ph.D. Harvard University (Experimental physics: molecular and atomic beams; magnetic resonance)

John Smith, Ph.D. University of Edinburgh (Elementary particle physics). Member, Institute for Theoretical Physics

Gene D. Sprouse, Ph.D. Stanford University (Experimental nuclear structure)

Arnold A. Strassenburg, Ph.D. California Institute of Technology (Experimental particle physics; high-energy instrumentation; curriculum development)

Clifford E. Swartz, Ph.D. University of Rochester (Experimental high-energy physics; school curriculum revision)

John S. Toll, Emeritus, Ph.D. Princeton University (Scattering; elementary particle theory)

Peter Van Nieuwenhuizen, Ph.D. Utrecht University (Theoretical physics). Member, Institute for Theoretical Physics

William I. Weisberger, Ph.D. Massachusetts Institute of Technology (Theoretical physics). Member, Institute for Theoretical Physics

Lee R. Wilcox, Ph.D. Stanford University (Quantum electronics)

Chen Ning Yang, Einstein Professor of Physics and Director of the Institute for Theoretical Physics, D.Sc. Princeton University; Ph.D. University of Chicago (Theoretical physics: field theory, statistical mechanics, particle physics)

Associate Professors

Philip B. Allen, Ph.D. University of California, Berkeley (Theoretical solid state physics: superconductors and superconductivity)

Peter Braun-Munzinger, Ph.D. University of Heidelberg (Experimental nuclear physics)

Robert L. deZafra, Ph.D. University of Maryland (Experimental atomic physics; optical pumping and double resonance quantum electronics)

Erlend H. Graf, Ph.D. Cornell University (Experimental low-temperature physics)

James Lukens, Ph.D. University of California, San Diego (Experimental solid state physics)

Robert L. McCarthy, Ph.D. University of California, Berkeley (Experimental elementary particle physics)

Robert L. McGrath, Ph.D. University of Iowa (Experimental physics: nuclear structure)

Harold J. Metcalf, Ph.D. Brown University (Atomic physics; level crossing techniques). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1973-74

Richard A. Mould, Ph.D. Yale University (Theoretical physics: general relativity; quantum theory of measurements)

Assistant Professors

Charles Archie, Ph.D. Cornell University (Experimental solid state physics)

Sudip Chakravarty, Ph.D. Northwestern University (Theoretical solid state physics)

Michael Marx, Ph.D. Massachusetts Institute of Technology (Experimental high energy physics)

Thaddeus Mazurek, Visiting, Ph.D. Yeshiva University (Theoretical nuclear astrophysics)

Robert Shrock, Ph.D. Princeton University (Theoretical physics: gauge theories). Member, Institute for Theoretical Physics

George Sterman, Ph.D. University of Maryland (Theoretical physics: elementary particles). Member, Institute for Theoretical Physics

Peter W. Stephens, Ph.D. Massachusetts Institute of Technology (Experimental solid state physics)

Teaching Assistants

Estimated Number: 50

Students wishing to major in physics may select a sequence of courses designed to serve as a preparation for graduate study in physics or for employment in industry or research. Instead they may select a sequence designed to provide considerable knowledge of the subject but not intended as preparation for a research-oriented career in physics. This latter group of students might include those who will some day work in the areas of science teaching, administration relating to science or technology, the history of science, technical writing, patent law, science and public policy, etc.

Physical Facilities

Physics laboratories for undergraduate experiments contain equipment specifically designed to elucidate the principles of physics that are under discussion in both the lectures and recitation sections. Students perform track and air table experiments, as well as some elementary work using oscilloscopes, etc. At the advanced level, facilities are available for laboratory work in the basic elements of circuit theory, modern electronic logic circuitry, and the role of mini-computers. Advanced research laboratories permit students to gain expertise in nuclear, high-energy, low-temperature, solid state, and surface physics, and in quantum electronics. Students work closely with faculty doing research in these areas, and are given the opportunity to work with an ongoing research group using specifically designed research equipment.

Minimum Requirements for the B.S. in Physics

1. Ten courses in the department, six of which must be at the junior level or above. Of these six, at least two semesters must be laboratory courses and must include PHY 445 or PHY 446. Each of the six upper division courses must be completed with a grade of C or better, and at least four of these upper division courses must be taken at Stony Brook. (34 credits)
2. Four semesters of mathematics: MSM 131, 132 or 141, 142, MSM 231 or 241, 306 or 307. (14 credits)
3. Twelve credits of other science, mathematics, or science-related courses (e.g., History of Science, Science and Public Policy) chosen with the approval of the departmental advisor. PHY 333 and PHY 339 may be included. (12 credits)

Total number of credits: 60

All courses used to satisfy these minimum requirements must be taken for a letter grade.

Students wishing to major in physics must, at the end of their sophomore year, consult with their departmental advisors in order to draw up preliminary plans of study which will then be submitted to the department. The plan can be revised at any time with the advisor's approval.

Honors

To receive the Bachelor of Science in physics with honors, a student must take ten courses in the department at the junior level or above, receiving an overall grade point average in these courses of at least 3.3. Two of the ten courses must be chosen from among the following: PHY 445, 446 Senior Laboratory and PHY 487, 488 Research.

The Research Program

A student desiring to prepare for graduate study in physics or for a research-oriented career in physics has considerable flexibility in the choice of courses. The following sample program is suggested:

Freshman Year

PHY 101 General Physics I
 PHY 102 General Physics II
 MSM 131 Calculus I or 141 Calculus Alpha
 MSM 132 Calculus II or 142 Calculus Beta

Sophomore Year

PHY 251 General Physics III
 PHY 252 Optics and Waves
 PHY 308 Quantum Physics
 MSM 231 Calculus III: Linear Algebra or 241 Calculus Gamma: Linear Algebra
 MSM 306 Calculus IV: Multivariate Calculus or 307 Calculus Delta: Multivariate Calculus
 CHE 131, 132 or 141, 142 General Chemistry or Honors Chemistry
 CHE 133, 134 or 143, 144 General Chemistry Laboratory or Honors Chemistry Laboratory

Junior Year

PHY 301, 302 Electromagnetic Theory
 PHY 303 Mechanics
 PHY 306 Thermodynamics, Kinetic Theory, and Statistical Mechanics
 At least one semester of PHY 335, 336 Junior Laboratory
 MSM 341 Advanced Calculus: Differential Equations
 MSM 342 Advanced Calculus: Complex Functions

Senior Year

PHY 443 Methods of Mathematical Physics I
 PHY 445 Senior Laboratory I
 Three selections from courses listed below:
 PHY 405 Advanced Quantum Physics
 PHY 408 Relativity
 PHY 431 Nuclear and Particle Physics
 PHY 444 Methods of Mathematical Physics II
 PHY 446 Senior Laboratory II
 PHY 447, 448 Tutorial in Advanced Topics
 PHY 472 Solid State Physics
 PHY 487, 488 Research

The Astrophysics Program

A student wishing to pursue a career in astrophysics must take a program of study which satisfies the minimum requirements for a B.S. in physics. In addition, he or she should take a concentration in those courses offered by the Earth and Space Sciences or Physics Departments which satisfy his or her educational goals.

The Physics of Materials Program

A student wishing to pursue a career in engineering physics, with emphasis on materials science and engineering, would, in addition to completing the requirements for the B.S. in physics, take courses during the junior and senior year in the Department of Materials Science and Engineering. After the successful completion of a minimum of five courses in the Department of Materials Science and Engineering (the student should consult with the Director of the Undergraduate Program in the Department of Physics and with the Chairman of the Department of Materials Science and Engineering), the student would be eligible for admission to the Master's degree program in Materials Science and Engineering.

Certification for Secondary Level Teaching

The requirements for provisional certification are set down in detail in the State-approved *Competency-Based Teacher Educational Program in Physics, 7-12*. (The complete document may be examined in the department office.) Graduates of the program are expected to display a firm grasp of fundamental educational principles, including historical, philosophical, psychological, and sociological perspectives. They must demonstrate a flexible and adaptive understanding of the basic principles of mechanics, electricity and magnetism, optics, thermodynamics and statistical mechanics, and modern physics.

In accordance with the principles of competency-based learning, the course requirements for this program are somewhat flexible, depending on the background and status of the student entering. Each program of study will be determined in consultation with the Director of the Physics Teacher Preparation Program. After entrance to the program (see below), all students will normally take PHY 450 Supervised Secondary School Teaching and PHY 454 Student Teaching Seminar.

Requirements for Entrance into the Professional Education Program

Declaration of Departmental Major: Prior to entrance in the Physics Secondary Teacher Preparation Program, the student must have officially declared a major in the Department of Physics.

Interview: The candidate must have a personal interview with the Director of the Physics Teacher Preparation Program.

Admission to Student Teaching: In order to obtain the recommendation of the Director of the Physics Teacher Preparation Program for admission to student teaching, the candidate must have completed six credits in foundations of education courses, SSI 265 Drug and Alcohol Education, PHY 339 Materials and Methods in Teaching Physics with a grade of C or above, have earned at least a 2.0 grade point average in all physics and mathematics courses completed, and have an overall cumulative grade point average of at least 2.0.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

The courses General Physics I-III present an intensive introduction to classical and modern physics for those who may major in physics, some other physical science, or engineering.

PHY 100 Quantitative Methods in Science

Instruction and practice in the methods of measuring physical phenomena and the representation and analysis of data. Although simple laboratory work will be done, the emphasis is on the transition methods from observation with appropriate precision to interpretation in terms of functional relationships. The course is designed as useful preparation for students who will later take PHY 101.

Fall and spring, 3 credits

PHY 101, 102 General Physics I, II

An introductory survey of classical physics, in which calculus is used concurrently with its development in MSM 131, 132. Mechanics, wave motion, kinetic theory, and thermodynamics are discussed during the first semester; electromagnetism, electric circuit theory, and optics during the second. Three lectures, one recitation, and two laboratory hours per week.

Corequisite for PHY 101: MSM 131 or 141. **Prerequisite for PHY 102:** PHY 101. **Corequisite for PHY 102:** MSM 132 or 142.
 Fall and spring, 4 credits each semester

PHY 103, 104 Physics for the Life Sciences

Primarily for students majoring in biological sciences or in pre-clinical programs. A general introduction to physics, with applications to biological systems. Topics include mechanics, fluid mechanics, electromagnetism, optics, acoustics, and radiation phenomena. Three lectures, one recitation, and two laboratory hours per week.

Prerequisite for PHY 103: MSM 125 or 131 or 141 and CHE 132 or 142. **Prerequisite for PHY 104:** PHY 103.
 Fall and spring, 4 credits each semester

PHY 110 Energy Resources and the Environment

An investigation of the role of energy in our civilization showing interaction of pure science, applied science, and technology and their impact on the environment and everyday life. Discussion centers on current status of energy resources and physical principles of energy conversion. These principles are illustrated by examining some present (e.g., fission reactors) and future (e.g., magneto-hydrodynamic generators) energy conversion systems. The environmental impact of the present rate of energy consumption of our society is discussed. The course is intended for both non-science and science majors. It may not be counted as one of the ten departmental courses required for the B.S. degree program in physics.

Fall and spring, 3 credits

PHY 117 Physics and Biological Systems I

An introductory survey of physics with emphasis on applications to biological systems. Topics studied will include the mechanics of particles; solids and fluids; thermodynamics; optics; electricity, magnetism, and radiation phenomena. Familiarity with algebra and trigonometry is required. This course is designed to satisfy the physics entrance requirements for undergraduate health science professional programs. It is a one-semester course in elementary physics and the applications of physics to the health sciences. The laboratory program introduces elementary experimental techniques and provides an opportunity for observation of phenomena on which the theory is built. Three lecture hours and one three-hour laboratory period per week.

Fall, 4 credits

PHY 118 Physics and Biological Systems II

A sequel to PHY 117 applying the physical principles learned in the first semester to biological systems such as the eye and the ear. Radiation phenomena will also be studied with reference to their

therapeutic use. This course, together with PHY 117 and PHY 119, the associated laboratory, provides a one-year sequence in introductory physics to satisfy the physics entrance requirements for students entering undergraduate health science professional programs. The course can be taken without the associated laboratory course.

Prerequisite: PHY 117.
Fall and spring, 3 credits

PHY 119 Physics and Biological Systems II Laboratory

This laboratory, associated with PHY 118, builds on the experimental techniques learned in PHY 117 and provides additional laboratory experience in optical and audio systems, and in nuclear radiation techniques.

Corequisite: PHY 118.
Fall and spring, 1 credit

PHY 121 Approach to Physical Science

Designed particularly for non-science majors, this laboratory and discussion-oriented course provides an opportunity for students to proceed from simple investigations to the formulation of powerful conceptual models. Stress is placed upon *how* rather than *what* we know. Problems and laboratory work can be completed successfully by students with no previous knowledge of college mathematics. One lecture, two discussion periods, and one two-hour laboratory period each week.

PHY 131, 132 Introductory Physics

An introductory survey of classical and modern physics which does not require a knowledge of the calculus. Mechanics, wave motion, kinetic theory, and thermodynamics are discussed during the first semester; electricity and magnetism, optics, atomic physics, nuclear physics, and elementary particle physics during the second. Three lecture hours, one recitation, and two laboratory hours per week.

Prerequisite to PHY 132: PHY 131.
Fall and spring, 4 credits each semester

PHY 137, 138 The Nature and Use of Physical Science

A non-mathematical course about physics to provide some broad scientific background for the educated citizen in an increasingly technological society. The course will be given as a sequence of six relatively independent modules, three per semester. The modules will be devoted to: 1) space, time, and symmetry; 2) communication, control, information, computers; 3) waves, sound, music, noise; 4) light, color, vision; 5) frontiers of modern physics, research at Stony Brook; 6) science and society, applications of technology. A student receives three credits for PHY 137 after successful completion of any three of these modules. Each additional module successfully completed during the

academic year earns one credit for PHY 138. Questions on how to register for these courses should be addressed to the Director of the Undergraduate Program in Physics.

Fall and spring, PHY 137, 3 credits; PHY 138, 1, 2, or 3 credits

PHY 251 General Physics III

This course is principally an introduction to particle and quantum physics. Topics studied will include special relativity, the particle aspects of electromagnetic radiation, the wave aspects of material particles, the concept of a wave function, and other fundamentals of the quantum theory. These ideas will be discussed as they relate to atomic spectra and structure, nuclear structure, elementary particles, and aspects of molecular and solid state physics. Three lecture hours and one three-hour laboratory per week.

Prerequisite: PHY 102. *Corequisite:* MSM 231 or 241.

Fall and spring, 4 credits

PHY 252 Optics and Waves

A survey of geometrical and physical optics. The basic phenomena of optics—ray optics, interference, diffraction, and polarization—will be observed and discussed in terms of the wave theory of light. Applications will be made to the design and performance of optical instruments and systems using crystal optics, lasers, and holography. Three lecture hours and one three-hour laboratory per week.

Prerequisite: PHY 102. *Corequisite:* MSM 231 or 241.

Fall and spring, 4 credits

PHY 301, 302 Electromagnetic Theory

Review of elementary electromagnetic phenomena and their unification in Maxwell's equations; applications of the theory to static and changing electric and magnetic fields, interaction of the fields with bulk matter, circuit theory, interaction of charged particles with electromagnetic fields, propagation of electromagnetic waves, and radiation.

Prerequisites: PHY 251, 252 and MSM 306 or 307. *Prerequisite to PHY 302:* PHY 301. *Corequisites:* MSM 341, 342.

Fall and spring, 3 credits each semester

PHY 303 Mechanics

The Newtonian formulation of classical mechanics is reviewed and applied to more advanced problems than those considered in PHY 101, 102. The Lagrangian and Hamiltonian methods are then derived from the Newtonian treatment and applied to various problems.

Prerequisites: PHY 251, 252. *Corequisite:* MSM 341.

Fall and spring, 3 credits

PHY 306 Thermodynamics, Kinetic Theory, and Statistical Mechanics

The course is in two parts. Those relations among the properties of systems at thermal equilibrium, which are independent of a detailed microscopic understanding, are developed by use of the first and second laws. The concept of temperature is carefully developed. The thermodynamic potentials are introduced. Applications to a wide variety of systems are made. The second portion of the course, beginning with the kinetic theory of gases, develops elementary statistical mechanics, relates entropy and probability, and treats simple examples in classical and quantum statistics.

Prerequisites: PHY 251 and MSM 231 or 241.

Fall and spring, 3 credits

PHY 308 Quantum Physics

An introduction to the concepts and mathematical methods of quantum mechanics. Some stress will be placed on historical development. Topics will include early quantum theory; Schrodinger's equation in time dependent and time independent forms; one- and three-dimensional solutions, including the treatment of angular momentum and spin; and perturbation theory. Applications to simple systems, especially the hydrogen atom, will be stressed.

Prerequisite: PHY 251.

Fall and spring, 3 credits

PHY 333 Physical Principles Applied to Living Systems

Topics will include the special sensory systems (vision and hearing) from the physical, neutral, molecular, and psychophysical viewpoints; the operation of the nervous system as both a communications network and a biochemical phenomenon; the effects of electromagnetic radiation at ionizing and nonionizing energies, as well as the effects of mechanical radiation (ultrasound); the structural system and the functions of muscles with accent on the heart muscle; and a detailed treatment of several types of modern instrument systems used in biological research. May not be counted as one of the ten departmental courses required for the degree.

Prerequisite: PHY 104 or PHY 251.

Fall and spring, 3 credits

PHY 335, 336 Junior Laboratory I, II

This course aims at providing a thorough introduction to modern electronics. It begins with a review of D.C. and A.C. circuits, diode and FET characteristics. This is followed by a study of the transistor in both the linear and saturation region. The differential amplifier, because of its fundamental importance in present day electronics, will be studied in detail. The concepts of negative and positive feedback will be introduced and demonstrated. The cir-

cuits used in digital computers (elementary logic circuits, storage registers, shift registers, adders) will also be studied.

Prerequisite to PHY 335: PHY 251, 252. *Prerequisite to PHY 336:* PHY 335.

Fall and spring, 3 credits each semester

PHY 339 Materials and Methods in Teaching Physics

Designed for prospective teachers of physics in secondary schools and two-year colleges, the course emphasizes methods and materials appropriate to the teaching of introductory physics and stresses recent curriculum developments. Students are required to become familiar with texts, laboratory materials, and other teaching aids, and are given the opportunity to demonstrate their proficiency in peer teaching situations. May not be counted as one of the ten departmental courses required for the degree.

Prerequisites: PHY 251, 252.

Fall and spring, 3 credits

PHY 405 Advanced Quantum Physics

Further development and extension of the principles introduced in PHY 308. Topics will include the quantum mechanical description of identical particles, symmetry principles, the structure of multi-electron atoms, the application of perturbation theory to radiative transitions, external perturbations (Zeeman and Stark splitting), an introduction to the matrix formulation of quantum theory, and the quantum mechanical description of scattering.

Prerequisites: PHY 303, 308, and MSM 341.

Fall and spring, 3 credits

PHY 407 Physics of Continuous Media

Topics to be covered include the response of non-ideal solids to stress, the properties of compressible fluids, viscosity, momentum transfer in fluid motion, irrotational flow, wave motion in gases, acoustics, conducting fluids, magneto-hydrodynamics waves, the physics of fully ionized gases, dynamics of degenerate fluids, application to magnetic plasmas, etc. This course is of interest to, among others, potential astrophysicists, plasma physicists, low temperature physicists, and geophysicists.

Prerequisites: PHY 303 and 306.

Fall, 3 credits

PHY 408 Relativity

A review and development of the special theory of relativity and an introduction to general relativity with applications to cosmology.

Prerequisites: PHY 302, 303, and MSM 342.

Fall and spring, 3 credits

PHY 431 Nuclear and Particle Physics

The topics will include: the interaction of radiation with matter, radiation detectors, nuclear structure, nuclear reactions, nuclear forces, accelerators, the properties of elementary particles and resonances. Applications of quantum mechanics and the role of symmetry principles will be stressed.

Prerequisite: PHY 308.

Fall, 3 credits

PHY 443, 444 Methods of Mathematical Physics I, II

This course describes a selection of mathematical techniques useful for advanced work in physics. The methods will be illustrated by applications in mechanics, hydrodynamics, heat conduction, electromagnetic theory, and quantum mechanics. Topics will be selected from the following: linear vector spaces, tensor algebra and vector analysis; matrices; Green's functions; complex variables with application to conformal mapping and contour integration; eigenvalue problems and orthogonal functions; partial differential equations; calculus of variations; integral transforms; integral equations; special functions; generalized function theory; probability.

Prerequisites: PHY 302, 303, and MSM 341, 342.

Fall and spring, 3 credits each semester

PHY 445, 446 Senior Laboratory I, II

A number of historically important experiments are studied and performed with the aid of modern instrumentation. As they progress, students are encouraged to pursue independent projects in which there are no rigidly fixed formats or procedures. Primary emphasis is on the development of experimental skills and on professionally acceptable analysis and presentation of results, both in written and oral form. Projects are typically chosen from such fields as atomic and nuclear spectroscopy, electron physics, solid state and low temperature physics, optics, and electromagnetism. Two three-hour laboratory sessions per week.

Prerequisite: PHY 308.

Fall and spring, 3 credits each semester

PHY 447, 448 Tutorial in Advanced Topics

For upper division students of unusual ability and substantial accomplishments, reading courses in advanced topics may be arranged. Prior to the beginning of the semester, the topic to be studied is selected by the supervising member of the faculty and a reading assignment is planned. Weekly conferences with this member of the faculty are devoted to discussion of material, resolution of problems encountered, and assessment of the student's progress. May be repeated.

Prerequisite: Permission of the Director of the Undergraduate Program in Physics.

Fall and spring, 2 to 4 credits each semester at discretion of instructor

PHY 450 Supervised Secondary School Student Teaching

Prospective secondary school teachers receive supervised practice teaching in a selected

Long Island secondary school. The student teacher reports to that school for a full school day for the semester. The supervising teacher helps the student to execute his or her teaching assignments and to interpret and evaluate his or her experience. Not for major credit. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: PHY 339 and approval of Director of Physics Teacher Preparation Program.

Corequisite: PHY 454.

Fall, 12 credits

PHY 454 Student Teaching Seminar

Seminar on problems and issues in teaching physics at the secondary school level. Analysis and commentary based on students' experience in their classroom assignments. Not for major credit.

Corequisite: PHY 450.

Fall, 3 credits

PHY 472 Solid State Physics

Introduction to the principal types of solids with emphasis on their electrical and magnetic properties; elementary theory of electrons in metals; energy bands. Applications to semiconductors, superconductors, para- and ferromagnetism, magnetic resonance.

Prerequisites: PHY 302, 306, and 308.

Spring, 3 credits

PHY 475 Undergraduate Teaching Practicum

Selected undergraduates collaborate with the faculty in teaching at the introductory level. In addition to working as tutors and as laboratory assistants, students will meet once a week with a faculty

supervisor to discuss problems that have been encountered and to plan future activities. Students will generally be assigned to assist in courses they have completed and in which they have excelled. Not for major credit and not repeatable. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: PHY 102 or 104 or 132, interview, and permission of Director of Undergraduate Program in Physics.

Fall and spring, 2 credits each semester

PHY 487, 488 Research

With the approval of the faculty, a student may conduct research for academic credit. Research proposals must be prepared by the student and submitted for approval by the faculty before the beginning of the credit period. The work is performed under the supervision of a member of the faculty. An account of the work and the results achieved is submitted to the faculty before the end of the credit period. May be repeated.

Prerequisite: Permission of Director of the Undergraduate Program in Physics.

Fall and spring, 2 credits each semester at discretion of instructor

Graduate Courses

Qualified students may take 500-level courses with the permission of the department chairman. See *Graduate Bulletin* for details.

Quantum Mechanics
Statistical Mechanics
Nuclear Physics
Classical Physics
Astrophysics
Solid State Physics
Elementary Particle Physics

Department of Political Science

Professors

Andrew Cowart, Director of Graduate Studies, Ph.D. University of Michigan (Public policy; econometrics)

Lee E. Koppelman, Part-time, D.P.A. New York University (Regional planning; resource management)

Gladys E. Lang, Ph.D. University of Chicago (Mass communications; education; collective behavior)

Kurt Lang, Ph.D. University of Chicago (Mass communications; collective behavior; military sociology; conflict and violence)

Milton Lodge, Ph.D. University of Michigan (Political psychology; political behavior)

Frank E. Myers, Ph.D. Columbia University (Comparative politics; political theory; public policy)

Merton Reichler, Adjunct, M.A. Columbia University (Constitutional law)

Howard A. Scarrow, Director of Undergraduate Studies, Ph.D. Duke University (Comparative politics; American government)

Martin B. Travis, Ph.D. University of Chicago (International law; comparative foreign policy)

Bernard Tursky, Chairman, Diploma, Lowell Institute, Massachusetts Institute of Technology (Political psychology; psychophysiology)

Stuart Valins, Ph.D. Columbia University (Group dynamics; environmental psychology)

Jay C. Williams, Ph.D. University of Chicago (Political ideologies; political film)

Associate Professors

Helmut Norpoth, Ph.D. University of Michigan (Political behavior; legislative process; research process; research methods)

Mark Schneider, Ph.D. University of North Carolina at Chapel Hill (Public policy; urban politics)

Assistant Professors

Stephen P. Brown, Ph.D. University of Rochester (Political parties; legislative behavior; econometrics)

Department of Political Science (Cont.)

James Enelow, Ph.D. University of Rochester (Voting and social choice theory; political behavior)

Gregory P. Falkin, Ph.D. Cornell University (Public policy; applied economics)

Ruth C. Hamill, Ph.D. University of Michigan (Social psychology and law; social perception and cognition)

William Linehan, Ph.D. Indiana University (International relations; defense policy; methodology)

George Quattrone, Ph.D. Duke University (Social psychology; social cognition; human inference, attributions, and behavior)

John Scholz, Ph.D. University of California, Berkeley (Public policy, public administration)

Lecturer

Richard Petrick, B.A. Oberlin College (American politics; policy evaluation)

Teaching Assistants

Estimated Number: 20

Requirements for the Major in Political Science

The major in political science leads to the Bachelor of Arts degree. The following courses are required.

	Credits
<i>I. Study Within the Area of the Major</i>	
A. Three out of four of the following courses:	9
POL 101 World Politics	
POL 102 American Government	
POL 103 Comparative Politics	
POL 104 Political Behavior	
B. Political Science electives:	24
1. All must be selected from courses numbered 200 or above. No more than six credits from internship courses may be applied.	
2. No grade less than C in courses numbered 300 and above may be used to fulfill major requirements.	
3. No more than six of the twenty-four 200-level or above political science credits may be taken at another institution (exceptions made in the case of planned foreign study). Only courses with C or above will be accepted.	
<i>II. Study Outside the Area of the Major</i>	
Two courses numbered 300 or higher, offered by another department in subjects directly related to the chosen program of study. Courses taken at another institution may be used to satisfy this requirement.	6
Total	39

Note: With the exception of internship courses, all courses in major must be taken for letter grade.

Programs of Study

Comparative Politics and International Relations

Four of the following:

POL 210, 211, 212, 236, 305, 308, 311, 313, 330, 331, 332, 335, 337, 339, 401, 402.

American Government and Public Policy

Four of the following:

POL 220, 221, 222, 260, 261, 317, 319, 320, 321, 322, 323, 324, 325, 326, 327, 360, 361, 362, 363, 364, 365, 366, 367.

Political Behavior and Political Psychology

Four of the following:

POL 240, 241, 242, 317, 323, 332, 340, 341, 342, 343, 346, 348, 349, 360, 367, 369.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

POL 101 World Politics

Analysis of the basic concepts and issues of international relations in the contemporary international system. The behaviors of states and their decision makers will be considered according to various models of national and international conflict. The relationship between the characteristics of nations and their foreign policies will be studied on a comparative basis.

Fall and spring, 3 credits

POL 102 Introduction to American Government

What the informed citizen and specialist should know about the organization of American government, including the Constitution and what it means today, the Congress, political parties, pressure groups, growth of the Presidency, the Supreme Court, judicial review, federalism, separation of powers, the Bill of Rights.

Fall and spring, 3 credits

POL 103 Introduction to Comparative Politics

Analysis of political institutions and processes in the contemporary world, emphasizing the interaction of political structures and processes in a variety of political settings.

Fall and spring, 3 credits

POL 104 Political Behavior

Survey of the types, modes, and conditions of political activity (political participation, apathy, alienation); political consensus and cleavages (aggression, violence, war); political socialization and recruitment of political elites; psychological and social basis of uniformities and variations in political behavior.

Fall and spring, 3 credits

POL 210 Foreign Policy in the Middle East

Survey of problems involved in the formulation of foreign policy of selected Middle East countries including Israel and Egypt. Cultural, economic, psychological, as well as political components of policy making will be examined together with the role of legislative and executive institutions.

Prerequisite: POL 101.

Fall or spring, 3 credits

POL 211 American Foreign Policy

Survey of problems involved in formulation of United States foreign policy. Whenever appropriate the American system is compared with procedures in other countries. Components of policy are analyzed: conditions abroad, traditional policy, public opinion, international law. Major constitutional provisions as they relate to foreign policy are reviewed. Executive and legislative institutions are studied from standpoints of role and personality, with emphasis given to contemporary situations.

Prerequisite: POL 101.

Fall or spring, 3 credits

POL 212 American Defense Policy

Historical and political investigation of salient trends in American military and national security policy since World War II, with special attention to domestic political groups and forces which influence defense policy making. Models of the political process in foreign and defense policy making are contrasted in terms of available evidence.

Prerequisite: POL 101.

Fall or spring, 3 credits

POL 220 Law and Politics

The major institutional structures of the civil and criminal law systems in the United States: the adversary proceeding, the legal profession, the judiciary, juries, and patterns of fault and punishment. Each aspect will be placed in the setting of American politics; i.e., in the context of legislative, executive, party, and community behavior.

Prerequisite: POL 102.

Fall, 3 credits

POL 221 American Political Issues

A consideration of some central policy issues in American politics, past and present, with emphasis on those arising in the urban industrial United States, e.g., racial equality, educational opportunity, civil rights, poverty and welfare, governmental corruption. Materials will be polemical books and articles, analyses, and films.

Prerequisite: POL 102.
Fall or spring, 3 credits

POL 222 State and Local Government

Analysis of subnational units—including states, cities, towns, and counties—in urban and suburban settings. Relationship of these to citizens and other government units.

Prerequisite: POL 102.
Fall or spring, 3 credits

POL 236 Politics in Developing Areas

Survey of developmental politics in selected emerging nations. Emphasis is upon colonial policies prior to independence, nationalistic movements, constitution building, and the emergence of leadership, parties, and interest groups. Comparison is made of the Western and non-Western political process.

Prerequisite: POL 103.
Fall or spring, 3 credits

POL 238 Political Propaganda

Examination of devices used to manipulate political attitudes and beliefs in both print and visual media. Course topics include politics of the mass media, political satire, political rhetoric, psychology of persuasion, etc.

Fall or spring, 3 credits

POL 240 Political Analysis

An introduction to the nature of social science inquiry. Subjects covered will include the structure of scientific knowledge, concept formation, and strategies of theory construction and confirmation. Especially recommended for students considering advanced work in any of the social sciences.

Prerequisites: POL 104 and satisfaction of mathematics proficiency requirement.
Fall or spring, 3 credits

POL 241 Interpreting Political Survey Results

An introduction to the logic and methods of public opinion research. Focusing primarily on political survey results, topics covered will include: the formulation and testing of hypotheses; the analysis and interpreting of tables, figures, and graphs; the interpretation of simple, descriptive statistics; and the review of major con-

temporary studies of American public opinion.

Prerequisite or corequisite: POL 104.

Fall or spring, 3 credits

POL 242 Political Culture and Socialization

Discussion of principal concepts, methods, and findings in the related fields of political culture and political socialization with emphasis on the American political system. Substantive focus on: (1) how individuals are indoctrinated into the political culture via agents of socialization such as family, school, and mass media; (2) how the political culture influences support and opposition to the political authorities, regime, and community.

Prerequisite: Sophomore standing.

Fall or spring, 3 credits

POL 250 Classical Political Theory: Plato to Mill

Plato, Aristotle, St. Thomas, Machiavelli, Hobbes, Locke, Montesquieu, Hume, Mill, and Rousseau are read and discussed to the end of discovering their relevance to the understanding of political behavior.

Prerequisite: Sophomore standing.

Fall or spring, 3 credits

POL 260 Introduction to Public Policy

Discussion and analysis of the processes of agenda setting, formulation, implementation, and evaluation of public policies in selected issue areas, such as housing, land use, education, etc. The public policy-making processes of the United States will be compared with those of selected other countries.

Prerequisite: POL 102.

Fall, 3 credits

POL 261 Business Law

A study of the legal environment of business operations, covering such topics as the principle of contracts, commercial papers, partnerships, corporations, real property, estates, bankruptcy, anti-trust laws, environmental and civil rights regulations.

Prerequisite: POL 102.

Fall and spring, 3 credits

POL 305 British Parliamentary Democracy

Examination of the working of parliamentary democracy in Britain and in selected dominions with emphasis upon the nature of the societies in question and the relationship of society to the working of political institutions, ideologies, and governmental policies.

Prerequisites: POL 102 and 103 and one other social science course.

Fall or spring, 3 credits

POL 308 Politics of Conflict: The Middle East

The genesis and development of one of the most important international regional conflicts, the Arab-Israeli conflict. Issues of the con-

flict, role of external powers, and process of conflict resolution will be discussed.

Prerequisite: POL 101.

Fall or spring, 3 credits

POL 311 Introduction to International Law

Case book approach to standard introductory course in international law, including the following topics: state jurisdiction and responsibility, individuals, international organization, use of force.

Prerequisite: POL 101.

Fall or spring, 3 credits

POL 313 Problems of International Relations

Analysis of the international system, its characteristic forms, and the principal forces making for conflict and adjustment. Examination of some prevalent analytical concepts, of major current problems and developments, and of prospects and alternatives for the future.

Prerequisite: POL 101.

Fall or spring, 3 credits

POL 317 American Election Campaigns

Various approaches to studying strategies of American election campaigns. Quantitative and formal approaches are complemented by case studies and other forms of qualitative evidence in pursuit of this goal. House Congressional campaigns are emphasized, but Presidential and other types of campaigns are also discussed.

Prerequisite: POL 104. POL 240 or 241 is recommended.

Spring, 3 credits

POL 319 The Politics of Race

An analysis of the role race plays in national policy formulation in the United States. The following topics will be examined: the institutionalization of racism in the American political culture; how blacks perceive political reality; elitism and pluralism; non-violence; patriotism and black nationalism; black politics and black power; the response of government to the demands of blacks; new political forms; future directions in black-white relations. This course is identical with AFS 319.

Prerequisites: Three courses in social sciences.

Spring, 3 credits

POL 320 Constitutional Law and Politics: United States

A study of the role of the modern Supreme Court within the political and governmental process; its relation with Congress, the Presi-

dency, state and local governments, parties, and interest groups; and the Court's contemporary policy-making role in several areas—economic regulation, representation, race relations, censorship, religion in government, defendants' rights.

Prerequisite: POL 102.

Fall and spring, 3 credits

POL 321 American Federalism and Intergovernmental Regulations

A survey of the constitutional, institutional, and political interrelationships among federal, state, and local governments, covering grant-in-aid and interstate compacts.

Prerequisite: POL 102.

Fall or spring, 3 credits

POL 322 The Presidency in the American Political System

How presidential power developed historically; from what sources the powers of the modern presidency emanate; how decisions are made in the presidential institution; how and to what degree presidential power may or ought to be controlled.

Prerequisite: POL 102.

Fall, 3 credits

POL 323 The Legislative Process

An examination of American legislative institutions—Congress, state governments, local legislatures—in light of recent research. How legislatures actually operate and how American legislatures contribute to the "democratic culture."

Prerequisite: POL 102.

Fall or spring, 3 credits

POL 324 American Political Parties and Pressure Groups

An examination of (1) political party organization, political leadership, finance, campaign techniques, and legal controls over parties; (2) the functions and methods of pressure groups and their interaction with policy makers; (3) the historical origins and development of the American party system; (4) the significance of parties and pressure groups for democratic ideology and the problems of political leadership in a democracy.

Prerequisite: POL 102.

Fall or spring, 3 credits

POL 325 Civil Liberties and Civil Rights

A systematic treatment of leading Supreme Court decisions in such areas as freedom of speech, press, and religion; the rights of criminal defendants; voting rights; and discrimination on grounds of race, sex, poverty, illegitimacy, and alienage.

Prerequisite: POL 320.

Fall or spring, 3 credits

POL 326 Politics of New York State

Analysis of parties, pressure groups, and the political process in New York State. Particular attention paid to the legislative process in Albany.
Prerequisite: POL 102.
 Fall or spring, 3 credits

POL 327 Urban Politics

Emphasizes both the formal and informal political institutions and processes in American cities, including governmental structures, political parties, interest groups, and service systems. Special attention will be given to community "power structures," political participation, and a comparative approach to the study of urban politics.

Prerequisite: POL 102.
 Fall or spring, 3 credits

POL 330 Constitutional Law and Politics: Comparative

The role of courts, lawyers, judges, and interest groups in the American and selected foreign political systems.

Prerequisite: POL 320.
 Fall or spring, 3 credits

POL 331 Comparative Political Parties and Pressure Groups

An analysis of the nature and function of political parties and pressure groups, with emphasis upon non-American political systems, both Western and non-Western, and upon party history, electoral behavior, election campaigns, and pressure group activity. Analysis of cross-national public opinion survey data using card sorter.

Prerequisite: POL 103.
 Fall or spring, 3 credits

POL 332 Language and Politics

The ways in which language shapes political judgments and preferences: How the words used in everyday language, in surveys, and by government to describe political events, issues, and processes carry multiple meanings. Exploration of the various experimental methods for determining the content and structure of political concepts.

Prerequisite: POL 103.
 Fall or spring, 3 credits

POL 335 Contemporary African Problems

An investigation of the nature of African societies by studying the variety of African political, social, and traditional forms necessary to understanding developments in the nineteenth and twentieth centuries. Emphasis will be upon some of the longstanding problems essential to understanding the diversity of ideas and people in the African scene. This course is identical with AFS 335.

Prerequisites: Two AFS or POL courses.
 Fall, 3 credits

POL 337 Politics in Africa

A study of nationalism, political thought, and political institutions in

Africa. Consideration is given to the quest for unity, the problems of liberation, and the political implications of social change. This course is identical with AFS 337.
Prerequisites: Two AFS or POL courses.
 Spring, 3 credits

POL 339 Politics in France, Italy, and West Germany

Examination of the political process in France, Italy, and West Germany, focusing on selected topics of comparative interest rather than presenting separate in-depth studies of the three countries. Among these topics are the economic, social, and cultural bases of democracy; forms of parliamentary government; recent election campaigns; and euro-communism.

Prerequisite: POL 103.
 Fall or spring, 3 credits

POL 340 Political Attitudes

A treatment of the problems of public opinion and factors creating it. The course investigates: (1) the content and style of expressions of political attitudes; (2) the other political determinants of interest and participation levels and political loyalties; (3) attitude research methods.

Prerequisite: POL 240.
 Fall or spring, 3 credits

POL 341 Political Alienation, Protest, and Revolution

Major contemporary explanations of political alienation and political protest will be discussed. Consideration of: (1) forms and causes of political alienation; (2) reasons for non-violent protest such as support for anti-regime political parties; (3) reasons for violent protest involving aggression against the regime; (4) conditions under which political protest leads to revolutionary change in existing regimes.

Prerequisite: POL 240.
 Fall or spring, 3 credits

POL 342 Empirical Democratic Theory

Various aspects of democratic theory will be examined with special emphasis placed on the applications of democratic principles within political systems. Topics include: (1) measurement of democracy at the systemic level; (2) conceptualization and measurement of support for democratic liberties as an attitude; (3) relevance of commitment to democratic values and procedures for the stability of democratic political systems; (4) determinants and behavioral consequences of support for democracy.

Prerequisite: POL 104.
 Fall or spring, 3 credits

POL 343 Behavioral Assumptions of the Law

Evidence from social science research is used to examine some of the behavioral assumptions underlying the law and to assess their validity. The primary focus will be on those aspects of the criminal justice system where social psychological factors, although formally extraneous to the legal process, can and do consistently influence legal outcomes and decisions.

Prerequisite: PSY 102.
 Spring, 3 credits

POL 346 Political Psychology

Focus on the application of psychological concepts and measures to political behavior. Course topics include: attitude measurement; stability and change; obedience to authority; learning theory; attention and problem solving; personality correlates of political activity; stress and aggression.

Prerequisite: POL 240.
 Fall or spring, 3 credits

POL 348 Political Beliefs and Judgments

Following a review of the literature on political attitudes, the course applies psychological concepts and experimental approaches to the study of the content and structure of political beliefs and judgments.

Prerequisite: POL 102 or 104.
 Spring, 3 credits

POL 349 Social Psychology of Politics

A survey of social psychological theory and research pertinent to political behavior. The course will look at how scientific psychology views socialization, attitude formation and change, conformity, power, decision-making in groups, and leadership. These topics are applied to such problems as politicalization, party identification, candidate preference, voting behavior, campaign strategies, and submission to political authority.

Prerequisite: POL 104.
 Fall or spring, 3 credits

POL 350 Contemporary Political Theory

An examination of how political theory has assimilated the advances and discoveries in the other social sciences, developments in the analysis of language, and reversals in Hegelianism and anarchism. Original writing from Mosca to Marcuse.

Fall or spring, 3 credits

POL 351 Political Theory and Public Policy

The relation between some central modern political concepts and some public policies. The course investigates such concepts as: equality; perfectability of institutions; the moral-political system; responsible government, as developed by thinkers from Rousseau to Mill. Case studies of five or six crucial policy developments (e.g., the war on poverty).

Prerequisite: POL 102.
 Fall or spring, 3 credits

POL 352 Polity and Economy

The relationship between the political and economic systems in modern industrial society. Special emphasis will be placed on the economic influences on political support, especially in the United States. Problems of measuring support by public opinion polls, as well as econometric problems in analyzing the relationship between politics and the economy will also be discussed.

Prerequisites: POL 102 and one course in economics.
 Spring, 3 credits

POL 353 Utopian Politics

Inquiry into the attractions and consequences of comprehensive ideological solutions to the shortcomings of the political community. Students will read four or five utopian works and a few analyses which seek to explain and evaluate this approach to political life.

Fall or spring, 3 credits

POL 354 Problems of Marxism

The problems posed for Marxism by certain competing schools of political thought, by institutional and social developments in the West, in Russia, and in backward areas, and by deviationist tendencies as in China and Yugoslavia. Particular attention will be given to the problems posed for social organization by (1) technology and its demands, (2) the ideal of high mass consumption, (3) the concept of individual development. Responses given to those problems by Marxism, Leninism, Mill, Weber, and Dewey will be surveyed. The course will relate doctrines to institutions.

Fall or spring, 3 credits

POL 360 Political and Administrative Decision Making

Exploration of approaches to the study of political choice. Topics dealt with include: decision theory, bargaining and negotiation, rationality, the political context of decision, decision tools, the empirical study of decision making, social criticism, and the decisionist perspective.

Prerequisite: POL 260.
 Fall or spring, 3 credits

POL 361 Budgetary Process

Budgetary process at all levels of government. Topics include the role of the budget in policy determination, in control and integration of government operations, and in relation to the private economy—planning, programming, budgeting, cost-benefit analysis.

Prerequisite: POL 260.
 Fall or spring, 3 credits

POL 362 The Politics of Governmental Planning

An examination of the governmental planning process of all levels—federal, state, regional, and local—with emphasis on the theory and practice of “creative federalism” related to the process and the relationship between planning and general governmental decision making.

Prerequisite: POL 260.
Fall or spring, 3 credits

POL 363 Policy and Administration of Natural Resources

Policy development in the resources area as influenced by the structure and pattern of political power on international, national, state, and local levels of government. Topics include the significance of technological innovation, value orientations, and economic welfare analysis in giving direction to policy planning.

Prerequisite: POL 260.
Fall or spring, 3 credits

POL 364 Politics of Poverty and Welfare

Consideration of the governmental policy-making process in welfare; poverty and welfare as problems for governmental action and public policy; poverty as a phenomenon for political analysis; national, state, and local programs to deal with poverty (particularly welfare programs); political behavior which results from poverty and the current welfare system.

Prerequisite: POL 260.
Fall or spring, 3 credits

POL 365 Bureaucracy and Public Administration

Intended for students interested in a public service career. Topics include functions of bureaucracy in American society and in various cultural contexts; relationships between policy and administration; development of organizational and bureaucratic theories, with emphasis on decision making, innovation, and responsibility.

Prerequisite: POL 260.
Fall or spring, 3 credits

POL 366 Government Regulation of Business

An examination of the scope of government regulation of business in the U.S. today—regulation at both the federal and state levels, regulation by both “economic” and “social” agencies. The course will also compare alternative explanations for regulatory agency failures as well as possible explanations for why some regulatory agencies perform better than others. Finally, the course will consider proposed reforms, such as clearer legislative standards, curbs on “revolving door” practices, greater citizen participation in agency proceedings, and deregulation.

Prerequisites: POL 102 and one of the policy courses listed on p. 131.
Fall or spring, 3 credits

POL 367 Mass Media in American Politics

Competing theories of the power of the press will be tested by examining the literature on mass media effects—on what the public thinks and what the public thinks about. Various explanations of why it is that news organizations behave as they do will also be assessed. Conflicts between freedom of the press and such values as privacy, national security, and the right to fair trial will be discussed. The relationships between freedom of the press and the public's right to know will also be explored.

Fall or spring, 3 credits

POL 401, 402 Seminars in Advanced Topics

Special projects and research papers on a topic of political in-

terest which will be announced before the start of the term.

Prerequisite: Permission of instructor.

Fall and spring, 3 credits each semester

POL 447 Directed Readings in Political Science

Individually supervised reading in selected topics of the discipline. May be repeated, but total credit may not exceed six credits.

Prerequisites: Political science major, 15 credits in political science, and permission of instructor and department.

Fall and spring, 1 to 3 credits

POL 475 Undergraduate Teaching Practicum

Each student will conduct a periodic recitation or laboratory section that will supplement a lecture course. The student will receive regularly scheduled supervision from the instructor. Responsibilities may include: preparing material for discussion and helping students with research papers. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Political science major, senior standing, interview, and permission of instructor.

Fall and spring, 3 credits

POL 487 Directed Research

Qualified advanced undergraduates in political science may carry out individual research projects under the direct supervision of a faculty member. May be repeated but total credit may not exceed six credits.

Prerequisites: Political science major, 15 credits in political science, and permission of instructor and department.

Fall and spring, 1 to 3 credits

POL 488 Internship

Participation in a local, state, or federal governmental agency or community organization. Students will be required to submit progress reports to their department sponsor and a final report on their experience to the department faculty. Grading in this course shall be Satisfactory/Unsatisfactory only. May be repeated up to a limit of nine credits.

Prerequisites: Political science

major with 3.0 G.P.A.; 15 credits in political science; permission of instructor, department, and Undergraduate Studies Office.

Fall and spring, 3 to 9 credits

POL 489 Washington Internship

Designed so that students can participate in the Washington Center for Learning Alternatives (W.C.L.A.) as interns in private or public sector organizations and agencies. Students will be supervised by selected practitioners within the organization or agency. Students will be required to submit journals of experience and observation which, together with the supervisors' report, become the basis for a Satisfactory/Unsatisfactory grade. Only three credits for this course may be applied towards major requirements. This course is identical with SSI 489.

Prerequisites: Admission to W.C.L.A., political science major with 3.0 G.P.A., 15 credits in political science, and sponsorship of a political science faculty member.

Corequisite: POL 490.
Fall and spring, 9 credits

POL 490 Washington Seminar

Seminar offered in Washington as part of the internship program of the Washington Center for Learning Alternatives (W.C.L.A.). The seminars are taught by people with experience in public and private agencies, public policy formulation, and relevant academic and professional experience. Students are offered work in several program areas designed to complement their internships, such as law and justice, congressional studies, policy studies, community-urban service, and studies in government. This course is identical with SSI 490.

Prerequisites: Admission to W.C.L.A., political science major with 3.0 G.P.A., 15 credits in political science, and sponsorship of a political science faculty member.

Corequisite: POL 489.
Fall and spring, 3 credits

Department of Psychology

Professors

Beverly Birns, Ph.D. Columbia University (Child development; psychology of women)

Dana Bramel, Ph.D. Stanford University (Interpersonal perception; social psychology)

David Cohen, Ph.D. University of California, Berkeley (Cellular mechanisms of conditioning; neural control of the heart)

James H. Geer, Ph.D. University of Pittsburgh (Sexual behavior)

Jacob Gewirtz, Ph.D. University of Iowa (Social learning; early environmental influences; developmental processes)

Marvin R. Goldfried, Ph.D. State University of New York at Buffalo (Behavioral assessment; cognitive behavior therapy)

Richard Green, M.D. Johns Hopkins University (Human sexuality; gender identity)

Marcia K. Johnson, Ph.D. University of California, Berkeley (Human learning and memory)

Harry I. Kalish, Ph.D. University of Iowa (Applied learning, biofeedback; animal learning)

Leonard Krasner, Ph.D. Columbia University (Behavior modification; environmental design)

Marvin Levine, Director of Undergraduate Program, Ph.D. University of Wisconsin (Human learning with emphasis on cognitive functions)

Robert Liebert, Ph.D. Stanford University (Observational learning; laboratory methodology; statistics)

Joseph LoPiccolo, Ph.D. Yale University (Sexual dysfunctions)

Department of Psychology (Cont.)

Emil Menzel, Ph.D. Vanderbilt University (Primate behavior; social behavior)

John Neale, Ph.D. Vanderbilt University (Behavior deviations, schizophrenia)

K. Daniel O'Leary, Chairman, Ph.D. University of Illinois (Marital discord; hyperactivity in children)

Howard C. Rachlin, Ph.D. Harvard University (Punishment, avoidance; choice; self-control)

Alan O. Ross, Ph.D. Yale University (Psychological disorders of children; learning disabilities)

John Stamm, Ph.D. University of Southern California (Experimental neuropsychology; higher cortical functions in monkeys and humans)

Bernard Tursky, Diploma, Lowell Institute, Massachusetts Institute of Technology (Psychophysiology; political psychology)

Stuart Valins, Ph.D. Columbia University (Group dynamics; environmental psychology)

Everett J. Wyers, Ph.D. University of California, Berkeley (Comparative and physiological psychology; memory consolidation)

Associate Professors

David Cross, Ph.D. University of Michigan (Psychophysics; mathematical models)

Thomas J. D'Zurilla, Ph.D. University of Illinois (Abnormal psychology; behavior deviation)

David Emmerich, Ph.D. Indiana University (Sensory processing; perception)

Ronald J. Friend, Ph.D. University of Toronto (Social psychology; social change)

Herbert Kaye, Ph.D. Brown University (Developmental; learning disabilities)

Fredric Levine, Ph.D. Northwestern University (Behavior modification; motivation; schizophrenia)

Theodore Lidsky, Ph.D. University of Rochester (Psychobiology; animal learning)

H. William Morrison, Director of Graduate Studies, Ph.D. University of Michigan (Perception of abstract relations; instructional techniques)

David M. Pomeranz, Ph.D. University of Rochester (Environmental psychology; behavior modification)

Sally Springer, Ph.D. Stanford University (Cognitive psychology; sensory processes; psycholinguistics)

Grover J. Whitehurst, Ph.D. University of Illinois (Basic learning processes; operant learning)

Assistant Professors

Bernard J. Baars, Ph.D. University of California, Los Angeles (Cognition language; artificial intelligence)

Edward G. Carr, Ph.D. University of California, San Diego (Behavior modification; learning disabilities)

Ernest F. Dube, Ph.D. Cornell University (Cognition; cross-cultural comparisons)

James H. Dwyer, Ph.D. University of California, Santa Cruz (Social stratification; structural equation modelling)

Alan Gilchrist, Ph.D. Rutgers University (Perception; cognitive processes; experimental psychology; statistics)

Dale Hay, Ph.D. University of North Carolina (Social development)

Randall Lockwood, Ph.D. Washington University (Animal behavior; ethological theory)

Alexandra Logue, Ph.D. Harvard University (Operant conditioning; history of psychology)

Susan O'Leary, Part-time, State University of New York at Stony Brook (Child and family problems; hyperactivity in children)

Brett Silverstein, Ph.D. Columbia University (Causes of poor nutrition; cigarette smoking)

Nancy Squires, Ph.D. University of California, San Diego (Processing sensory information)

Everett Waters, Ph.D. University of Minnesota (Social and personality development)

Harriet Waters, Ph.D. University of Minnesota (Memory and cognitive development)

Teaching Assistants

Estimated Number: 150

Physical Facilities

The Psychology Department has a number of laboratories used for undergraduate instruction. The laboratory facilities in which undergraduates participate are *Point of Woods University Laboratory School* (a facility for ten children with hyperkinesia and conduct disorders); *Suffolk Developmental Center* (a University facility for fifty autistic children); the Psychology Department *Preschool* (a nursery school for pre-kindergartners).

There are also Operant Laboratories (pigeons and rats), Memory and Perception Laboratories, Physiological Laboratories (marmosets, fish, primates), and Social Laboratories, such as the Brentwood School tutoring project and the Long Island Equal Justice Association.

Requirements for the Major in Psychology

A series of core courses, electives, and options make up the major in psychology, which leads to the Bachelor of Arts degree.

A. Study Within the Area of the Major

30 credits in psychology to be distributed as follows:

	Credits
1. Core Program:	
PSY 101, 102 Introduction to Psychology	6
PSY 201 Statistical Methods in Psychology or	
MSA 102 Elements of Statistics	3
PSY 300 Research Methodology	3
PSY 303 Research Methodology Laboratory	3
2. Distribution Requirements within the major:	
Two courses from each group (1 and 2 below):	
a. PSY 208 Theories of Personality	
PSY 209 Social Psychology	
PSY 211 Developmental Psychology	
PSY 215 Abnormal Psychology	6

b. PSY 220 Motivation	Credits
PSY 241 Introduction to the Nervous System or PSY 340 Physiological Psychology	
PSY 244 Comparative Psychology or BIO 332 Animal Behavior	
PSY 318 Animal Learning	
PSY 319 Human Learning or PSY 348 Human Memory or PSY 350 Cognitive Psychology	
PSY 321 Sensation-Perception	6
3. One additional course from either the 300 or 400 level.	3-4
B. Study in Related Areas	
1. MSA 101, MSC 105, MSM 120, or any more advanced course (excluding MSA 102)	3
2. One three-credit BIO course	3
3. One of the following options is also required. Because these options draw upon courses in other departments, it is necessary to update the specific course numbers each year. A listing of the specific courses can be obtained from the Department of Psychology Undergraduate Office.	
a. Anthropology and/or Sociology Option	12-14
b. Biological Sciences Option	
c. Computer Science Option	
d. Economics Option	
e. History of Science Option	
f. Linguistics Option	
g. Mathematical Sciences Option (Applied or Pure)	
h. Political Science Option	
i. Certain University minors (Business, Child Care and Family Studies, Women's Studies)	
j. Double majors: These automatically fulfill the option requirement.	
<i>Additional Options:</i> The student may propose some other program of study representing a related area. Contact the Psychology Department office for details on how to do this.	
Total	48-57

In fulfilling all of the above requirements the student must take courses for letter grades. The program outlined above presents the general major requirements. In addition, the department recommends that students who plan to enter graduate school in psychology include in, or add to, their programs an advanced laboratory (PSY 304-307).

Note: No more than six credits from among PSY 273, 283, 447, and 487 may be taken in one semester. See also "Course Credit and Prerequisites," p. 45, for further limits on directed readings and research courses, and "Undergraduate Teaching Assistantships," p. 45.

Honors Program in Psychology

Students apply for admission to the Psychology Honors Program in the fall of their junior year. Minimum academic requirements include a 3.0 grade point average overall and a 3.5 grade point average in psychology courses. At the time of application, students must have completed PSY 101, 102 Introduction to Psychology, PSY 201 Statistical Methods in Psychology, and one course from the psychology distribution requirements (either a or b). The department will announce the procedures and deadline for application early in the fall semester.

The program is followed for three semesters. During the spring of their junior year, students enroll in a three-credit Honors Seminar (PSY 399) designed to review research topics currently studied by the psychology faculty. In their senior year, students register for three to six credits of PSY 495 (and 496), while they work on an honors thesis. The honors project is proposed to a departmental honors committee after consultation with an appropriate faculty advisor. The thesis will be judged by three faculty members, one of whom will be from outside the department. Favorable judgment of the thesis and continued high academic performance will provide the basis for conferring honors in psychology.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

PSY 101, 102 Introduction to Psychology

An introduction to psychology as the science of behavior. First semester: an introduction to the areas of personality theory, testing, and social and developmental psychology. Second semester: an intensive investigation of the major research areas covering learning, perception, and the physiological foundations of behavior. Students may choose to participate in experiments or in a library research project.

Prerequisite to PSY 102: PSY 101.
Fall and spring, 3 credits

PSY 201 Statistical Methods in Psychology

The use and interpretation of elementary statistical techniques in research, emphasizing descriptive statistics, correlational analysis, and inferential statistics, including chi-square, critical ratio, t, F, and certain selected non-parametric techniques. May not be taken for credit in addition to MSA 102.

Prerequisites: PSY 102 and MSA 101 or MSC 105 or MSM 120.
Fall and spring, 3 credits

PSY 208 Theories of Personality

Contemporary theories of personality with emphasis on the experimental literature pertaining to personality development and current methods of personality assessment in the applied areas.

Prerequisite: PSY 102.
Fall and spring, 3 credits

PSY 209 Social Psychology

Communication, attitude formation and change, social perception, interpersonal relations, and group performance.

Prerequisite: PSY 102.
Fall and spring, 3 credits

PSY 211 Developmental Psychology

A study of the growth processes from fetal development to late childhood. Perceptual and learning characteristics are explained as they relate to increases in cognitive and social competence in the total community. Biological factors are examined as they relate to inheritance of behavior patterns.

Prerequisite: PSY 102.
Fall and spring, 3 credits

PSY 215 Abnormal Psychology

Psychopathology, including the neuroses and functional and organic psychoses, will be examined. Analysis of current research in psychopathology and its relationship to the theories of abnormal behavior.

Prerequisite: PSY 102.
Fall and spring, 3 credits

PSY 220 Motivation

Theories of motivation from biological to existential and how they apply to human behavior.

Prerequisite: PSY 102.
Spring, 3 credits

PSY 232 Psychological and Social Foundations of Education

A competency-based course for students seeking secondary education teacher certification. Principles of psychology and sociology relevant to the student's future role will be considered. Topics will include traditional and contemporary issues in adolescent psychology; theories of learning; educational institutions and social processes of learning

in relation to structures of societies. Not for major credit in psychology. This course is identical with SOC 232.
Fall or spring, 3 credits

PSY 241 Introduction to the Nervous System

Comparative survey of the gross and microscopic anatomy of nervous systems from coelenterates to primates. The physiological basis of behavioral organization with emphasis on the increasing structural complexities of nervous systems and behavior.
Prerequisite: PSY 102 or BIO 101 or BIO 151.
Fall, 3 credits

PSY 244 Comparative Psychology

The phylogenetic distribution and evolution of both learned and unlearned behavioral patterns including kineses, taxes, instinct, respondent and operant conditioning, generalization, and discrimination.
Prerequisites: PSY 102 and BIO 101 or BIO 151.
Spring, 3 credits

PSY 273 Supervised Research in Psychology (Formerly PSY 287)

Initial training and participation in techniques or duties related to a specific laboratory or field research experience under the direct supervision of a faculty member or advanced graduate student in the Department of Psychology. Students who wish to seek information about the opportunities available may do so through the Undergraduate Office of the Department of Psychology. Grading in this course shall be Satisfactory/Unsatisfactory only. Students may take two sections in a single semester, but no more than three credits may be applied to a section. May not be taken for more than six credits per faculty advisor during the student's career.
Prerequisite: Permission of instructor.

Fall and spring, 1 to 6 credits

PSY 283 Applications and Community Service (Formerly PSY 205)

Designed to provide opportunities for students to study and apply psychological principles outside the classroom (e.g., in settings such as hospitals and schools). Specific programs will vary from semester to semester. General information is available in the Undergraduate Office in the Psychology Department. Grading in this course shall be Satisfactory/Unsatisfactory only. May be repeated up to a limit of six credits. May not be counted toward the distribution requirement in the social and behavioral sciences.
Prerequisite: Permission of instructor.

Fall and spring, 1 to 3 credits

PSY 300 Research Methodology

Basic principles in the design and execution of research in psychology.
Prerequisite: PSY 201.
Fall and spring, 3 credits

PSY 303 Research Methodology Laboratory

Designed to provide an introduction to basic techniques in research through laboratory experience.
Prerequisite: PSY 300.
Fall and spring, 3 credits

PSY 304 Laboratory in Social Psychology

Techniques and experimental problems in social psychology, including natural observation, surveys, and experimental design.
Prerequisites: PSY 303 and permission of instructor.
Fall or spring, 4 credits

PSY 305 Laboratory in Perception

Techniques and experimental problems in perception and sensation on the visual, auditory, and tactual senses. The role of motivation and selective attention on the detection and recognition of stimuli will be investigated.
Prerequisites: PSY 303 and permission of instructor.
Fall or spring, 4 credits

PSY 306 Laboratory in Learning and Performance

Experimental methodology as applied to associative and motivational processes: response acquisition and extinction, reward and punishment, discrimination learning, retention, perceptual-motor skills, and cognitive processes.
Prerequisites: PSY 303 and permission of instructor.
Fall or spring, 4 credits

PSY 307 Laboratory in Comparative and Physiological Psychology

Techniques and experimental problems in the comparative and physiological bases of behavior including sensation, perception, motivation, learning, social interaction, and evolution of behavior.
Prerequisites: PSY 303 and permission of instructor.
Fall or spring, 4 credits

PSY 310 Studies of Social Conflict

Students will formulate and carry out team research projects focusing on issues involving conflict within the University or in the surrounding communities.
Prerequisites: PSY 102 and 201 and permission of instructor.
Fall or spring, 3 credits

PSY 311 Advanced Developmental Psychology

Selected topics in child development: (1) social development, (2) cognitive development, (3) children's learning, and (4) the biological basis of development. One of these four topics will be explored in depth in a given semester, with another topic offered the following

semester. The topic for a given semester will be announced at the time of preregistration. May be repeated once.
Prerequisite: PSY 211.
Fall and spring, 3 credits

PSY 312 Behavior Deviation in Children

Development and modification of behavioral deviations in children; application of principles derived from experimental analysis of behavior to problems of children.
Prerequisite: PSY 211.
Fall and spring, 3 credits

PSY 314 The Neuropsychology of Learning Disabilities

The relationships between learning disabilities in children and neuronal and psychological processes. The course considers anatomical, physiological, and developmental functions of the human brain and specific disorders in attention, perception, memory, language, and impulse control.
Prerequisite: PSY 312.
Fall or spring, 3 credits

PSY 315 Behavior Modification

Philosophical and experimental foundations of behavior modification. Not designed for specific training in clinical techniques, but issues related to clinical application will be considered.
Prerequisites: PSY 201, 215, and 303.
Fall and spring, 3 credits

PSY 316 Sexual Behavior

A systematic examination of patterns of sexual behavior, using currently available material that includes biological and sociological as well as psychological considerations. Typical patterns will be discussed as well as sexual dysfunction and treatment. The major emphasis will be upon human sexuality; however, animal data will be presented where deemed appropriate. A substantial portion of the discussion will focus upon similarities and differences between the sexes.
Prerequisite: PSY 208 or 215.
Fall or spring, 3 credits

PSY 317 Behavior Influence and Planned Environments

The concept of planned environments as illustrated by research and application of behavior modification, environmental psychology, and open education.
Prerequisites: PSY 215 and 312.
Fall, 3 credits

PSY 318 Animal Learning

Principles and techniques by which the behavior of organisms may be modified. The effects of reward and punishment and the techniques of stimuli control.
Prerequisite: PSY 201.
Fall and spring, 3 credits

PSY 319 Human Learning

Basic concepts, empirical findings, and theoretical interpretation in the study of learning, knowing, remembering, and problem-solving.
Prerequisite: PSY 201.
Fall and spring, 3 credits

PSY 321 Sensation-Perception

Phenomena of sensation and perception and the methods by which they may be studied. Different theoretical frameworks will be considered.
Prerequisite: PSY 201.
Fall and spring, 3 credits

PSY 322 Advanced Statistics

Survey of probability and sampling theory, descriptive and inferential statistics, and introduction to experimental design.
Prerequisite: PSY 201.
Fall or spring, 3 credits

PSY 330 The Psychology of Eating and Drinking

This course will survey theories of eating and drinking as well as cover various methods of treating drinking and eating disorders. Material from many areas of psychology will be included, for example, learning and motivation, physiological psychology, sensation and perception, and personality.
Prerequisites: PSY 102, a 200-level psychology course (except 273 or 283, and one semester of biology).
Fall and spring, 3 credits

PSY 340 Physiological Psychology

The functions of the primate brain in behavioral processes covering sensations, perception, states of consciousness, motivation, learning, memory, and language.
Prerequisites: PSY 102 and BIO 101 or 151.
Fall, 3 credits

PSY 343 Electrical and Chemical Brain Stimulation

Behavioral processes studied by the methods of electrical and chemical stimulation of the brain. Consideration of the electrophysiological and biochemical bases of learning, memory, and motivation.
Prerequisite: PSY 304.
Spring, 3 credits

PSY 344 Animal Social Behavior

A comparative perspective on sociality, communication, altruism, social ranks, and group organizations.
Prerequisite: PSY 244 or BIO 332.
Fall, 3 credits

PSY 348 Human Memory

Survey of recent theory and current research on the nature of human memory including iconic, short- and long-term memory, the nature of imagery, rehearsal, mnemonic strategies.
Prerequisite: PSY 303.
Fall or spring, 3 credits

PSY 350 Cognitive Psychology

An examination of theoretical and empirical work on human cognition. Emphasis will be placed on information processing, analysis of perception and pattern recognition, memory, attention, decision, and response processes.
Prerequisite: PSY 303.
Fall or spring, 3 credits

PSY 352 History and Systems of Psychology

History and present status of conceptual trends in psychology. Psychological principles and theories are traced from the early Greek philosophers through the European philosophers and empiricists to their embodiment in contemporary psychological theory.
Prerequisite: Nine credits of psychology.
Spring, 3 credits

PSY 354 Systematic Viewpoints in Psychology

A study in depth of the theories and research of a single important psychologist or school of psychology. May be repeated with permission of the instructor.
Prerequisite: PSY 102.
Fall or spring, 3 credits

PSY 370 The Psychology of Language

Examination of language and a consideration of its implication for cognitive psychology.
Prerequisite: PSY 319.
Fall or spring, 3 credits

PSY 372 Tests and Measurements in Personality

A study of principles of psychological assessment of personality with emphasis on theory and

practice and principles of measurement theory and correlational techniques. Students will have the opportunity to develop a personality test and put these principles and techniques into practice.
Prerequisites: PSY 201 and permission of instructor.
Fall or spring, 3 credits

PSY 373 Theory of Psychological Scaling

Analyzes alternative models for transforming behavioral observations into inferred relations among stimuli and individuals. The course presents a framework within which the various scaling techniques can be grouped and their relationships understood, considering tasks to which the methods may apply, information that can be inferred, and testable consistencies implied.
Prerequisite: PSY 201.
Fall or spring, 3 credits

PSY 399 Contemporary Topics in Psychology

Research topics and issues currently under investigation by members of the department will be reviewed. Each week a different faculty member will assign readings and will lecture on the theories, problems, and methods related to his or her research.
Prerequisite: Admission to Psychology Honors Program.
Spring, 3 credits

PSY 447 Readings in Psychology

Directed readings under the guidance of a faculty member. May be repeated.
Prerequisite: Permission of department.
Fall and spring, 1 to 6 credits

PSY 475 Undergraduate Teaching Practicum I

Each student will conduct a weekly recitation or laboratory section that will supplement a lecture course. The student will receive regularly scheduled supervision from a faculty member. Responsibilities may include pre-

paring material for discussion and helping students with research papers. Grading in this course shall be Satisfactory/Unsatisfactory only. May not be repeated.
Prerequisites: Senior psychology major and permission of instructor.
Fall and spring, 3 credits

PSY 476 Undergraduate Teaching Practicum II

The continuation on a more advanced level of training in the techniques of organization and management in the teaching of psychology courses. Students will be expected to assume greater responsibility in such areas as leading discussions, analyzing and evaluating test results and papers, and observing and assisting students and teaching assistants to develop new teaching techniques. It is expected that the course in which a student is permitted to work as a teaching assistant will be of at least equal difficulty as the course in which he or she previously served; it will not be the same course. Grading in this course shall be Satisfactory/Unsatisfactory only.
Prerequisites: PSY 475 and permission of instructor and department.
Fall and spring, 3 credits

PSY 487 Independent Research in Psychology

Upper division students interested in carrying out independent research projects under the auspices of a faculty member in the Department of Psychology may do so under this course. The student must propose and carry out the research project and must analyze and write up the results in a form acceptable to the sponsor. Written agreement by the faculty sponsor to undertake this respon-

sibility and an outline of the project goals are filed with the Undergraduate Office in Psychology. These become a formal part of the student's departmental file. May be repeated up to a limit of 12 credits.
Prerequisite: Permission of department.
Fall and spring, 3 to 6 credits

PSY 488 Internship

Participation in public and private agencies and organizations. Students will be required to submit written progress reports and a final written report on their experience to the faculty sponsor and the department. Grading in this course shall be Satisfactory/Unsatisfactory only. May be repeated up to a limit of nine credits.
Prerequisites: 12 credits in psychology, permission of instructor, Director of Undergraduate Studies, and Undergraduate Studies Office. *Corequisite:* PSY 447 or 491 or 492.
Fall and spring, 3 to 9 credits

PSY 491, 492 Special Topics in Psychological Research and Theory

Seminar for senior majors dealing with current research and theory in areas of special interest. Topics will be announced prior to the beginning of each semester. May be repeated up to a limit of 18 credits. Students may take two sections in a single semester. May not be taken for more than six credits per faculty member during the student's career.
Prerequisites: PSY 303 and written permission of instructor.
Fall and spring, 3 credits each semester.

PSY 495-496 Senior Honors Thesis in Psychology

A two-semester research project for seniors in the Honors Program. The student will design, execute, analyze, and write up a study under the supervision of an appropriate instructor.
Prerequisite: PSY 399.
Fall and spring, 3 to 6 credits each semester

Program in Religious Studies

Professors

Thomas J.J. Altizer, Ph.D. University of Chicago (Religion and literature; theology)

Robert C. Neville, Director, Ph.D. Yale University (Philosophical theology; philosophy of religion; value theory and ethics). Recip-

ient of the State University Chancellor's Award for Excellence in Teaching, 1974-75

Assistant Professors

Sung-bae Park, Ph.D. University of California, Berkeley (Buddhist studies; Indian, Chinese, Japanese, and Korean philosophy and religious thought)

Peter B. Manchester, Director of Undergraduate Studies, Ph.D. Graduate Theological Union (Christian origins; philosophical theology)

Lecturer

Christopher S. George, Adjunct, Ph.D. University of Pennsylvania (Indic and Tibetan studies)

The program in religious studies offers an interdisciplinary approach to the analysis of religion in its many forms and aspects. To the variety of religious traditions, both living and historical, it brings the techniques and questions of philosophy, history, literature, and the human sciences. Designed for flexibility in meeting student interests and needs, the program offers a major, a minor, an honors program, and a variety of strong electives useful for broadening one's knowledge of religious phenomena, for supplementing the major program in many related fields of humanities and social science, and for meeting humanities distribution requirements. Further information and advising in regard to any of the program's services is available through the program office.

Requirements for the Major in Religious Studies

The major in religious studies leads to the Bachelor of Arts degree. It requires ten courses (30 credits) distributed as follows:

	<i>Credits</i>
I. RLS 301 (ordinarily taken in fall of the junior year; may be taken in senior year by those who do not meet the prerequisites as juniors) and RLS 400.	6
II. Depth requirement: Four courses at the 200, 300, and 400 levels in one of the following areas of emphasis:	
A. Buddhism	
B. East Asian religions (Chinese, Japanese, and Korean religions).	
C. Christianity (to include at least one Judaic studies course; JDH/RLS 230 or JDS/HIS 225, 226 recommended).	
D. Judaism (in coordination with Judaic Studies; ordinarily all four courses in this area emphasis will be JDS and JDH, but one may be replaced with a relevant RLS or other course with advisor's approval).	
E. Theology, philosophy, and method in religion.	
F. Other areas, as available. These must be approved by the Program Director before the first semester of the senior year.	12
III. Breadth requirement: Four RLS courses in areas outside the area emphasis.	12
<i>Total</i>	30

Note: The planning of a sound and coherent curriculum is an important dimension of the religious studies major. Academic advising is available for all majors through the program office and the Director of Undergraduate Studies; by their junior year all majors will have an assigned advisor who should be consulted at each registration period. Final approval of courses selected for major requirements should be obtained prior to registration for the senior year. Requirements for the major may be satisfied with RLS courses and, with advisor's approval, with courses from other departments listed below. Students wishing to satisfy the requirements with yet other courses may do so with the approval of the Program Director.

Related Courses in Other Department

Detailed course descriptions appear under appropriate departmental listings and should be examined there.

- AFH 333 Islam and Africa
- AFH 346 Black Religion
- ANT 251 Comparative Religious Systems
- ARH 206 The Art and Architecture of the High Middle Ages, ca. 1050-1400
- ARH 207 Art of the Ancient Near East
- ARH 303 The Art and Architecture of the Early Middle Ages, ca. 400-1050
- ARH 329 Primitive Art
- EGL 261, 262 The Bible as Literature
- EGL 342 Milton
- HIS 233 Medieval History, 300-1100
- HIS 234 The High Middle Ages, 1100-1400
- HIS 235 Humanism and Renaissance
- HIS 236 The Age of the Reformation
- JDS/HIS 225, 226 Civilization of Israel I, II
- JDH 298 Midrash in Translation
- JDH 447 Readings in Judaic Studies
- PHI 111 Introduction to Eastern Philosophy; Classical Texts
- PHI 112 Introduction to Eastern Philosophy; Interpretations
- PHI 236 Introduction to Chinese Philosophy
- PHI 268 Philosophy of Religion
- PHI 273 Philosophy of Myth
- PHI 304 Medieval Philosophy
- PHI 340 Indian Buddhism: Its Essence and Development
- SOC 352 Sociology of Religion

Appropriate special topics from these or other departments may also be offered to fulfill major requirements with permission of the Program Director.

The Honors Program in Religious Studies

Religious studies majors who have maintained a grade point average of 3.5 in the major and 3.0 overall through their junior year may be invited to attempt the degree in religious studies with honors.

The honors major requires a total of 36 credits, consisting of the 30 credits required for the major, and six additional credits in a special research project pursued through both semesters of the senior year under the supervision of a member of the faculty (RLS 495-496).

When the supervising faculty member judges the student ready, an honors essay based on this special project is presented and defended at a meeting of the Religious Studies Seminar, which consists of the religious studies faculty and participating faculty from related disciplines. Thereafter, the religious studies faculty together with at least one faculty member from another discipline who attended the seminar will meet to decide whether to recommend conferring the degree with honors. The decision will be based on the student's overall record, the recommendation of the special project supervisor, the student's performance in presenting the honors essay, and the judgment of the faculty concerning its intrinsic worth.

Students who believe they are qualified to become candidates for honors should consult with the Director of Undergraduate Studies during their junior year. Faculty supervision of the senior honors project must be agreed upon and arranged before the end of the junior year.

The Minor in Religious Studies

The minor in religious studies consists of six courses (18 credits), at least three of which (9 credits) are at the upper division level

In addition to these general requirements, the program is designed to insure (I) an encounter with the variety of world religions, (II) a grasp of problems of method and the critical use of sources in the study of religion, and (III) sufficient depth in a

single area emphasis to read advanced work in the area with experience and judgment. Requirements to meet these goals are:

I. RLS 101 and a 200-level RLS course	Credits 6
II. RLS 301	3
III. At least three courses in one of the area emphases listed for the major	9
	Total 18

Students desiring to minor in religious studies should declare the minor with the Director of Undergraduate Studies in the semester in which they register for RLS 301. Academic advising on fitting the religious studies minor in with the student's major program is available through the same office. Final approval of courses selected to meet the minor requirements should be obtained prior to registration for the senior year.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

RLS 101 Great Religions of the Contemporary World

An introduction to the history, doctrine, and religious practices of Hinduism, Judaism, Buddhism, Confucianism, Taoism, Christianity, and Islam.
Fall, 3 credits

RLS 122 Goodness and Godliness

A study of the diverse approaches to social values in conservative, liberal, and revolutionary religious thought, with case studies in political economy, medical ethics, and civil rights. An introduction to religious ethics.
Spring, 3 credits

RLS 195, 196 T'ai Chi Ch'uan

A study of the philosophy and practice of T'ai Chi Ch'uan, the ancient Taoist exercise. Of the 108 movement forms approximately the first half will be learned in RLS 195, the second half in RLS 196.

Prerequisite to RLS 196: RLS 195. Fall and spring, 1 credit each semester

RLS 220 Studies in Religion

This is a lower division study within the area of expertise of distinguished visiting faculty. The topic of the course varies from semester to semester. Students should consult the description of course offerings available from the religious studies office. The course may be repeated with permission of the Director of Religious Studies.
Fall or spring, 3 credits

RLS 230 Judaism

A critical introduction to the scripture, the oral law, the traditions, the history, and the religious practices and beliefs of Judaism. This course is identical with JDH 230.
Fall, 3 credits

RLS 240 Confucianism and Taoism

An introduction to the basic philosophies and doctrines of Confucianism and Taoism, such as the concept of Tao, non-action, benevolence, and propriety. The course will explore both the similarities and the differences between these two traditions.
Fall, 3 credits

RLS 246 Korean and Japanese Religions

An introduction to the main developments in Korean and Japanese religious history from earliest times to the nineteenth century, with emphasis on Buddhism, Confucianism, and Taoism, as well as Shamanism in Korea and Shintoism in Japan. The relationship between the Korean form of religious traditions and those found in China and Japan will also be stressed.
Spring, 3 credits

RLS 260 Buddhism (Formerly RLS 135)

An introduction to the basic philosophy and doctrines of Buddhism, beginning with a survey of lives and works of major historical figures of Buddhism. The principal issues of Buddhist thought, drawing from Indian, East Asian, and Western sources, will be treated. Particular attention will be paid to the meaning of faith, practice, and enlightenment in Buddhism.
Fall, 3 credits

RLS 270 Christianity

A critical introduction to the scripture, tradition, history, and religious practices and beliefs of Christianity.
Spring, 3 credits

RLS 280 Islam

An introduction to the main features of Islamic revelation as contained in the Qur'an; its impact on the major intellectual, legal, and social institutions of the world it subsequently shaped; schism in the form of the Shi'ite sects; Sufism. The course will conclude with an examination of Islam in the modern world.
Fall, 3 credits

RLS 301 Sources and Methods

An inquiry in depth into the application of critical, historical, and philosophical methods to religious texts and experiences. An introduction to the resources and limitations of academic study of religion.

Prerequisites: Two courses, at least one at the 200 level, in religious studies or from the list on p. 139.

Fall, 3 credits

RLS 302 Contemporary Theology

An intensive study of influential recent work in theology, with primary emphasis on contemporary Christian and radical theology, including such themes as the death of God, the impact of historical criticism of scripture, and the emerging dialogue among the world religions.

Prerequisite: One 200-level RLS course.

Fall or spring, alternate years, 3 credits

RLS 321 Christian Classics

Case studies in Christian hermeneutics. An introduction to the background, content, and influence of selected classic individual Christian texts or genres of writing, heterodox as well as orthodox, selected from New Testament and apostolic literature, patristic and medieval authors, and decisive reformation and modern works. May be repeated as subject matter differs.

Prerequisites: RLS 270 or EGL 262 and permission of instructor. Fall or spring, 3 credits

RLS 330 Special Topics

An investigation of a particular area or dimension of religious studies which will vary from semester to semester. May be repeated with permission of Program Director.

Fall and spring, 3 credits

RLS 341 Meditation and Enlightenment

A critical analysis of the traditions, practices, and literature of Zen and other traditions of Buddhism, with particular attention paid to the meaning of enlightenment and the practice of meditation.

Prerequisite: One 200-level religious studies course.

Spring, 3 credits

RLS 350 Philosophical Theology

A study of selected theological problems that integrate religious concerns with rigorous philosophical reflection, West and East, including: the nature of the religious object, knowledge of the transcendent, the experiential basis of faith, the meaning of historical

process, and resources and dangers in selfhood.

Prerequisite: One 200-level RLS or PHI course.

Fall, 3 credits

RLS 370 Tibetan Buddhism

The dynamics of Tibetan Buddhism from traditional texts and living sources; tantric practices, mandalas, meditation.

Prerequisite: One 200-level religious studies course or PHI 111 or 112 or 236.

Fall, 3 credits

RLS 372 Buddhist Classics (Formerly RLS 262)

An introduction to Buddhist hermeneutics through the critical analysis of Buddhist texts, focusing each semester on one text fundamental for Madhyamika, Yogacara, Tathagatagarbha, Hua-Yan, T'ien-t'ai, Ch'an (Zen), or Pure Land traditions.

Prerequisite: RLS 260 or 341 or PHI 111 or 112.

Fall or spring, 3 credits

RLS 400 Religious Studies Seminar

A proseminar for senior majors in religious studies, focusing on the problem of the relation between phenomenology, hermeneutics, and history of religions on the one hand and their theological and philosophic interpretation on the other. May be repeated once.

Prerequisite: Permission of Program Director.

Spring, 3 credits

RLS 447 Readings in Religious Studies

Directed study with religious studies faculty, limited to religious studies majors or upper division students working on advanced problems in religious studies.

Prerequisite: Permission of instructor and Program Director.

Fall and spring, 1 to 6 credits

RLS 465 Judaic Responses to Catastrophe

The responses of Judaic thinkers from the Bible to the Second World War to the problem of historical disaster and the need to understand and respond to it. Particular attention will be given to the question of long-term continuity and the appearance of innovation in such responses. This course is identical with JDH 465.

Prerequisites: JDS/HIS 225 or 226 or JDH/RLS 230.

Fall, 3 credits

RLS 495-496 Senior Honors Project

A two-semester project for RLS majors who are candidates for the degree with honors. Arranged during the junior year with the program, the project involves independent study and the writing of a paper under close supervision of an appropriate faculty member, on a topic chosen by the student.

Prerequisite: Permission of instructor and Director of Undergraduate Studies.

Fall and spring, 3 credits each semester

Interdisciplinary Program in Social Sciences

Professors

Beverly Birns, Coordinator of Women's Studies, Ph.D. Columbia University (Psychology; women's studies)

Joel T. Rosenthal, Ph.D. University of Chicago (Social history)

Eli Seilman, Director, Ph.D. New York University (Social science education; Asian studies)

Associate Professor

Shi Ming Hu, Coordinator of Asian Studies, Ed.D. Columbia University (Chinese and Asian studies; social science education)

Assistant Professor

Judith Wishnia, Ph.D. State University of New York at Stony Brook (Women's history; labor history; European history)

Lecturers

Robert D. Bagnall, Ph.D. Temple University (Curriculum theory development)

David Lichtenstein, Coordinator of Child Care and Family Studies, Ph.D. State University of New York at Stony Brook (Early childhood; psychology)

Vera Rony, M.A. University of Chicago (Labor studies; economics)

This interdisciplinary degree program (SSI) is designed for students with broad interests in the findings, questions, and methods of the social and behavioral sciences. Individual plans of study are created by combining courses from among the offerings of Africana studies, anthropology, economics, history, linguistics, political science, psychology, sociology, and the social sciences program courses (e.g., SSI 101). The student must do work in at least four of these fields.

The social sciences program is the administrative home of three minors, Asian studies, child care and family studies, and women's studies. Social sciences majors who wish to follow one of these areas of concentration may choose courses in the minor so as to simultaneously fulfill a large number of their social sciences requirements. Students who are not social sciences majors are free to complete the minor by following one of the options outlined. Further information on the minors is available at the social sciences office.

Requirements for the Major in Social Sciences

The interdisciplinary major in social sciences leads to the Bachelor of Arts degree. The following courses are required.

Courses in at least four of the social science departments listed above, distributed as follows:

	Credits
A. Two courses in <i>each</i> of any two social science departments	12
B. Four courses in <i>each</i> of any two other social science departments (at least two of the courses in each department must be numbered 300 or above)	24
C. Four additional courses in <i>any</i> social science department or departments numbered 300 or above	12
Total	48

In addition:

- At least 36 credits of the 48 must be earned by letter grade.
- No more than nine credits of independent work (273, 445-449, 481-489) and no more than six credits of such work from any single department or program may be used toward fulfillment of major requirements. Only three credits of SSI 488 or 489 may count toward the major.
- Up to six credits of related courses numbered 300 or above may be substituted for two of the four courses needed for requirement C. An up-to-date list of approved related courses is

available from the social sciences interdisciplinary program office. Social sciences majors who have elected the Asian studies, child care and family studies, or women's studies minor may use upper division humanities courses listed for their minor as related courses.

4) The following may not be used to satisfy requirements A and B, but they may be used as related courses in requirement C: SSI 375, 397, 398, 490, and upper division Africana studies courses with the AFH designator.

5) AFS 283, PSY 283, SSI 283, 450, 454, LIN 115, 116, 375, and lower division AFH courses may not be used to fulfill major requirements. Only one teaching practicum (475, 476) may be counted.

Requirements for the Minor in Asian Studies

This minor may also be taken as a field of concentration for students within the social sciences major. The student should work out an individual program in consultation with the coordinator.

	Credits
A. Two courses chosen from HIS 219, 220, 317	6
B. Two social science courses from a department other than History, chosen from the list below	6
C. Two humanities courses chosen from the list below	6
D. One other course from the list below	3
E. SSI 461	3
Total	24

Note: In order to use the maximum number of Asian studies credits to fulfill major requirements, social sciences majors are advised to use a course from the social science group to fulfill requirement 4.

At least nine credits must be taken in upper division courses. Though there is no language requirement for the minor (or the concentration), at least one year of Chinese is recommended for the insight it offers into an Asian culture.

The humanities courses may be used to satisfy the social sciences major's "appropriate courses" option if they are numbered 300 or above, with permission of the minor coordinator.

Social Science

ANT 206 People of Asia
 ANT 313 China: Social and Cultural Background
 HIS 340 Intellectual History of China
 HIS 341 Twentieth-Century China
 HIS 344 Twentieth-Century Japan
 HIS 431 Colloquium in Asian History
 SSI 140 Introduction to China Today
 SSI 340 Education in Contemporary China

Humanities

- ARH 203 Survey of Far Eastern Art
 ARH 318 History of Chinese Painting
 PHI 111 Introduction to Eastern Philosophy: Classical Texts
 PHI 112 Introduction to Eastern Philosophy: Interpretations
 PHI 236 Introduction to Chinese Philosophy
 PHI 239 Japanese Philosophy and Aesthetics
 PHI 340 Indian Buddhism: Its Essence and Development
 PHI 342 Chinese and Japanese Buddhism
 RLS 240 Confucianism and Taoism
 RLS 261, 262 Buddhist Classics I, II
 RLS 341 Meditation and Enlightenment
 RLS 370 Tibetan Buddhism

Requirements for the Minor in Child Care and Family Studies

The child care and family studies minor combines course work in child development and the family with practical, directed work in one of the campus child care centers. Courses in social sciences and psychology, work in a child care center, and a senior seminar are all combined to give students in the minor experience in a variety of disciplines and in modes of instruction and directed work in the field of applied child development.

I. Study in Social Sciences

- | | |
|--|---|
| A. SSI 103 Childhood: Social and Historical Perspectives | 3 |
| B. SSI 281 and SSI 283: Seminar and Practicum in Child Development | 6 |

II. Related Courses

To be chosen from the list below. Some courses must be chosen from at least two departments other than SSI. At least 9 of the 15 credits must be from upper division courses

Credits

15

Total 24

- AFS 370 The Black Family
 ANT 352 Culture and Personality
 ANT 354 Family Kinship
 HUM 124 Childhood and the Family in Literature
 LIN 105 Non-Standard Varieties of English
 LIN 320 Psycholinguistics
 PSY 209 Social Psychology
 PSY 211 Developmental Psychology
 PSY 311 Advanced Developmental Psychology
 PSY 312 Behavior Deviation in Children
 PSY 317 Behavior Influence and Planned Environments
 SOC 204 Courtship and Marriage
 SOC 243 Sociology of Youth
 SOC 247 Women and Men
 SOC 304 Sociology of the Family
 SOC 308 Poverty and Social Welfare
 SOC 380 Social Psychology
 SSI 487 Independent Projects in the Social Sciences

Requirements for the Minor in Women's Studies

The minor in women's studies may also be taken as a field of concentration for students within the social sciences major. Courses must be taken from at least two departments other than SSI and at least nine credits must be in upper division courses.

- | | |
|--|---|
| A. SSI 102 Introduction to Women's Studies | 3 |
| B. SSI 407 Senior Seminar in Women's Studies | 3 |
| C. One of the following: | 3 |
| MSA 201 Elements of Statistics | |
| MSC 112 Introduction to Computer Science | |
| PSY 201 Statistical Methods in Psychology | |
| SOC 201 Research Methods in Sociology | |
| SOC 202 Statistical Methods in Sociology | |
| D. At least nine credits chosen from the core courses, listed below | 9 |
| E. Two additional courses to be chosen from either core or related courses | 6 |

Total 24

Core Courses

- AFS 370 The Black Family
 ANT 355 Anthropology and Law
 ANT 367 Male and Female in Cross-Cultural Perspective
 EGL 276 Women and Literature
 HAS 518 Older Women in American Society
 HIS 242 Women in European History
 HWC 318 Women and Health Care
 PHI 384 Philosophy and Feminism
 PSY 316 Sexual Behavior
 SOC 247 Women and Men
 SOC 304 Sociology of the Family
 SSI 103 Social and Historical Perspectives on Childhood
 SSI 307 Psychology of Women
 SSI 333 Women in U.S. History

Related Courses

- ANT 354 Family and Kinship
 HIS 284 Sex in History
 HIS 316 The Healer and the Witch in History
 HIS 370 U.S. Social History
 HUM 122 Images of Women in Literature
 HUM 124 Childhood and Family in Literature
 PSY 209 Social Psychology

Each semester various special topics courses focusing on women are given in individual departments. Check with the women's studies coordinator to determine which are eligible for the minor.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

SSI 101 Social Control

An introductory exploration of the nature and variety of social organization. Special attention is paid to political philosophy, to the concept of "social determinism," and to various forms of social bond and constraint. Readings will be drawn from the various social sciences.

Prerequisite: Freshman standing.
Fall, 3 credits

SSI 102 Introduction to Women's Studies

A general introduction to women's studies and to the feminist movement. It looks at the way a number of different academic disciplines have dealt with the female component of society, and it examines the contributions women have made and the roles they have played in a variety of areas.

Spring, 3 credits

SSI 103 Childhood: Social and Historical Perspectives

Theories and conceptions of child development and the practices of child-rearing will be related to social and historical changes in the nineteenth and twentieth centuries: the effects of the Industrial Revolution and urbanization on children's lives, as well as upon theories of child-rearing; such phenomena as infant mortality, birth control, child health, and child-care arrangements; major theories, e.g., those of Freud,

Skinner, Piaget, and Erikson, as products of a social and historical context. May not be taken by seniors majoring in any social science.

Fall, 3 credits

SSI 140 Introduction to China Today

An introduction to the People's Republic of China through the study of selected topics dealing with life and society in China today. Selected topics include: children and youth, women, literature and art, education, medicine and health care, communes, national minorities, language reform.

Fall, 3 credits

SSI 265 Drug and Alcohol Education

The examination of drug- and alcohol-related issues as they concern the teacher. The course will examine currently available information from an interdisciplinary perspective and will be concerned with the pre-college setting.

Fall and spring, 1 credit

SSI 281 Seminar in Child Development

Students will meet weekly to discuss their experience in the child-care center and to learn basic principles of early childhood education and development relevant to the day care situation. Lectures and demonstrations of early childhood activities will emphasize language and cognition, social and motor behavior, "play," "arts and crafts," and various techniques for organizing group and individual energies.

Prerequisites: PSY 211 or SSI 103 and permission of instructor. *Co-requisite:* SSI 283.

Fall and spring, 3 credits

SSI 283 Practicum in Child Development (Formerly SSI 280)

Students will work nine hours a week in a full-day child-care center to gain practical experience in teaching, making materials and observing pre-school children. "Day-book" records will be kept and will be one of the bases for discussion in SSI 281. This course will require students to use the knowledge gained in SSI 281 in a closely supervised situation. May not be counted toward the College distribution requirement in social and behavioral sciences nor may it be repeated for credit. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: PSY 211 or SSI 103 and permission of instructor. *Corequisite:* SSI 281.

Fall and spring, 3 credits

SSI 307 Psychology of Women

The psychological impact of important physiological and sociological events and epochs in the lives of women: menstruation, female sexuality, marriage, childbirth, and menopause; women and mental health, mental illness, and psychotherapy; the role of women in the field of psychology. *Prerequisites:* SSI 102 and ANT 367 or PSY 102 or SOC 247.

Fall, 3 credits

SSI 311 Interdisciplinary Problems in the Social Sciences

This course treats a problem that has been tackled by a number of the social sciences. It illustrates the different natures of approach, method, and findings. The actual problem chosen will vary from semester to semester. May be repeated.

Prerequisites: Eighteen hours of social science credit.

Schedule to be announced, 3 credits

SSI 333 Women in U.S. History (Formerly HIS 372)

An interpretation of the history of women in relation to the major themes in American history such as industrialization and urbanization. Emphasis will be placed on topics of special interest to women, i.e., the cult of domesticity, the birth control movement, feminism, women and reform, changing attitudes toward female sexuality.

Spring, 3 credits

SSI 340 Education in Contemporary China

Extensive examination of the educational practice, educational policy, and curriculum in the Peo-

ple's Republic of China with emphasis on the interrelationship between political ideology and the educational system.

Alternate years, 3 credits

SSI 375 Social Studies Curriculum Development: Seminar-Laboratory

An analysis of selected theoretical constructs for social studies curriculum development and their application to the design of new curriculum materials. Special emphasis given to the design, analysis, and evaluation of curriculum materials developed by the student and experimented with in actual teaching experiences. Laboratory requires a minimum of three hours per week in selected schools.

Prerequisite: Permission of instructor.

Fall and spring, 4 credits

SSI 397 Teaching Social Studies

A study of social studies as a subject taught in the secondary schools, the nature of the social studies, curricula models, scope and sequence of topics offered, new programs of social studies instruction, etc. Designed for prospective teachers of social studies in secondary schools.

Prerequisite: A minimum of five social science courses numbered 200 or higher.

Fall, 3 credits

SSI 398 Social Studies Teaching Strategies

An examination of the instructional methods and materials for teaching social studies at the secondary school level. Designed for prospective teachers of social studies in secondary schools.

Prerequisite: SSI 397.

Spring, 3 credits

SSI 407 Senior Seminar in Women's Studies

Students will have the opportunity to explore any one issue pertaining to women's studies in depth. The research may be field based or based entirely on library research.

Prerequisite: Completion of 15 credits of the women's studies minor.

Spring, 3 credits

SSI 447 Directed Readings in Social Science

Individually supervised reading in selected topics of the social sciences. May be repeated, but total credit may not exceed six credits.

Prerequisite: Permission of instructor and program.

Fall and spring, 1 to 3 credits

SSI 450 Supervised Student Teaching

Prospective secondary social studies school teachers will receive supervised practice teaching by arrangements with selected Long Island secondary schools. The student teacher reports to the school to which he or she is assigned for a full school

day for the semester. Frequent consultation with the supervising teacher helps the student to interpret and evaluate the student teaching experience. Applications must be filed in the semester preceding that in which the student plans to student teach. The dates by which applications must be completed will be announced. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: SSI 397 and 398, 3.0 grade point average in the major, 2.75 grade point average overall, enrollment in the Social Studies Teacher Preparation Program, and approval of social studies coordinator. *Corequisite:* SSI 454.

Fall and spring, 12 credits

SSI 454 Student Teaching Seminar

Seminar on problems and issues of teaching social studies at the secondary school level. Analysis of actual problems and issues encountered by the student in his or her student teaching experience.

Corequisite: SSI 450.

Fall and spring, 3 credits

SSI 461 Senior Seminar in Asian Studies

This interdisciplinary seminar will bring together faculty members and students to discuss and do research on various problems of current interest in the field of Asian studies, including such topics as agrarian unrest, nationalism; regional economic integration; problems of modernization, industrialization, historical continuity and discontinuity; and comparative aesthetics. A seminar director will be responsible for the selection of the topic and the faculty participants. May be repeated.

Prerequisite: Eighteen credits in Asian studies.

Fall and spring, 3 credits

SSI 475 Undergraduate Teaching Practicum

Each student will conduct a weekly recitation section that will supplement a lecture course. The student will receive regularly scheduled supervision from the instructor. Responsibilities may include preparing material for discussion and helping students with research papers. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Social Science Interdisciplinary major, senior standing, interview, and permission of instructor.

Fall and spring, 3 credits

SSI 487 Independent Project in the Social Sciences

Interdisciplinary independent projects in the social sciences designed to enable students to combine academic and field work on a practical or community problem. There will be an emphasis on team projects under special supervision. May be repeated.

Prerequisites: Eighteen credits in the social sciences and permission of program director.

Fall and spring, 1 to 6 credits

SSI 488 Internship

Participation in local, state, or federal government public and private agencies and organizations. Students will be required to submit written progress reports and a final report on their experience to the faculty sponsor and the program. Grading in this course shall be Satisfactory/Unsatisfactory only. May be repeated up to a limit of nine credits.

Prerequisites: Fifteen credits in social science; permission of instructor; program, and Undergraduate Studies Office.

Fall and spring 3 to 9 credits

SSI 489 Washington Internship

Designed so that students can participate in the Washington Center for Learning Alternatives (W.C.L.A.) as interns in private or public sector organizations and agencies. Students will be supervised by selected practitioners within the organization or agency. Students will be required to submit journals of experience and observation which, together with the supervisors' report, become the basis for a Satisfactory/Unsatisfactory grade. Only three credits for this course may be applied towards major requirements. This course is identical with POL 489.

Prerequisites: Admission to W.C.L.A. and 15 credits from at least three social science departments. *Corequisite:* SSI 490.

Fall and spring, 9 credits

SSI 490 Washington Seminar

Seminar offered in Washington as part of the internship program of the Washington Center for Learning Alternatives (W.C.L.A.). The seminars are taught by people with experience in public and private agencies, public policy formulation, and relevant academic and professional experience. Students are offered work in several program areas designed to complement their internships, such as law and justice, congressional studies, policy studies, community-urban service, and studies in government. This course is identical with POL 490.

Prerequisites: Admission to W.C.L.A. and 15 credits from at least three social science departments. *Corequisite:* SSI 489.

Fall and spring, 3 credits

Social Studies Secondary Teacher Preparation Program

Program Coordinator

Eli Seifman

This program offers the student the opportunity to prepare for a teaching career and to complete the requirements for a New York State Provisional Certificate as a teacher of secondary school social studies.

In the selection of courses to satisfy the requirements listed below, a student and his or her advisor should make every effort to construct a program which leads to knowledge and understanding of a particular society with a language and a culture different from those of the student.

Students who wish to enter this program are expected to consult the program advisor and establish an advisement folder prior to the beginning of the junior year. Failure to do so may result in a delay in meeting the certification requirements.

Requirements

A. Preparation in Social Science

Credits
48

A minimum of 48 credits in social science departments or interdisciplinary programs, excluding psychology and linguistics. For departmental majors, this must include at least 15 credits outside the major department.

At least 9 of these 15 credits must be in upper division courses.

Credits

1. Included in the social science credits must be at least 18 credits of history, distributed as follows: six credits in U.S. history; six credits in European or world history; and six credits in history other than U.S., European, or world.
2. The major requirements of one of the following departments or interdisciplinary programs: Africana Studies, Anthropology, Economics, History, Political Science, Social Sciences Interdisciplinary Program, Sociology. Only the majors specified here are acceptable for the Social Studies Secondary Teacher Preparation Program.

B. Preparation in Professional Education

25

These requirements include a course in foundations of education (SOC/PSY 232 or PHI 360); training in drug and alcohol education (SSI 265); six credits in methods and materials of teaching social studies (SSI 397 or HIS 397, SSI 398 or HIS 398 or SSI 375); student teaching (SSI 450); and a student teaching seminar (SSI 454).

Total 73

Department of Sociology

Distinguished Professor

Lewis A. Coser, Ph.D. Columbia University (Theory; sociology of knowledge and intellectuals; conflict and violence; political sociology)

Professors

Stephen Cole, Director of Undergraduate Studies, Ph.D. Columbia University (Sociology of science, medicine, and the professions)

Rose Laub Coser, Joint with Community and Preventive Medicine, Health Sciences Center, Ph.D. Columbia University (Medical; family; organizations; socialization; gender roles)

Kenneth A. Feldman, Ph.D. University of Michigan (Social psychology; youth; higher education)

John H. Gagnon, Graduate Director, Ph.D. University of Chicago (Sexual behavior; marriage and the family; social change; deviance)

Norman Goodman, Chairman, Ph.D. New York University (Social psychology; marriage and the family; socialization). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1975-76

Gladys E. Lang, Ph.D. University of Chicago (Mass communications; education; collective behavior)

Kurt Lang, Ph.D. University of Chicago (Mass communications; collective behavior; military sociology; conflict and violence)

Charles Perrow, Ph.D. University of California, Berkeley (Organizations; social change; political sociology; conflicts and social movements)

James B. Rule, Ph.D. Harvard University (Theory; political sociology; social control)

Hanan C. Selvin, Coordinator, Minor in Methods of Social Research, Ph.D. Columbia University (Research methods; statistics; marriage and the family)

Eugene A. Weinstein, Ph.D. Northwestern University (Social interaction; social psychology; research methods)

Associate Professors

O. Andrew Colver, Ph.D. University of California, Berkeley (Demography; urban; social planning; ecology; organizations)

Erich Goode, Ph.D. Columbia University (Deviance; criminology; religion). On leave Fall 1981

Mark Granovetter, Ph.D. Harvard University (Economic and political sociology; stratification; mathematical models; theory)

Department of Sociology (Cont.)

Ned Polsky, B.A. University of Wisconsin (Deviance; criminology; stratification; sociology of the arts)

Michael Schwartz, Ph.D. Harvard University (Political sociology; research methods; ethnic relations; mathematical models; historical methods). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1974-75

Judith Tanur, Ph.D. State University of New York at Stony Brook (Statistics; research methods; social psychology)

Andrea Tyree, Ph.D. University of Chicago (Demography; stratification; statistics; research methods)

Assistant Professors

Said Amir Arjomand, Ph.D. University of Chicago (Comparative sociology; historical sociology; theory; sociology of religion)

Diane Lee Barthel, Ph.D. Harvard University (Urban sociology; community; race and ethnicity; sex roles)

Ivan D. Chase, Ph.D. Harvard University (Social stratification; conflict and cooperation; biosociology)

Scott L. Feld, Ph.D. Johns Hopkins University (Collective decision making; games and simulation; small groups; research methods)

Lyle Hollowell, Ph.D. University of Minnesota (Deviant behavior; law and criminal justice; social control)

Bruce R. Hare, Ph.D. University of Chicago (Sociology of education; social psychology; race and self-concept)

Paget Henry, Ph.D. Cornell University (Theory; political sociology; religion; social change; stratification)

Glenn Z. Yago, Ph.D. University of Wisconsin (Urban sociology; sociology of the community; political sociology)

Gerald Zeitz, Ph.D. University of Wisconsin (Theory; organizations; work and the professions; social change; comparative social structure)

Requirements for the Major in Sociology

The major in sociology leads to the Bachelor of Arts degree. The following courses are required.

	Credits
A. Study Within the Area of the Major	
1. Required courses	
SOC 103 Introduction to Sociology or 104 Introduction to Sociology: Honors	3
SOC 201 Research Methods in Sociology (to be taken no later than the sophomore year; SOC 211-212, 8 credits, may be substituted)	3
SOC 361 Historical Development of Contemporary Sociology	3
SOC 362 Introduction to Sociological Theory (SOC 361 and 362 should be taken consecutively during the junior or senior year)	3
2. Sociology electives	18
<i>Option 1:</i> Free selection of courses from among all sociology course offerings.	
<i>Option 2:</i> Concentration in one or more of the following areas: Comparative political sociology; the sociology of culture; urban sociology; sociological methodology; social psychology; applied sociology; pre-teaching; pre-graduate school; pre-law school. (Further information and guidance is available from departmental advisors.)	
<i>Option 3:</i> Systematic selection of courses from a limited number of concentrations.	
Sub-Total	30

Note: SOC 202 Statistical Methods in Sociology or SOC 211-212 are recommended for majors considering graduate study.

B. Study in Related Areas

- MSM 125 Calculus A or MSA 101 Introduction to Finite Mathematics or two other courses in mathematics chosen with departmental approval. The department urges students to fulfill the mathematics requirement as early in their college careers as possible. 3
 - At least three courses (9 credits) chosen from one of the following related social sciences: anthropology, economics, history, political science, and psychology. (Credits from applied social science professions like social work, police science, education, and management science are not applicable.) 9
- Total 42**

C. Grading Policy

- No more than two courses from the requirements of the department, including sociology electives (A, 2 above), mathematics (B, 1 above), and related social science courses (B, 2 above), but excluding required sociology courses (A, 1 above), may be taken Pass/No Credit. None of the required sociology courses may be taken Pass/No Credit.
- All upper division courses in sociology offered to fulfill major requirements must be passed with a grade of C or better.
- For transfer students who are sociology majors, special regulations apply:
 - No grade of less than C for a sociology course taken elsewhere than at Stony Brook will be accepted for credit in the major.
 - For the requirement of three courses in a related social science and for the mathematics requirement (B, 1 and B, 2 above), any passing grade will be sufficient to transfer for credit.

Note: The Sociology Department requires that transfer students take at least 12 credits in sociology in residence at Stony Brook to complete the sociology major.

Minor in Methods of Social Research

This minor is intended primarily for students majoring in one of the social and behavioral science departments or interdisciplinary programs who plan graduate study in one of the social or behavioral sciences or professional careers that may involve a significant amount of social research—for example, law, public health, or marketing. The requirements for the minor have been chosen to include substantive breadth, methodological power, and technical proficiency:

	Credits
A. Three substantive courses in one department or program in the social and behavioral sciences outside the major.	9
B. One course in quantitative methods and one course in qualitative methods, each in a department outside the major.	6
C. One course in theoretical or mathematical statistics.	3
D. One course in advanced applied statistics.	3
E. Demonstrated proficiency in computer programming; no course requirement.	
F. SOC 405 Seminar in Methods of Social Research	3
Total	24

For further details on the minor, including suggested courses to meet the specific requirements, see the minor coordinator.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

SOC 103 Introduction to Sociology

A survey of the main concepts in sociological analysis. This course is the prerequisite for most higher level courses in sociology. May not be taken for credit in addition to SOC 104 or 301 or 302.
Fall and spring, 3 credits

SOC 104 Introduction to Sociology: Honors

An enriched introduction to the sociological perspective with an emphasis on how sociologists develop and test their hypotheses about human behavior. This course will require more reading and cover more difficult topics than SOC 103. Students who want to do this extra work will benefit by receiving a more in-depth introduction to sociology in a relatively small class. May not be taken for credit in addition to SOC 103 or 301 or 302.

Prerequisite: Satisfaction of English and mathematics proficiency requirement.
Fall and spring, 3 credits

SOC 201 Research Methods in Sociology

Methods of collecting and analyzing empirical data to test sociological hypotheses. Emphasis will be on multivariate analysis of tabular and statistical data. Students

planning on graduate work in sociology should consider SOC 211-212 instead of SOC 201. Not for credit in addition to SOC 211-212.
Prerequisite: SOC 103 or 104.
Fall and spring, 3 credits

SOC 202 Statistical Methods in Sociology

An introduction to the use and interpretation of statistical methods in social research; descriptive and inferential statistics. May not be taken for credit after any other statistics course.
Prerequisites: SOC 103 or 104 and satisfaction of mathematics proficiency requirement.
Fall, 3 credits

SOC 204 Courtship and Marriage

Social factors affecting courtship, mate selection, and engagement; dynamics of marital adjustment and parenthood.
Fall and spring, 3 credits

SOC 211-212 Methods and Statistics I, II

Students wishing a more thoroughly integrated view of sociological methodology and the place of statistical techniques in it should register for this two-semester course rather than for SOC 201 or 202. Students will learn descriptive and inferential statistics in the course of designing and carrying out either individual or group research projects; the students will consider the interrelations between theory and research as well as the mechanics of carrying out the research process. Every student will be required to analyze a set of data and to write a research report. SOC 201 and 202 are not available for credit for students taking SOC 211-212, and this

course fulfills the methodology requirement for the major.

Prerequisites: SOC 103 or 104 and satisfaction of mathematics proficiency requirement.
Fall (211) and spring (212), 4 credits each semester

SOC 232 Psychological and Social Foundations of Education

A competency-based course for students seeking secondary education teacher certification. Principles of psychology and sociology relevant to the student's future role will be considered. Topics will include traditional and contemporary issues in adolescent psychology; theories of learning; educational institutions and social processes of learning in relation to structures of societies. This course is identical with PSY 232.

Fall and spring, 3 credits

SOC 243 Sociology of Youth

Adolescent socialization; age structures and intergenerational conflict; peer groups and youth subcultures.

Fall and spring, 3 credits

SOC 247 Women and Men

The roles of women and men in modern society; changing relations between the sexes; women's liberation and related movements.

Fall and spring, 3 credits

SOC 301 Principles of Sociology

An introduction for upper division students committed to a major in a different field who want to find out how the sociologist looks at the world. The course will illustrate the use of a sociological perspective in the analysis of the social world, rather than focus on sociological concept development. Topics to be included will be chosen from among the following: ethnic relations, deviance and delinquency, socialization, organizational analysis, the family as a social institution, population analysis, urban life. Not for major credit nor for credit in addition to SOC 103 or 104 or 302. May be used as a prerequisite for higher level sociology courses in place of SOC 103.

Prerequisites: Upper division standing and a major other than sociology.
Fall, 3 credits

SOC 302 American Society

Intended for upper division students committed to a major in a different field who wish to look at American society through the eyes of the sociologist. Included in

the course is the sociological view of American social structure in terms of power and patterns of inequality, the legal system, ethnic relations, social mobility, and urban problems. Not for major credit nor for credit in addition to SOC 103 or 104 or 301. May be used as a prerequisite for higher level sociology courses in place of SOC 103.

Prerequisites: Upper division standing and a major other than sociology.
Spring, 3 credits

SOC 303 Social Stratification

Theories of social stratification; patterns of differentiation in wealth, prestige, and power; social mobility; power structures and elites.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall, 3 credits

SOC 304 Sociology of the Family

Analysis of the family as a major social institution; examination of the structure and functions of the family in various societies.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Spring, 3 credits

SOC 307 Social Planning

Deliberate attempts to introduce change in society; methods of evaluating the success of social change programs; conditions affecting the success of such programs.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall, 3 credits

SOC 308 Poverty and Social Welfare

Consideration of the historical and contemporary social definitions, distribution, and status of the poor in the United States; analysis of alternative explanations for their situation; and study of the effects of social welfare institutions upon the poor.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall and spring, 3 credits

SOC 309 Social Conflicts and Movements

An examination of aggregate phenomena; "revolutionary" and "counter-revolutionary" programs and organizations. Historical and cross-cultural examples will be emphasized.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Spring, 3 credits

SOC 310 Ethnic Relations

The formation, migrations, and conflicts of ethnic and other minority groups; prejudice, discrimi-

nation, and minority self-hatred.
Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall and spring, 3 credits

SOC 315 Sociology of Technology

Social systems and the "tools" of various kinds which they develop to shape their environment. Concentration on technologies of highly developed, modern societies and on ethical issues involved in attempts to guide the development and effects of these technologies. Consideration will be given to the role of technology in all societies, from the simplest to the most developed.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Spring, 3 credits

SOC 320 Population Problems

Sources and consequences of changes in population size and composition; the "demographic explosion."

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall, 3 credits

SOC 323 Urban Society

The emergence of cities and the process of urbanization; an examination of urban structure; the consequences of the urban milieu for interpersonal relations and institutions.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall and spring, 3 credits

SOC 335 Sociology of the American Labor Movement

An analysis of the rise and present state of the American labor movement with emphasis on the growth of large corporations, the role of the state in American industry, imperialism, and the influence of class, race, and gender in American society.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Spring, alternate years, 3 credits (not offered 1982-83)

SOC 336 Social Change

The impact of technological, generational, and cultural forces on social organization from a historical and comparative perspective.
Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall, 3 credits

SOC 337, 338 Sociology of Deviance and Crime

An integrated consideration of deviance, crime, and delinquency from a sociological perspective. The first semester will focus on competing theories of the nature and etiology of deviant and criminal behavior, problems of research in these areas (and the related technical, legal, and ethical issues), and substantive findings for "non-victim" crimes and legal but morally stigmatized behavior. Second semester will include

topics on the substantive findings about juvenile crime, adult victim crime, and a sociological view of the control of deviant and criminal behavior.

Prerequisites to SOC 337: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences. *Prerequisite to SOC 338:* SOC 337.

Fall and spring, 3 credits each semester

SOC 341 Historical Sociology

Sociological theories and methods applied to the study of historical phenomena such as revolutions, migration, and industrialization.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences. A history course is also recommended.

Fall, alternate years, 3 credits (not offered 1981-82)

SOC 351 Sociology of Literature

Literature as a symbolic expression of social structure; the relations between literary movements and other forms of social activity.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.

Spring, alternate years, 3 credits (not offered 1981-82)

SOC 352 Sociology of Religion

The ways in which sociocultural processes affect and are influenced by religious belief systems and organizations; changing structures and functions of religious institutions.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall, 3 credits

SOC 353 Sociology of Science

Social influences on the choice of research problems and on the behavior of scientists; the social organization of scientific enterprises.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall, alternate years, 3 credits (not offered 1982-83)

SOC 354 Sociology of Law

Law as an institution of social control; the legal profession, court systems, and bureaucratization of the legal process; the relation of law to social change.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Spring, 3 credits

SOC 356 Political Sociology

Social structure and processes as affecting, and affected by, political behavior and organizations; the sociology of power, authority, and legitimacy.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.

Fall and spring, 3 credits

SOC 358 War and Military Institutions

The role of violence in social affairs; military organizations; civil-military relations.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall, alternate years, 3 credits (not offered 1981-82)

SOC 360 Comparative Social Structures

The principal complex societies and their central institutions, with emphasis on industrialization and economic development.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Spring, 3 credits

SOC 361 Historical Development of Contemporary Sociology

Main currents in the development of theories and empirical studies of society, culture, and personality.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall and spring, 3 credits

SOC 362 Introduction to Sociological Theory

A systematic treatment of the dominant general orientations in sociology including structural-functional analysis and symbolic interactionism.

Prerequisite: SOC 361.
Fall and spring, 3 credits

SOC 370 Work and the Professions

The social patterning of work situations and careers; relations of work organizations to each other and to larger social structures.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall, 3 credits

SOC 372 Mass Communications

Social influences on the content and effects of mass communications; communication systems; the public functions of mass communication.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall, 3 credits

SOC 373 Collective Behavior

Major unstructured social phenomena—such as mob violence, panics, fads and fashions, and

public opinion—as the outcome of collective problem-solving activity.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Spring, 3 credits

SOC 380 Social Psychology

Individual and social factors in human behavior; the structure of personality; identity development; communication processes; and attitudes.

Prerequisites: SOC 103 or 104 or PSY 101 and either SOC 201 or two other courses in the social sciences.

Fall and spring, 3 credits

SOC 381 Sociology of Organizations

Bureaucracy as a form of organization; the structure of relations between and within organizations.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.

Spring, alternate years, 3 credits (not offered 1982-83)

SOC 382 Small Groups

The structure and functioning of face-to-face groups in field and laboratory settings.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Spring, alternate years, 3 credits (not offered 1981-82)

SOC 387 Sociology of Education

Educational institutions as social systems; social patterns in the life-cycles of students and teachers; class and ethnic factors in educational development.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall, 3 credits

SOC 390 Special Topics

Lectures on topics of current sociological interest which will be announced before the start of the term. May be repeated as the subject matter differs.

Prerequisites: SOC 103 or 104 and either SOC 201 or two other courses in the social sciences.
Fall and spring, 3 credits

SOC 401 Senior Seminar in Sociology

Special projects and research papers on a topic of sociological interest, which will be announced before the start of the term. May be repeated once.

Prerequisite: Permission of instructor.
3 credits

SOC 405 Seminar in Methods of Social Research

Comparisons of assumptions underlying various statistical and methodological procedures; the interplay of substantive theory and empirical research; applied research and policy implications; the social contexts of research. The seminar should integrate the work that the student has taken in his major and minor.

Prerequisite or corequisite: Completion of all other requirements for the minor in methods of social research.

Fall, 3 credits

SOC 447 Independent Readings

Selected readings, usually in a special area, to be arranged by the student and the instructor. May be repeated. No more than six credits of SOC 447 and SOC 487 may be counted toward the major. A maximum of three credits may be taken with any one faculty member in any one semester.

Prerequisites: Written permission of instructor and of Director of Undergraduate Studies.

Fall and spring, 1 to 6 credits

SOC 487 Independent Research

Designing and carrying out a research project selected by the student and arranged by the student and the instructor. May be repeated. No more than six credits of SOC 447 and SOC 487 may be counted toward the major.

Prerequisites: Written permission of instructor and of Director of Undergraduate Studies.

Fall and spring, 1 to 6 credits

SOC 488 Internship

Participation in local, state, and national public and private agencies and organizations. Students will be required to submit written progress reports and a final written report on their experience to the faculty sponsor and the department. Grading in this course shall be Satisfactory/Unsatisfactory only. May be repeated up to a limit of nine credits.

Prerequisites: Twelve credits in sociology (including SOC 201), permission of instructor, department, and Undergraduate Studies Office.

Fall and spring, 3 to 9 credits

Department of Theatre Arts

Professors

John Newfield, Emeritus, Ph.D. University of Vienna (Dramaturgy; theatre history; opera)

Thomas Neumiller, M.F.A. Yale University (Acting; directing; mime)

Associate Professors

Leonard Auerbach (Acting; stage management)

William Bruehl, Ph.D. University of Pennsylvania (Directing; Asian theatre; modern drama; improvisation)

Richard Dyer-Bennet (Voice)

Richard Hartzell, M.Ed. Pennsylvania State University (Documentary film; film-making; television as communication)

Jonathan Levy, Chairman, Ph.D. Columbia University (Dramaturgy; criticism; playwriting)

Louis Peterson, M.F.A. Yale University (Playwriting)

Assistant Professors

Gordon S. Armstrong, Ph.D. University of California, Berkeley (Theatre history)

Steven Pollock, M.F.A. Yale University (Technical theatre; lighting design)

Campbell Baird, M.F.A. New York University (Stage design)

Sigrid Insull, M.A. Indiana University (Costume design, makeup)

Requirements for the Major in Theatre Arts

The major in theatre arts leads to the Bachelor of Arts degree. The following courses are required:

	Credits
I. Study Within the Area of the Major	
A. Core Curriculum (no more than two theatre courses may be taken per semester by freshmen):	
THR 104 Play Analysis	3
THR 112 The Acting Process (for those not planning a performance emphasis) or THR 105 Acting I (for those planning a performance emphasis)	3
THR 200 Fundamentals of Technical Theatre	3
THR 281, 282 Theatre History I, II	6
B. Programs of Study (see below)	21
C. THR 300 Seminar in Current Production (four times)	4
THR 401 Senior Seminar	3
THR 402 Senior Thesis	3
Sub-Total	46
II. Study in Related Areas	
One course each from Art, Music, and English from those listed below:	
ARH 101, ARH 102, MUS 101, MUS 119, EGL 241, EGL 242, EGL 243 (recommended)	9
Total	55

Programs of Study

After completing the core courses, the student in consultation with an assigned advisor elects to emphasize a specific area of interest or a general program, choosing courses from the following groups.

General

Individualized program, including courses from all areas.

Acting

THR 130, 205, 218, 222, 230, 242, 318, 322, 332, 342, 352, 362, 482

Directing

THR 205, 225, 226, 255, 324, 325, 332, 333, 339, 489

History and Theory

THR 214, 225, 324, 325, 354, 484

Technical Theatre/Design

THR 203, 255, 313, 316, 323, 336, 345, 346, 483, 486

Theatre Management/Stage Management

THR 106, 214, 255, 316, 324, 333, 336, 345, 481

Media-Communications

Although at present no formal major exists in the area of media-communications, a series of courses are offered that provide the student with a broad view of radio, television, and film, as well as intensive work in certain selected areas. The courses listed below are recommended.

THR 137, 138 Understanding Media I, II
 THR 270 Broadcasting Principles and Practices
 THR 272 Introduction to Television
 THR 325 Writing for the Media
 THR 371 Techniques of Film Production

Other courses are found within the regular offerings of the department.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

THR 101 Understanding Theatre

An introduction to theatre performance. Students participate in all aspects of theatrical production, such as tryouts, rehearsals, designing sets, directing scenes, playwriting, and critical analysis. A fee will be charged for theatre trips. Not open to upper division theatre majors and not for theatre major credit.

Fall and spring, 3 credits

THR 104 Play Analysis

A close reading of several plays of different periods and styles and a general examination of the elements out of which all plays are made—dialogue, character, plot, etc. Upper division theatre majors must have permission of instructor.

Fall and spring, 3 credits

THR 105 Acting I (Formerly THR 212)

A study of the vocabulary and skills of the actor's craft. The first steps of the discipline of acting are considered. The first half of the course is spent in lecture and workshop sessions exploring the uses of such techniques as sense memory, concentration, and relaxation. The second half of the semester attempts to apply these techniques to work in scene study. May not be taken for credit in addition to THR 112.

Prerequisites: Audition and permission of instructor.

Fall and spring, 3 credits

THR 112 The Acting Process

Introduction to the actor's craft. The broader aspects of the discipline are examined during lecture and workshop sessions; analysis, memorization, and performance of short scenes. Attendance at departmental productions is required. Recommended for non-majors and theatre students who do not anticipate emphasizing the performance areas. May not be taken for credit in addition to THR 105.

Fall and spring, 3 credits

THR 117 Film Expression

An introduction to those formative means unique to film by which the director-author expresses ideas. Examples of the work of great directors from Griffith to Godard are viewed, analyzed, and discussed. Narrative-dramatic film is emphasized, but Brakhage, Belson, Whitney, and others are not ignored. A foundation for both future film critics and future film-makers. This course is required for admission to all other film courses.

Fall, 3 credits

THR 120 Verbal Communication

Preparation of various types of material for verbal presentation. Basic studies in the process of interpersonal communication and

small and large group communication. Practice in the orderly preparation and verbal presentation of materials in the areas of process explanation and persuasion. Basic skills of public speaking.

Fall or spring, 3 credits

THR 130 The Human Voice

A basic practical course in voice production for the actor. Students will participate in exercises for developing the speaking voice with an emphasis on the involvement of the body. Fundamentals of the International Phonetic Alphabet will be taught.

Prerequisites: Audition and permission of instructor.

Fall and spring, 3 credits

THR 137 Understanding Media I

An introductory course in media: movies, still photography, video, and sound. Theory, history, and aesthetics are examined through laboratory workshops. The course is intended to develop an understanding of, and skills in, audio and visual media for the student with a general interest as well as for the student who plans to pursue further study in the scholarly or professional field.

Fall or spring, 3 credits

THR 138 Understanding Media II

Further examination of theory, history, and aesthetics of electronic media, video, and sound. Laboratory workshops are employed to develop basic skills in electronic audio and visual techniques and their application.

Prerequisite: THR 137.

Fall or spring, 3 credits

THR 200 Fundamentals of Technical Theatre (Formerly THR 216)

A course in basic technical theatre practice and stagecraft, incorporating elements of drafting, construction, painting, and the handling of stage scenery and properties. Laboratory work in theatre sound is also included.

Fall and spring, 3 credits

THR 203 Graphic Techniques for the Stage

A course in the development of plans, sections, elevations, technical drawings, construction drawings, and sketching techniques in various media for theatrical design.

Prerequisite: THR 200.

Fall, 3 credits

THR 205 Acting II (Formerly THR 312)

Continued training in basic techniques. Advanced work in character analysis and development. Emphasis is on scene study and

introduction to styles of acting.

Prerequisite: THR 105 or 112 and audition.

Fall and spring, 3 credits

THR 214 Modern Drama on Stage

A seminar examining the forms of modern drama in the context of production from 1860 to the present.

Prerequisite: THR 104 or EGL 193.

Fall or spring, 3 credits

THR 217 Introduction to Film-making

The first course in film-making techniques requires students to explore the aesthetics of motion through the use of a movie camera and through the experience of combining moving images, by creative editing, into meaningful sequences.

Prerequisites: THR 117 and permission of instructor.

Spring, 3 credits

THR 218 Movement

An introduction to the elements of movement. Structured exercise to encourage appropriate body functioning—balance, coordination, flexibility, and articulateness.

Prerequisite: Sophomore standing.

Fall and spring, 3 credits

THR 222 Stage Makeup

An investigation into the theory, techniques, and materials of stage makeup and its relation to character analysis. The students will explore aspects of facial anatomy, color theory, and graphic representation of three-dimensional form. They will also have the opportunity to plan and design makeup for department productions.

Prerequisite: THR 105 or 112.

Fall or spring, 2 credits

THR 223 Stage Costume I

An introduction to costume design including graphic communication and basic costume construction. Exercises in design rendering techniques, pattern drafting, and design fundamentals.

Prerequisite: Permission of instructor.

Fall, 3 credits

THR 225 Playwriting

A workshop devoted to planning and writing finished scripts for the stage. Students will write original material for possible production in theatre workshops.

Prerequisite: EGL 102 or 202 or 285, or THR 104.

Fall or spring, 3 credits

THR 230 Voice and the Actor

The continuation of voice study explores increasing resonance, range, articulation, and the link of acting, involving improvisation and the use of text. Continued work in International Phonetic Alphabet will be taught.

Prerequisites: THR 130, audition, and permission of instructor.

Fall or spring, 3 credits

THR 242 Mime I

A beginning course in the techniques of mime. The fundamentals of creating illusions (the wall, the rope, objects, etc.) and the various mime walks are studied. Classes alternate mime exercises with the presentation of short mime pieces by students. The importance of mime for the actor is stressed.

Prerequisites: Audition and permission of instructor.

Fall, 3 credits

THR 244 Summer Theatre Workshop

Students in the course, in addition to working with the instructor throughout the planning, preparation, and execution of a summer stock series, will assume key positions of responsibility such as stage manager, head technician, and principal acting roles. May be repeated. May count toward major for a maximum of six credits.

Prerequisite: Permission of instructor.

Summer, 1 to 6 credits

THR 270 Broadcasting Principles and Practices (Formerly THR 107)

The history and evolution of the broadcasting industry in the United States from the early days of radio to the current sophisticated communication system. The course will provide the student with a basic understanding of the industry and its relation to regulatory agencies and the public.

Prerequisite: THR 138.

Fall or spring, 3 credits

THR 272 Introduction to Television (Formerly THR 127)

How television works and an examination of the skills and techniques of the professionals and craftsmen who make it work. Directors, writers, cameramen, performers, and advertising agency people will be guest lecturers. Equipment and technique will be demonstrated, but this is not a hands-on course. Although broadcast television (both commercial and public) will be emphasized, cablevision, instructional TV, industrial training, and experiments in community communication will also be examined.

Prerequisites: THR 117 and 138.

Fall or spring, 3 credits

THR 281, 282 Theatre History I, II (Formerly THR 123, 124)

Evolving architectural concepts, scenic conventions, technology, and production techniques will be studied with reference to corresponding literary, social, and cultural trends. I, Ritual to 1660. II, 1660 to 1932.

Prerequisite: THR 105 or 112.

Fall (281) and spring (282), 3 credits each semester

THR 300 Seminar in Current Production

Students work as assistants or apprentices on current departmental productions, closely supervised

by the faculty and production staff. Weekly seminars examine the theoretical basis of all practical work being performed. Areas of assignment and examination include directing, design (costume, settings, lights), dramaturgy, theatre technology, management, audience development, acting. May be repeated.

Prerequisites: Core curriculum.
Fall and spring, 1 credit

THR 316 Advanced Technical Theatre

An advanced study of the materials and techniques of stagecraft, as well as methods of problem-solving and interaction in technical production. Emphasis on technical direction, advanced drafting, budgeting, crew organization, and planning.

Prerequisites: THR 200 and permission of instructor.
Spring, 3 credits

THR 318 Movement for Actors

Application of movement concepts to acting problems. Awareness of the students' personal movement qualities, particularly in relation to characterization and interaction; the relationship of movement to voice and speech and to set, props, and costume.

Prerequisites: THR 218 and permission of instructor.
Fall or spring, 3 credits

THR 322 Acting III

Acting for students who have demonstrated high potential in Acting II. Scene work will be limited to one or two major playwrights.

Prerequisites: THR 205, audition, and permission of instructor.
Spring, 3 credits

THR 323 Stage Costume II

An advanced course in costume design involving play analysis, design, and presentation techniques. Bi-weekly projects and critiques with special emphasis on historical research.

Prerequisites: THR 223 and permission of instructor.
Spring, 3 credits

THR 324 Current Trends in Experimental Theatre

A study of various experimental contemporary theatres in Europe and the U.S. and analysis of their goals, methods of working, and productions. Relations of these contemporary theatres with traditional non-literary forms of popular theatre, such as pageants, carnivals, circus, Commedia dell'Arte. Exploration of different types of acting, directing, and staging through practical exercise using techniques, scenarios, and scripts from the different theatres. A seminar-workshop in which guest artists may take part.

Prerequisite: THR 104 or 214 or EGL 193.
Fall or spring, 3 credits

THR 325 Writing for the Media

The basic preparation and construction of materials for use in media: radio, television, and motion pictures.

Prerequisites: THR 225 and permission of instructor.
Fall and spring, 3 credits

THR 330 Oral Interpretation

The final link in the voice-to-acting process. Specific skills in the style of oral interpretation will be taught as approaches to prose and poetry reading and analysis. A Reader's Theatre project may emerge.

Prerequisites: THR 230, audition, and permission of instructor.
Fall and spring, 3 credits

THR 332 Improvisation

Work will consist of workshop and discussion sessions during which students will drill in both verbal and non-verbal exercises and assorted theatre games leading to the development of improvisational skills for both single and group work. May be repeated once.

Prerequisites: Audition and THR 105 or 112.
Fall or spring, 3 credits

THR 333 Directing I (Formerly THR 239)

An introduction to the work of the director in selecting and preparing the play for production. Problems of style, interpretation, and execution. The director's approach to the actor.

Prerequisites: THR 104, 105 or 112, 200, 281, 282.
Fall, 3 credits

THR 336 Stage Management

A course in backstage theatre management. Includes analysis of the playscript to serve the physical production most efficiently; blueprint and light plot reading; making of properties.

Prerequisites: THR 200 and permission of instructor.
Fall or spring, 3 credits

THR 339 Directing II

Students will apply the skills and techniques learned in Directing I to specific scenes and plays.

Prerequisites: THR 205 and 333.
Spring, 3 credits

THR 342 Mime II

A continuation of the beginning mime course. More intensive work on performance techniques, putting together mime pieces, considerations of mime costume and makeup, and, if possible, actual performance.

Prerequisites: THR 242 and permission of instructor.
Spring, 3 credits

THR 345 Stage Lighting (Formerly THR 226)

Basic elements of lighting principles, instrumentation, and control. Introduction to color, design, and aesthetics, including the planning of designs for individual plays.

Prerequisites: THR 104, 200, and permission of instructor.
Fall, 3 credits

THR 346 Advanced Stage Lighting (Formerly THR 326)

Advanced topics in lighting design intended to acquaint the student with highly specialized lighting genres. Subjects will include lighting for repertory theatres, the dance, and musical theatre. This is strictly a studio design course intended for those students who have satisfactorily completed THR 345.

Prerequisites: THR 345 and permission of instructor.
Spring, 3 credits

THR 352 Acting IV

Advanced scene study in various styles. Students will choose scenes from the repertoire which represent different acting styles; e.g., Elizabethan and Jacobean, Restoration, Victorian, Twentieth-Century Realism, Brechtian. Work will involve the exploration of the scenes, how they reflect the manners, costume, movement, and attitudes of the time; and techniques to be employed for effective staging and acting.

Prerequisites: THR 322 and audition.
Fall or spring, 3 credits

THR 354 Special Topics

In-depth study of a specific subject in the history, theory, aesthetics, criticism, dramaturgy, or the dramatic tradition of the theatre, such as: the epic theatre tradition; medieval and renaissance criticism; methods of reading plays; analyses of dramatic texts; notions of the absurd from Aristophanes to Brecht. May be repeated.

Prerequisites: Core curriculum and permission of instructor.
Fall or spring, 3 credits

THR 355 Stage Design I (Formerly THR 213)

An introduction to the aesthetics of scene design with an emphasis on the designer's graphic language. Basic exercise in drafting, perspective drawing, and simplified rendering techniques that pertain to the organization and presentation of the design idea.

Prerequisites: THR 104, 200, and permission of instructor.
Fall, 3 credits

THR 356 Stage Design II (Formerly THR 313)

Principles of design for the theatre including color composition and rendering techniques. These techniques are related to the aesthetics of dramatic composition and the flexibility of modern staging.

Prerequisites: THR 200 and 355.
Spring, 3 credits

THR 357 Topics in Film and Television

A detailed study of a particular period in the history or development of film or television. Topics in film might include: the Biograph Films of 1902-08, the history of film of a particular nation. Topics in television might include: a comparative study of stage plays adapted for television, origin and theory of the docu-drama. May be repeated as topics change.

Prerequisites: THR 117, 137, and 272.
Fall and spring, 3 credits

THR 362 Advanced Acting: Film and Video

An exploration of the theory and technique of film and video performance. For advanced acting students who have had both classroom and on-stage production experience.

Prerequisites: THR 137, 322, audition, and permission of instructor.
Fall or spring, 3 credits

THR 371 Techniques of Film Production (Formerly THR 227)

Instruction in planning short films and experience in executing the plans. Students may make their own films or assist a more advanced film-maker according to the discretion of the instructor. Such technical skills (lighting, sound recording, editing) as are required by the films being made will be taught.

Prerequisites: THR 138 and 217.
Fall, 3 credits

THR 372 Film-making Workshop (Formerly THR 327)

Continues instruction and practical experience in the planning and production of motion pictures. Whatever advanced technical skills are required by the films produced will be taught; 16mm equipment will be used.

Prerequisites: THR 371 and permission of instructor.
Spring, 3 credits

THR 401 Senior Seminar

A seminar in theatre theory. It involves examination of current theatrical practice as it relates to theatrical theory. Political theatre, didactic and activist theatre, poetic drama, Shakespearean and classical theatre production. Artaud, Brecht, and other major theorists will be examined.

Prerequisites: Theatre arts major, senior standing, and permission of department.
Fall, 3 credits

THR 402 Senior Thesis

Practicum thesis work such as acting, recitals, direction of a play, design of sets or costumes for a

production, independent dramaturgical work relating to a production.

Prerequisites: Theatre arts major, senior standing, and permission of department

Spring, 3 credits

THR 475 Undergraduate Teaching Practicum I

Each student will be responsible for some aspect of a course, depending on his or her particular skills. The student will receive regularly scheduled supervision from the instructor. Responsibilities may include: preparing material for discussion, keeping records, helping students with their projects, holding regular office hours. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: Theatre arts major, senior standing, and permission of instructor and department.

Fall and spring, 3 credits

THR 476 Undergraduate Teaching Practicum II

Further training in the teaching of theatre courses. Either increased or different responsibilities will be assigned, adding to the quality of academic experience already gained in THR 475. Grading in this course shall be Satisfactory/Unsatisfactory only.

Prerequisites: THR 475 and permission of instructor and department.

Fall and spring, 3 credits

Projects Courses and Internship

Applications for projects courses must be submitted by the end of the Advanced Registration period. Students may take *no more than* six credits of projects courses (481-487 and 489).

THR 481 Projects in Production Management (Formerly THR 488)

Advanced work on a particular problem in theatre management under close faculty supervision. The student may supervise the house and box office for a season, or perform a theoretical task such as write a paper on the history of management in the American theatre during the nineteenth and twentieth centuries.

Prerequisites: Core curriculum, THR 336, and permission of department.

Fall and spring, 3 credits

THR 482 Projects in Performance

Intensive, individual work on performance under faculty supervision. May be the preparation of a major role to be presented before an audience either on or off campus.

Prerequisites: Core curriculum, THR 352, and permission of department.

Fall and spring, 1 to 3 credits

THR 483 Projects in Theatrical Design

Advanced individual work on theatrical design, i.e., settings or costumes. For example, the cos-

tume designs for a three-act play including concept, sketches, renderings, fabric swatches, etc., or the design for a setting for a community theatre project.

Prerequisites: Core curriculum, THR 323 or 356, and permission of department.

Fall and spring, 1 to 3 credits

THR 484 Projects in History, Dramatic Literature, and Theory

Advanced individual work on a specific problem related to theatre history, dramatic literature, or dramatic theory.

Prerequisites: THR 354 and permission of department.

Fall and spring, 1 to 3 credits

THR 485 Projects in Script Writing

Advanced individual work resulting in a script for stage, screen, or television.

Prerequisites: THR 325 and permission of department.

Fall and spring, 1 to 3 credits

THR 486 Projects in Technical Theatre

Advanced work under faculty supervision on some phase of technical theatre, for example the design and execution of a lighting plot for a University production or a community theatre or the design

for a new theatre, including floor plans and elevations.

Prerequisites: Core curriculum, THR 316 or 346, and permission of department.

Fall and spring, 1 to 3 credits

THR 487 Projects in Film and Television

Advanced individual work in film or television resulting in either a scholarly paper, film footage, or a video tape.

Prerequisites: THR 372 and permission of department.

Fall and spring, 1 to 6 credits

THR 488 Internship

Participation in a professional organization that creates and presents public performances, creates and presents to the public works in the media arts, or concerns itself with the management or funding of arts organizations. Students will be required to submit written progress reports to their department sponsors and a final written report to the department faculty. Supplementary reading may be assigned. Grading in this course shall be Satisfactory/Unsatisfactory only. May be repeated up to a limit of nine credits.

Prerequisites: Permission of instructor, department, and Undergraduate Studies Office.

Fall and spring, 3 to 9 credits

THR 489 Projects in Directing

Individual work under faculty supervision as the director of a play to be performed before an audience either on or off campus.

Prerequisites: Core curriculum, THR 339, and permission of department.

Fall and spring, 1 to 3 credits

Unaffiliated Courses

The courses listed in this section are offered for their general interest to students rather than as a part of any major or minor program. The designator INT is used only for courses giving advanced training in academic skills; these courses do not satisfy distribution requirements. The designators HUM, SBS, and SCI indicate interdisciplinary courses focused primarily on the arts and humanities, the social and behavioral sciences, and the natural and mathematical sciences, respectively; these courses satisfy distribution requirements. A student who wishes to use any of these courses to fulfill the requirements of a major or minor program should apply to the department or to the other agency that supervises the program.

Courses

See p. 45, Course Credit and Prerequisites, and Numbering System.

INT 180 Women's World, Women's Place: An Introduction to the University for Re-entry Students

Designed to help re-entry students adjust to school and, specifically, to Stony Brook. After meeting with counselors, librarians, instructors from the Mathematics Learning Center, and others, for several weeks, students will turn to reading and writing in women's studies as a focus for reviving academic skills.

Topics of concern to women will be studied from both an historical and contemporary perspective. Discussion will be encouraged as will the writing of several short papers, including a research paper. Written work will receive careful guidance and criticism.

Prerequisite: Open only to students returning to school after at least five years' absence.

Fall, 3 credits

INT 250 Academic Research

Provides a basic understanding of the information process through the study of classification schemes, research strategies, abstracting, use of indexes and abstracts, reference materials, government documents, monographs, serial literature, and various automated retrieval systems. Should be taken in conjunction with a course requiring a research paper. Fifty-item bibliography required.

Fall and spring, 2 credits

**HUM, SBS, SCI 291
Seminar on Contemporary
Issues**

This variable topics course, designed primarily for lower division students, will explore contemporary issues in the light of two or more disciplines. Topics explored primarily in the light of disciplines in the humanities will be assigned the HUM designator; those in the natural and mathematical sciences, the SCI designator; and those in the social sciences, the SBS designator. Topics will be generated by faculty members or developed in response to student suggestions.

Fall and spring, 1 credit each

**HUM, SBS, SCI 491
Seminar on Contemporary
Issues**

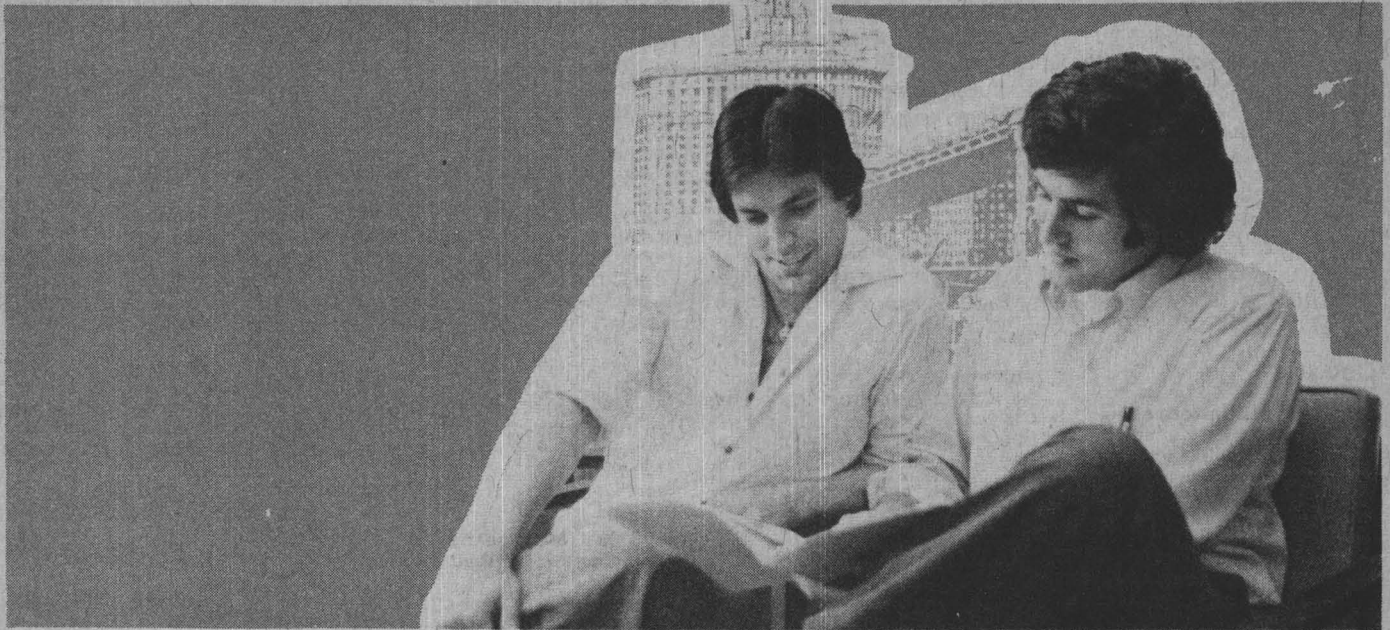
This variable topics course, designed for upper division students, will explore contemporary issues in the light of two or more disciplines. Topics explored primarily in the light of disciplines in the humanities will be assigned the HUM designator; those in the natural and mathematical sciences, the SCI designator; and those in the social sciences, the SBS designator. Topics will be generated by faculty members or developed in response to student suggestions.

Fall and spring, 1 credit each

**SBS 360 Death
(Formerly INT 360)**

Lectures and discussions will include the following topics: the evolutionary significance of death, death as a social process, death and a philosophy of life, the fear of death, death in other cultures, the rhetoric of death.

Spring, 3 credits



W. Averell Harriman College for Urban and Policy Sciences

Professor

Robert Nathans, Ph.D. University of Pennsylvania (Energy policy)

Associate Professors

Stanley M. Altman, Ph.D. Polytechnic Institute of Brooklyn (Analytic methods; evaluation of public agencies)

Adele Brody, Part-time, M.L.L. New York University School of Law (Urban law; public administration in a policy analysis framework)

T. Owen Carroll, Ph.D. Cornell University (Analytic methods; energy policy; social policy). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1973-74

Pearl Kamer, Adjunct, Ph.D. New York University (Application of economic theory to urban, suburban, and regional problems)

Lee Koppelman, D.P.A. New York University (Regional planning)

Harry Weiner, Dean, S.M. Massachusetts Institute of Technology (Analysis and redesign of public organizations)

Dennis R. Young, Ph.D. Stanford University (Decision-making program evaluation; social policy)

Assistant Professors

Leland Neuberg, Ph.D. University of California, Berkeley (Social conflicts surrounding the question of municipal vs. private ownership of electrical power systems)

Thomas Sexton, Ph.D. State University of New York at Stony Brook (Operations research, especially as applied to the analysis of transportation problems)

Richard Silkman, Ph.D. Yale University (Economic analysis as it relates to education policy)

John P. Walsh, Ph.D. State University of New York at Stony Brook (Application of economic analysis problems of health policy)

Instructor

Carl Carlucci, M.S. State University of New York at Stony Brook (Management information systems)

Lecturers

Barbara Cohn, B.A. New York University (Analysis of municipal services)

Gary Lefkowitz, M.P.A. Harvard University (Manpower policy, quality of work life, productivity)

Teaching Assistants

Estimated Number: 1

The W. Averell Harriman College for Urban and Policy Sciences offers professional training for positions in government agencies at the federal, state, and local levels and for positions in the private sector that relate to public policy. Although the College's main program is at the graduate level, its Accelerated Program is open to students who have, during their freshman and sophomore years, demonstrated both an interest in public service careers and an aptitude for quantitative analysis. Graduates work as budget analysts, planners, managers, project leaders, and consultants in agencies dealing with public problems such

as energy, transportation, criminal justice, science and technology, health, education, etc.

Most Accelerated Program students receive their baccalaureate degree from the College of Arts and Sciences, in which they choose a major that accepts Urban and Policy Sciences

courses toward fulfillment of requirements. (The Social Sciences, Liberal Arts, Economics, and Political Science majors mesh best with the Accelerated Program.) University and College graduation requirements, therefore, are the same as those for Arts and Sciences students (see p. 42). Students may choose a major in the College of Engineering and Applied Sciences, in which case their College requirements are the same as those for Engineering and Applied Sciences students (see p. 156). Students receive the Master of Science degree in Urban and Policy Sciences at the completion of the third year.

Information can be obtained from the *Graduate Bulletin* and the Director of Education of the W. Averell Harriman College for Urban and Policy Sciences, 314 Old Physics, State University of New York at Stony Brook, Stony Brook, New York 11794.

Courses

UPS 311, 312 Introduction to Urban and Policy Sciences

This course covers four related topics, which are not separable, nor can they be taken as individual courses. The topics are: *Economic Analysis*—Theory is

applied to a number of public policy problems from the outset. Sufficient economic theory is taught to prepare the student for the graduate program, but emphasis is placed on attacking real problems and recognizing lacunae and inadequacies in the present stock of theory. *Administration*—Personnel, information, and control systems are examined, mainly through the case method, with a view toward preparing the student to look for evi-

dences of pathology in public agencies. *Quantitative Methods*—Sets, logic probability, matrices, algebra, and related topics are taught from the viewpoint of creating a tool-kit with which the public policy analyst and manager can approach problems that contain nonmathematical as well as mathematical aspects. The computer is introduced in the same way. *Case Studies*—Formal analyses are studied, particularly those on which important public policy decisions have been based (the Coleman report, the Fleishman report on educational financing, the Carnegie Commission report on public television, the Civil Rights Commission report on pupil opportunity, etc.) with a view toward identifying their theoretical underpinnings.

Prerequisite: Permission of Dean. *Fall and spring, 12 credits each semester*

UPS 331 Intermediate Economics for Public Policy Analysis

An intermediate level course on economic theory and analysis for public policy. The course gives a treatment of welfare and efficiency implications of decentralized economies under various degrees of competition; discusses welfare economies; develops the rationale for public activity in a de-

centralized economic system and the concepts of consumer's surplus, public goods, externalities; considers the treatment of the distributional implications of public decisions; and discusses pricing and output policies for government industries and finance and their effect on the economy.

Prerequisites: UPS 311, 312. *Fall, 3 credits*

UPS 341 Models for Policy Making

Comprehensive overview of the principles of policy analysis in the public sector. Emphasis is placed on developing the student's ability to organize unstructured problems and to evaluate policy alternatives. Case studies of public sector problems in diverse areas such as housing, education, energy, and environmental control are included.

Prerequisites: UPS 311, 312. *Fall, 3 credits*



College of Engineering and Applied Sciences

Programs in Engineering and Applied Sciences

Technology is now being asked to provide help in solving a wide range of industrial and social problems: energy, transportation, urban development, environmental control, health services, and education. In parallel, engineers must contribute to the improvement of the quality of life in the developing nations. In all of these endeavors, the engineering problems are intimately related to social, economic, and political conditions. Consequently, the engineering program at Stony Brook emphasizes the development of educational experiences in not only the engineering areas, but also the underlying natural sciences, the related social and behavioral sciences, and the humanities.

In order to realize these objectives, the engineering and applied sciences curriculum is much more flexible than at many other schools. The student who specializes in a particular field such as electrical, mechanical, or materials engineering, as well as applied mathematics and computer science, may plan an interdisciplinary program specifically adapted to his or her career goals involving other departments or divisions of the University; he or she may choose a program of breadth as preparation for later specialization in architecture, business, law, or medicine. In all of these paths there is strong emphasis on individual projects in the junior and senior years when students are encouraged to work closely with members of the faculty on projects of interest to the students.

Students interested in engineering have a choice of six majors. The College of Engineering and Applied Sciences offers five different majors, listed below, and in collaboration with this college, the College of Arts and Sciences offers a Bachelor of Science with a major in Engineering Chemistry.

Bachelor of Science in:
Applied Mathematics and Statistics
Computer Science

Bachelor of Engineering in:
Engineering Science
Electrical Engineering
Mechanical Engineering

Each student is enrolled in one of these five majors. There is, in addition, great flexibility for specialization toward desired careers because of the freedom provided by electives within any of the five majors. Thus, the student may decide to emphasize: *Computer Engineering* within electrical engineering; *Ocean Engineering* (courses ESI 280, ESC 330 are appropriate, with courses selected from other parts of the University as well); *Materials Science* within engineering science by choice of electives offered by the Department of Materials Science and Engineering, or within the major in mechanical engineering; *Structural Engineering* within the major in engineering science with courses offered by the Department of Mechanical Engineering and the Department of Applied Mathematics and Statistics.

In addition, the engineering student often prepares for graduate studies in architecture, business, law, or medicine. Interested students should consult with the appropriate faculty advisor for each profession:

Architecture:	Prof. Stewart Harris
Law:	Prof. Sheldon S.L. Chang
Medicine:	Prof. Velio A. Marsocci

Industrial Management/Pre-Business: Students interested in pursuing careers in management or in continuing on to a graduate degree in business administration are advised to take the following sequence of elective courses:

ECO 101 Introduction to Economics
 ECO 114 Financial Accounting
 ECO 214 Managerial Accounting
 EST 392 Engineering and Managerial Economics
 MSA 310 Survey of Probability and Statistics
 MSA 342 Operations Research

The above course sequence is suggested. Substitutions as well as additional courses should be chosen in consultation with the Undergraduate Program advisor of the Department of Applied Mathematics and Statistics. Students should also consider the business minor, p. 63.

Accreditation

All three undergraduate engineering degree programs offered by the College are accredited by the Accreditation Board for Engineering and Technology, Inc. (formerly the Engineers' Council for Professional Development).

Physical Facilities

The College of Engineering and Applied Sciences houses several specialized laboratories for undergraduate students. The Engineering Laboratory contains many small-scale, table-top experiments which provide students with experience in planning and designing engineering experiments. The Mechanical Engineering Laboratory is a unique departmental facility pertaining to basic mechanical engineering practice and includes equipment for the measurement of stress and strain, fluid flow rates, static and dynamic pressures, and temperature and heat transfer rates. The Department of Electrical Engineering has several laboratories for undergraduate students in the areas of electrical circuits and electronics, microprocessors and programmed logic, and digital systems. A student machine shop is also available for students who have completed a course in machine shop practice and safety.

Two Baccalaureate Degrees

Qualified students whose special interests and career plans make such study appropriate may be granted permission to earn two degrees at the undergraduate level by planning a program which leads to a Bachelor of Engineering degree and either a Bachelor of Arts or a Bachelor of Science degree in the College of Arts and Sciences. For details, see p. 35.

BE/MS Program

An engineering student may apply for admission to enter this special program which will lead to a Master of Science degree and a Bachelor of Engineering degree at the end of the fifth year. For details see individual department sections.

Degree Requirements

All candidates for the Bachelor of Engineering or the Bachelor of Science degree must satisfy the University graduation requirements, the College distribution requirements, and the requirements of a major. Candidates for the Bachelor of Engineering degree must also satisfy the College residence requirements.

University Graduation Requirements

Credit Hour Requirement

At least 120 credits for the Bachelor of Science degree and at least 128 credits for the Bachelor of Engineering degree must have been completed. Restrictions on credits that may be counted are stated in Restrictions on Credits on p. 157.

Grade Point Average Requirement

At least 2.00 cumulative grade point average must have been achieved for all courses taken at Stony Brook after the end of the semester in which the 57th credit was earned.

Residence Requirement

At least 36 credits must have been earned at Stony Brook beginning with the 58th credit.

Upper Division Credit Requirement

At least 39 credits of courses numbered 300 or higher must have been completed. Some of these credits may have been earned through courses transferred from other colleges and individually evaluated at Stony Brook as upper division.

College Distribution Requirements

Distribution requirements are normally met by attaining a passing grade in appropriate courses. Up to four credits required in each area, however, may be filled by AP, CPE, CLEP, or Challenge credit or other approved credit by examination. For details, see p. 18.

The following categories of courses do not fulfill distribution requirements:

1. Proficiency-level courses: AIM, EFL, EGC, MSP.
2. Federated Learning Communities core courses, program seminars, and independent projects: CUE, FLC, HHP, SEI, TVS. Other excluded designators in this category will be announced as new Federated Learning Communities are developed.
3. Interdisciplinary academic skills courses: INT.
4. Physical Education courses: PEC.
5. Elementary foreign language courses: Numbered 111 through 116.
6. Community service and day care courses: AFS, PSY, and SSI 283.

A. Proficiency in English Composition

All entering students are expected to demonstrate competence in the clear and logical expression of ideas in written

English. This requirement may be met by passing the English proficiency examination or by completing EGC 101 English Composition.

(0-3 credits)

B. Twenty-one credits in the Arts and Humanities and Social and Behavioral Sciences chosen in such a way as to satisfy the distribution requirements described in items C, D, and E

(21 credits)

C. Arts and Humanities

Six (6) credits to be chosen from among the offerings in art (ARH and ARS), classics (CLS), comparative literature (CLT), English (EGL—but not EGC), foreign languages (CHI, EEL, FLA, FRN, GER, GRK, HBW, ITL, LAT, POR, PSH, RUS, SGL, SPN, SWE, YDH—but not courses numbered 111-116 nor LIN 115, 116), humanities interdisciplinary (HUM), music (MUS), philosophy (PHI), religious studies (RLS), theatre arts (THR). In addition, those Incoming Student Seminars designated ISH, Africana Studies courses designated AFH, Judaic Studies courses designated JDH, and certain Health Sciences Center courses (HMC 300 and 331) and EST 390 apply.

D. Social and Behavioral Sciences

Six (6) credits to be chosen from among the offerings in anthropology (ANT), economics (ECO), history (HIS), interdisciplinary social sciences (SBS and SSI—but not 283), linguistics (LIN—but not 115, 116), political science (POL), psychology (PSY—but not 283), sociology (SOC). In addition, those Incoming Student Seminars designated ISS, Africana studies courses designated AFS (but not 283), and Judaic studies courses designated JDS apply.

Sometimes Independent Study Program and Foreign Study courses (ISP, FSC, FSD, FSF, FSG, FSI, FSY) may satisfy distribution requirements. These must be evaluated for each student individually.

E. A sequence of at least three courses (9 credits minimum) containing a central theme, to be chosen from the Arts and Humanities and/or the Social and Behavioral Sciences as defined in C and D above. At least two of these courses are to be at the 200 level or above and all three courses are to be within one discipline, e.g., HIS. Students who wish to select other suitable sequences may petition the Committee on Academic Standing and Appeals. Sequences in foreign languages require testing by the foreign language department for the appropriate level. Students who enter the College with an undergraduate degree in an Arts and Humanities or Social and Behavioral Sciences discipline will meet this requirement automatically.

College Residence Requirements for the B.E. Degree

At least seven ESG courses and/or approved technical elective courses offered by the College must have been completed. Of these seven, at least five must be approved technical elective courses offered by the department of the student's major. Engineering Science majors must petition the Academic Standing and Appeals Committee for approval of technical elective courses to meet this requirement.

Requirements for the Majors

For the Bachelor of Science degree, the requirements for the major in Applied Mathematics and Statistics are on p. 158, and in Computer Science on p. 161. For the Bachelor of Engineering degree, requirements for the major in Electrical Engineering are on p. 164, in Engineering Science on p. 169, and in Mechanical Engineering on p. 174.

Exemptions from Requirements for the Majors

A student may gain an exemption from any of the requirements for a major by submitting a petition together with supporting material to the Academic Standing and Appeals Committee or by arranging with the current instructor to take a comprehensive examination (e.g., the final examination) along with enrolled students. The results of the examination and their evaluation, submitted by the instructor, together with any other supporting material submitted by the student, will provide the basis for the Committee's decision. Exemptions do not confer credits.

Technical Electives

Any engineering departmental or interdepartmental courses listed as technical electives or recommended by a student's advisor as appropriate to his or her academic program and approved by the Academic Standing and Appeals Committee will satisfy technical elective requirements.

Open Electives

Any courses offered for credit at this University, or any credits accepted as transfer credits may be considered open electives.

Permission to Take Graduate Courses

Undergraduates with superior academic records may take graduate courses if they receive the permission of the course instructor and of their academic advisor. Forms are available in the Engineering Undergraduate Student Office, Engineering 127.

Pass/No Credit Option

The only courses which may be taken on Pass/No Credit basis for the Bachelor of Engineering degree are those fulfilling the College distribution and open elective requirements.

Pass/No Credit rules for the Bachelor of Science degree appear in the individual department sections.

Restrictions on Credits

Only courses stating in the description that they may be repeated may be taken more than once for credit. Only three credits of physical education may be counted toward degree requirements.

Course Numbering

Courses are numbered in accordance with the following general pattern:

100-199 Introductory courses; appropriate for and generally taken by freshmen.

200-299 Intermediate courses; appropriate for and generally taken by sophomores.

300-399 Upper division courses; appropriate for and generally taken by juniors and seniors.

400-499 Special upper division courses such as seminars, directed readings and research, teaching practica; appropriate for and generally taken by juniors and seniors. Certain 400-level courses for seniors only are so specified.

Department of Applied Mathematics and Statistics

Professors

Edward J. Beltrami, Ph.D. Adelphi University (Distribution and optimization theory)

Yung Ming Chen, Ph.D. New York University (Partial differential equations and wave propagation)

Daniel Dicker, Sc.D. Columbia University (Boundary value problems of solid and fluid mechanics)

Vaclav Dolezal, Sc.D. Czechoslovak Academy of Science (Distribution theory, systems theory)

Irving Gerst, Ph.D. Columbia University (Applied algebra and number theory)

Herbert Robbins, Ph.D. Harvard University, D.Sc. (honorary) Purdue University (Mathematical statistics)

Ram P. Srivastav, D.Sc. University of Glasgow, Ph.D. University of Lucknow (Integral equations and mixed boundary value problems)

Reginald P. Tewarson, Ph.D. Boston University (Numerical analysis)

Alan C. Tucker, Chairman, Ph.D. Stanford University (Combinatorics and applied models). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1973-74

Armen H. Zemanian, Eng.Sc.D. New York University (Network theory, food system modeling)

Associate Professors

James C. Frauenthal, Director of Undergraduate Studies, Ph.D. Harvard University (Population dynamics; applied mechanics). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1977-78

Woo Jong Kim, Ph.D. Carnegie Institute of Technology, Ph.D. Carnegie-Mellon University (Ordinary differential equations)

Martin A. Liebowitz, Ph.D. Harvard University (Random processes and applications)

Gary Simon, Ph.D. Stanford University (Statistics). Recipient of the State University Chancellor's Award for Excellence in Teaching, 1978-79

Assistant Professors

Gerard Dallal, Ph.D. Yale University (Statistics)

Stephen Finch, Ph.D. Princeton University (Statistics)

Bhaskar Sengupta, Eng.Sc.D. Columbia University (Operations research; random processes)

Laurel Smith, Ph.D. Stanford University (Statistics)

Scott Provan, Ph.D. Cornell University (Operations research)

Teaching Assistants

Estimated Number: 40

The undergraduate program in Applied Mathematics and Statistics aims to give mathematically oriented students a liberal education in quantitative problem solving. The courses in this program survey a wide variety of mathematical theories and techniques which are currently employed by planners and researchers in government, industry, and science. About half of the applied mathematics majors go on to graduate or professional schools, largely in statistics, operations research, business management, and urban science. Others go directly into professional careers as actuaries, programmer-analysts, management trainees, and secondary school teachers. While some career-oriented course sequences are listed below, students are strongly encouraged to seek faculty advice in coordinating their career plans with their academic programs. In the spring of their junior year, all students contemplating graduate studies, upon graduation or at a later date, should consult with the MSA Graduate Placement Advisor who will assist them in choice of schools, and provide information about Graduate Record Examinations, etc. Students considering secondary school mathematics teaching can major in Applied Mathematics and Statistics or in Mathematics.

Requirements for the Major in Applied Mathematics and Statistics—Bachelor of Science Degree

In addition to the University graduation requirements and the College of Engineering and Applied Sciences distribution requirements, the following courses are required for the major in applied mathematics and statistics:

1. MSM 131, MSM 132, MSM 231, and MSM 306, or their equivalents
2. MSC-111 or MSC 112
3. MSA 301, MSA 310, and 18 additional credits in courses designated MSA and numbered 300 and above. (A maximum of 6 of these 18 credits may be replaced by an equal number of credits taken from approved junior level or higher mathematically oriented courses. Typically approved substitutions are: ECO 321, ECO 349, ECO 350, PHY 443, PHY 444, and all courses designated MSC or MSM and numbered 301 and above.)
4. To gain a background in fields that generate mathematical applications, a minimum of 14 additional credits shall be chosen from among the course offerings in economics, the physical sciences (not including mathematical sciences), and engineering. No more than 8 of these credits may come from any one department.

Minors and Double Majors

The department urges students in other majors who are considering a double major with MSA first to select individual MSA courses on the basis of their academic interests or vocational needs. Only after a student has taken several MSA courses should he or she decide upon this as a second major.

On the other hand, MSA students are strongly encouraged to minor or double major in another discipline. The most frequent choices of MSA double majors are computer science and economics.

Recommendations for Students Majoring in Applied Mathematics and Statistics

The department encourages students to have a broad exposure to many types of mathematical reasoning and to its diverse roles in the social and natural sciences. During their first two years, students considering an MSA major are encouraged to take, besides the required calculus sequence: some physics (either PHY 131, 132 or PHY 101, 102 or PHY 103, 104), MSC 111 or 112 and one other computer course (competence in computer programming is essential for many professional careers), and some economics. At the end of the sophomore year or the beginning of the junior year, students begin taking upper division MSA courses, usually starting with MSA 301 and 310. At the same time, they are strongly encouraged to continue taking MSM and MSC courses and mathematically oriented courses in other departments, such as ECO 251 and PHY 443. The following lists of course sequences for certain professions are given as a preliminary guide to students with interests in these professions. Students should talk with faculty specializing in these areas as early as possible for more specific information.

Statistics: MSA 301, 310, 311, 312, another MSC course beyond 112; students considering highly competitive graduate statistics programs need MSM 310 or 313, and 320 or 321.

Actuarial Science: Preparation for second actuarial examination—MSA 301, 310, 311 and 312; third actuarial examination—MSA 326, 532 and 543; fourth actuarial examination—MSA 544.

Operations Research or Management Science: MSA 301, 310, 311, 331, 341, and 342.

Analyst-Programmer: MSA 301, 310, 311, 320, 326, 341, and MSC 120, 201, and 205.

Pass/No Credit Grading

The Department will not accept P/NC grades for courses listed under 1, 2, and 3 above, because they are used to satisfy major requirements.

Courses

MSA 101 Introduction to Finite Mathematics

This course concentrates on mathematical concepts and techniques which are needed for the mathematical models currently being used in such fields as anthropology, biology, economics, linguistics, psychology, and sociology. Topics to be covered include set theory, combinatorics, finite probability, matrix algebra, Markov chains, game theory and interest theory. This course may not be taken by students with credit for MSM 127 or 132 or 142. Students may not receive credit for both MSA 101 and MSA 110. *Fall and spring, 3 credits*

MSA 102 Elements of Statistics

The use and misuse of statistics in real-life situations; basic statistical measures of central tendency and of dispersion, frequency distributions, elements of probability, binomial and normal distributions, small- and large-sample hypothesis testing, confidence inter-

vals, chi-square test, and regression. This course may not be taken by students with credit for MSM 231, MSA 310, MSA 311, MSA 312, ECO 320, PSY 201, SOC 202, SOC 211-212.

Prerequisite: Satisfaction of Arts and Sciences mathematics proficiency requirement.

Fall and spring, 3 credits

MSA 104 Introduction to Probability

Introduction to continuous and discrete probability; basic properties of probability distributions, examples (from the physical and biological sciences), expectations; binomial, Poisson, and normal distributions.

Prerequisite: One semester of calculus. *Corequisite:* MSM 126 or 132 or 142.

Fall and spring, 1 credit

MSA 110 Probability and Statistics in the Life Sciences

A survey of probability theory and statistical techniques with applications to biological and biomedical situations. Topics covered include Markov chain models, binomial, Poisson, normal, exponential and chi-square random variables, tests of hypotheses, confidence intervals, t-tests, analysis of variance, regression, and contingency tables. Credit cannot be given for both MSA 101 and 110.

Prerequisite: MSM 126 or 131 or 141.

Fall and spring, 3 credits

MSA 194 Patterns of Problem Solving

A survey of techniques and methods of problem solving as developed by the engineer and applied scientist. Applications drawn from a broad range of fields. Primarily intended for non-engineering majors. Crosslisted with EST 194.

Spring, 3 credits

MSA 301 Finite Mathematical Structures A

This course introduces the student to graph theory and combinatorial analysis. The emphasis is on solving applied problems rather than on theorems and proofs. Techniques used in problem-solving will include generating functions, recurrence relations and network flows. This course develops the type of mathematical thinking that is fundamental to computer science and operations research.

Corequisite: MSM 221 or 231. *Fall, 3 credits*

MSA 302 Finite Mathematical Structures B

Sets, binary relations, partially ordered sets; Boolean algebra and applications to switching; finite state machines and machine homomorphisms; formal languages and their recognition by machines; groups and applications to sorting, codes, and machines; modular arithmetic, random number generation; finite fields and applications. Crosslisted with MSM 312.

Prerequisites: MSM 221 or 231 and MSC 201.

Fall and spring, 3 credits

MSA 310 Survey of Probability and Statistics

A survey of data analysis, probability theory and statistics. Stem-and-leaf displays, box plots, schematic plots, fitting straight line relationships, discrete and continuous probability distributions, conditional distributions, binomial distribution, normal and t distributions, confidence intervals, significance test. MSA 310 may not be taken for credit in addition to ECO 320.

Prerequisite: MSM 126 or 132 or 142.

Fall and spring, 3 credits

MSA 311 Probability Theory

Probability spaces, random variables, moment generating functions, algebra of expectations, conditional and marginal distributions, multivariate distributions, order statistics, law of large numbers.

Prerequisite: MSM 221 or 231 or 241.

Fall and spring, 3 credits

MSA 312 Mathematical Statistics

Estimation, confidence intervals, Neyman-Pearson lemma, likelihood ratio test, hypothesis testing,

chi-square test, regression, analysis of variance, non-parametric methods.

Prerequisite: MSA 311.

Spring, 3 credits

MSA 320 Applied Differential Systems

Properties of ordinary differential equations with diverse applications to problems in the natural and social sciences. (No background in areas of application is required.) The course is designed for students in the mathematical sciences who are interested in basic uses of the calculus.

Prerequisite: MSM 221 or 231 or 241.

Fall, 3 credits

MSA 326 Numerical Analysis

Direct and indirect methods for the solution of linear and non-linear equations. Computation of eigenvalues and eigenvectors of matrices. Quadrature, differentiation and curve fitting. Numerical solution of ordinary and partial differential equations.

Prerequisites: MSC 111 or 112 and MSM 221 or 231 or 241.

Fall and spring, 3 credits

MSA 331 Mathematical Modeling

This course investigates the process of translating real-world problems into mathematical models. During the semester six to eight unconnected problems will be studied in detail. These will be chosen to illustrate various methods of formulation and solution, and will generally find their origins in the social and biological sciences.

Prerequisites: MSM 221 or 231 or 241 and either MSA 310 or MSA 311.

Spring, 3 credits

MSA 341 Operations Research I: Deterministic Models

This course presents linear programming with a view towards its uses in economics and systems analysis. Linear-algebra and geometric foundations of linear programming; simplex method and its variations; primal-dual programs; formulation and interpretation of linear programming models, including practical problems in transportation and production control. Optional computer projects.

Prerequisite: MSM 221 or 231 or 241. MSA 341 and MSA 342 may be taken in either order, though it is recommended that MSA 341 be taken first.

Spring, 3 credits

MSA 342 Operations Research II: Stochastic Models

Methods and techniques for stochastic modeling and optimization, with applications to queueing theory, Markov chains, inventory theory, games and decisions.

Prerequisites: MSM 221 or 231 or 241 and either MSA 310 or MSA 311. MSA 341 and 342 may be taken in either order, though it is recommended that MSA 341 be taken first.

Fall, 3 credits

MSA 350 Graph Theory

Paths and circuits, trees and tree-based algorithms, graph coloring, digraphs, network flows, matching theory, matroids, and games with graphs.

Prerequisite: MSA 301 or consent of instructor.

Spring, 3 credits

MSA 361 Engineering Mathematics A

Introduction to partial differential equations of engineering; methods of solution including separation of variables, Fourier series and integrals; elements of numerical analysis.

Prerequisite: MSM 221 and MSC 111 or 112.

Fall and spring, 4 credits

MSA 362 Engineering Mathematics B

Vector and related techniques used in fluid dynamics and electromagnetic fields; methods of complex variables in engineering applications.

Prerequisite: MSM 221.

Fall and spring, 4 credits

MSA 400 Topics in Mathematical Modeling (Formerly MSA 332)

Topics in mathematical modeling will be offered as student demand and faculty time and interest coincide. Some possible offerings include: population dynamics models, epidemiological models, and demographic models. The emphasis of the course will be on mathematical thinking and methods. Course may be repeated once.

Prerequisites: MSM 221 or 231- or 241 and MSA 311.
3 credits

MSA 441 Business Policy, Formulation, and Administration

This course focuses on the problems faced by the general manager in business planning, forecasting, and decision making. Typical case studies relating to establishing objectives and formulating strategies are assigned as a basis for a discussion-oriented class session. Analyses of financial statements, production planning, and organizational structures are involved in arriving

at recommendations for action.

Prerequisites: Any three required courses in the Business Minor Program plus permission of instructor.

3 credits

MSA 475 Undergraduate Teaching Practicum

Students assist the faculty in teaching by conducting recitation or laboratory sections that will supplement a lecture course. The student will receive regularly scheduled supervision from the faculty advisor. May be used as an open elective only and repeated once.

Prerequisites: Senior standing as an undergraduate major within the College; a minimum grade point average of 3.0 in all Stony Brook courses and the grade of B in the course in which the student is to assist; permission of department.
Fall and spring, 3 credits

MSA 487 Research in Applied Mathematics

A course which will give the student an opportunity to be involved in an independent research project with supervision by the faculty. Permission to register will require that students have average grades of B in their courses and that they obtain the agreement of a faculty member to supervise their research. May be repeated once. Only 3 credits of research electives (MSA 487, MSC 487, ESC 499, ESE 499, ESM 499, EST 499) may be counted toward fulfillment of technical elective requirements.

Prerequisite: Permission of instructor and department.

Fall and spring, 3 credits

MSA 491 Workshop in Applied Mathematics

Lectures will be given by the course instructor and by visitors on topics of current interest in applied mathematics. Projects involving mathematical modeling will be undertaken by small groups of students with the supervision of faculty. Reports will be submitted by each group of students at the end of the semester.

Prerequisite: Permission of instructor.

Spring, 3 credits

Applied Mathematics and Statistics Courses Approved as Engineering Technical Electives

MSA 301, 302 Finite Mathematical Structures A, B

MSA 310 Survey of Probability and Statistics

MSA 311 Probability Theory

MSA 312 Mathematical Statistics

MSA 320 Applied Differential Systems

MSA 326 Numerical Analysis

MSA 331 Mathematical Modeling

MSA 341, 342 Operations Research I, II

MSA 350 Graph Theory

MSA 400 Topics in Mathematical Modeling (may be used only once)

MSA 487 Research in Applied Mathematics (may be used only once)

MSA 491 Workshop in Applied Mathematics

Department of Computer Science

Professors

Arthur J. Bernstein, Ph.D. Columbia University (Computer systems; operating systems; computer networks)

Herbert L. Gelernter, Ph.D. University of Rochester (Artificial intelligence; scientific applications)

Jack Heller, Chairman, Ph.D. Polytechnic Institute of Brooklyn (Information organization and retrieval; humanities data processing; data structures)

Richard B. Kieburz, Ph.D. University of Washington (Theory of computation; programming languages)

David R. Smith, Ph.D. University of Wisconsin (Switching theory; digital system design; computer architecture)

Associate Professors

John C. Cherniavsky, Ph.D. Cornell University (Software engineering, theory of computation)

Zvi M. Kedem, D.Sc. Technion, Israel Institute of Technology (Database systems, computer graphics, algorithm analysis)

Assistant Professors

Hussein G. Badr, Ph.D. Pennsylvania State University (Operating systems, performance evaluation)

Peter B. Henderson, Ph.D. Princeton University (Software engineering)

Mark A. Jones, Ph.D. University of Kansas (Artificial intelligence)

David Maier, Ph.D. Princeton University (Computational complexity; algorithm analysis; database systems)

Sharon C. Salveter, Ph.D. University of Wisconsin (Learning; natural language understanding, knowledge representation)

Edward Sciore, Ph.D. Princeton University (Database systems; programming languages)

David S. Warren, Ph.D. University of Michigan (Natural language processing; theory of computation)

Alessandro Zorat, Ph.D. University of Southern California (Computer architecture; parallel computation; algorithm analysis)

Teaching Assistants

Estimated Number: 30

Undergraduate Program In Computer Science

The undergraduate major in computer science is designed to combine a liberal arts program with sufficient pre-professional education in computer science to prepare the student for graduate study or for a career in the computing field. The intent is to offer the breadth of education which will enable students to place computing in the perspective of an extension of man's intellectual power, while offering the depth of education required to understand how to utilize the power of computing.

Students will learn concepts and skills needed for designing, programming, and applying computer systems while learning the theoretical foundation of computer science. They will also have sufficient freedom in the program to pursue other academic interests in the liberal arts, sciences, and engineering to complement their study of computer science. Many students will be able to utilize the flexibility of the program to satisfy the requirements of a second major for the baccalaureate degree.

Physical Facilities

The laboratory in the Computer Science Department has its own PDP 11/60 computer (which is connected to mass storage devices, an analog-to-digital converter, and a graphics terminal), as well as 24 LSI-11 microcomputers. Although used mainly for graduate research, they are also available to qualified undergraduate students engaged in special independent projects.

The campus Computing Center, a major centralized facility to serve the computing needs of instruction, research, and administration, is used very heavily in most undergraduate computer science course work. This central computer complex consists of a UNIVAC 1100/80 - 2X1 system with 4 million characters of main memory, 3 billion characters of on-line disk storage, and a complement of tape drives, printers, and card processing equipment. More than 120 remote devices are located on the Stony Brook campus and are connected via a communication network. A tape library of more than 6,000 magnetic tapes provides for storage of users' programs and data in machine accessible form.

Requirements for the Major in Computer Science—Bachelor of Science Degree

In addition to the University graduation requirements and the College distribution requirements (p. 156), the following courses are required for the major in computer science:

I. Required Courses

- A. MSC 112 (or equivalent), MSC 120, MSC 201.
- B. Four other computer science courses selected from Groups 1 and 2 below. Two of these four courses must be selected from Group 1.
 - Group 1: MSC 303, MSC 304, MSC 306, MSC 345
 - Group 2: MSC 205, MSC 305, MSC 307, MSC 346, MSC 352, MSC 371, MSC 380, MSC 487.
- C. MSM 131, 132, 231 (or MSM 125, 126, 127, 231 or MSM 141, 142, 231).
- D. MSA 302 or MSM 313.
- E. MSA 301, 326 and 310.
- F. ESE 318.

II. Natural Science Requirement

Students must take 12 credits from among the course offerings in the natural sciences (physics, chemistry, biology, earth and space sciences).

III. Grading

All courses taken to satisfy requirements for the major (I and II above) must be taken for a letter grade and completed with a grade of C or better.

Suggestions for Elective Courses

Students are encouraged to concentrate their elective courses in no more than two disciplines chosen according to their secondary interests so as to obtain depth in these areas. Students

interested in the theory of computation are encouraged to take MSM 371 Logic. Those interested in computer hardware should consider ESE 316 Digital Devices and Circuits, ESE 346 Computer Communications, ESE 349 Introduction to Fault Diagnosis of Digital Systems, and ESE 380 Microprocessors and Programmed Logic. Other related courses can be found in the listings of the Departments of Mathematics, Applied Mathematics and Statistics, Electrical Engineering, and the Interdisciplinary Program in Linguistics. Also, there is a large selection of graduate courses in the department's Master of Science program which are available, as electives, to eligible seniors. Students should consult with faculty members of the Department of Computer Science early to plan their programs.

Sample Program (Required Courses Only)

Freshman	Sophomore	Junior	Senior
MSM 131	MSM 231	MSA 301	MSA 310
MSM 132	MSM 313	MSA 326	ESE 318
MSC 112	MSC 201	MSC elective	MSC elective
MSC 120		MSC elective	MSC elective

Courses

MSC 100 The Societal Impact of Computers

A critical assessment of the role that computing and data processing play in contemporary society. Following an introduction to the information management capabilities that automation can provide, a study will be made of economic, legal, and moral issues involved in the utilization of these capabilities. Crosslisted with EST 100.

Fall and spring, 3 credits

MSC 105 Introduction to Computer Science and Business Data Processing

An introduction to programming and the solution of problems by data processing algorithms. Sorting, merging, report generation, and statistical summarization using one sequential file. Experience will be gained by designing programs in PL/1 to perform typical business, library, and archiving applications. May not be taken for credit in addition to MSC 111 or MSC 112.

Fall and spring, 3 credits

MSC 111 Computer Science for Engineers

An introduction to computer science and the use of the computer for solving scientific and engineering related problems. Students will gain experience using the FORTRAN programming language. Primarily for engineering students not planning to take advanced computer science courses. May not be taken for credit in addition to MSC 105 or MSC 112.

Fall and spring, 3 credits

MSC 112 Introduction to Computer Science

A rigorous introduction to the fundamental concepts of computer science, including algorithms, problem-solving techniques, data structures, and machine principles. Students will gain experience using a modern high-level computer programming language to solve a variety of numeric and non-numeric problems. Primarily for students planning to take further computer science courses. May not be taken for credit in addition to MSC 105 or MSC 111.

Fall and spring, 3 credits

MSC 120 Computer Organization and Programming

Explores the physical structure of a computer, machine representation of information, assembly language programming, input and output communication; and introduces the student to systems programming techniques.

Prerequisite: Pass proficiency examination.

Fall and spring, 4 credits

MSC 201 Advanced Programming

Development of techniques in non-numeric programming with particular emphasis on data representation. Detailed treatment of recursive data structures, searching and sorting. Introduces concepts of modular design of programs. Involves writing large programs in PASCAL.

Prerequisite: Pass proficiency examination. Students not having PASCAL background are advised to see the instructor prior to registration.

Fall and spring, 3 credits

MSC 205 Business Data Processing

The design of sequential and direct access files to perform business data processing. Use of PL/1 and COBOL to illustrate the

algorithms. Use of stream mode files for sorting and merging. Use of direct access files for record keeping, inventory control, techniques for self-defining files, updating, adding, and deleting records. Techniques for retrieving subsets of data from direct access files used in report generation.

Prerequisite: MSC 201.
Fall, 3 credits

MSC 303 Introduction to the Theory of Computation

An introduction to the abstract notions encountered in machine computation. Topics include finite automata, regular expressions and formal languages, with emphasis on regular and context-free grammars. Questions relating to what can and cannot be done by machines are covered by considering various models of computation, including Turing machines, recursive functions, and universal machines.

Prerequisites: MSC 201 and MSM 313 (or MSA 302).
Fall, 3 credits

MSC 304 Compiler Design

Topics studied include formal description of programming languages, lexical analysis, syntax analysis, symbol tables and memory allocation, code generation, and interpreters.

Prerequisites: MSC 120 and MSC 201.
Spring, 3 credits

MSC 305 Introduction to Data Base Management

The design of data base management systems to obtain consistency, integrity, and availability of data. Conceptual models and schemas of data: hierarchical, network, relational, and graph theoretic. The role of the data base administrator in the organization and use of data.

Prerequisite: MSC 205.
Spring, 3 credits

MSC 306 Operating Systems

Students are introduced to the structure of modern, operating systems. Topics include virtual memory, resource allocation strategies, concurrency and protection. The design and implementation of a simple system will be performed.

Prerequisites: MSC 120 and MSC 201.
Fall, 3 credits

MSC 307 Principles of Programming Languages

Course will present examples of programming languages (PL) other than PASCAL, such as SNOBOL, APL, LISP, ALGOL, PL/1, ADA. Students will write sample programs in some of the languages studied. The languages will be used to illustrate PL constructs such as binding, binding times, data types and implementation, operations (assignment datatype creation, pattern matching), data control, storage management, parameter passing, operating environment. The suitability of these various languages for particular programming tasks will also be covered.

Prerequisite: MSC 201.
Spring, 3 credits

MSC 345 Computer Architecture

Starts with functional components at the level of registers, busses, arithmetic and memory chips; and then uses a register transfer language to manipulate these in the design of hardware systems up to the level of complete computers. Specific topics also included are microprogrammed control, user level instruction sets, I/O systems, and device interfaces, control of memory hierarchies, and parallel processing organizations. Crosslisted with ESE 345.

Prerequisites: MSC 120 and ESE 318.
Spring, 3 credits

MSC 346 Computer Communications

Crosslisted with ESE 346.
Spring, 3 credits

MSC 352 Heuristic Programming and the Simulation of Intelligent Behavior by Machine

Topics covered include: critique of artificial intelligence research; state-space problem representations and search algorithms; game-playing programs; theorem-proving programs; programs for the study and simulation of cognitive processes and pattern recognition. Further topics in current research as time permits.

Prerequisites: MSC 201 and MSC 303.
Spring, 3 credits

MSC 370 Digital Simulation and Modeling

Crosslisted with ESE 370.
Fall, 3 credits

MSC 371 Computer Graphics

Display devices and processors, with emphasis on processor-cathode ray tube interface. Generation of characters, straight lines, and curves specified by descriptive geometry and by differential equations, geometrical transform. Input devices, and basic instruction sets. Processor logic steps in instruction handling. Introduction to three-dimensional graphics. Crosslisted with ESE 371.

Prerequisites: MSC 120 and ESE 318.
Spring, 3 credits

MSC 380 Microprocessors and Programmed Logic

Crosslisted with ESE 380.
4 credits

MSC 381 Microprocessors and Programmed Logic II

Crosslisted with ESE 381.
3 credits

MSC 475 Undergraduate Teaching Practicum

Students assist the faculty in teaching by conducting recitation, or laboratory sections that will

supplement a lecture course. The student will receive regularly scheduled supervision from the faculty instructor. May be used as an open elective only and repeated once.

Prerequisites: Senior standing as an undergraduate major within the College; a minimum grade point average of 3.0 in all Stony Brook courses and the grade of B in the course in which the student is to assist; permission of department.
Fall and spring, 3 credits

MSC 487 Research in Computer Science

A course which involves the student in an independent research project under the supervision of a faculty member. Only three credits of research electives (MSA 487, MSC 487, ESC 499, ESE 499, ESM 499, EST 499) may be counted towards fulfillment of technical elective requirements. May not be taken for more than six credits. When registration is for four credits or more in a semester, CASA approval must be received.
Prerequisite: Permission of instructor and department.
Fall and spring, 1 to 6 credits

Computer Science Courses Approved as Engineering Technical Electives

MSC 120 Computer Organization and Programming
MSC 201 Advanced Programming
MSC 205 Introduction to Business Data Processing
MSC 303 Introduction to the Theory of Computation
MSC 304 Compiler Design
MSC 305 Data Base Design
MSC 306 Operating Systems
MSC 345 Computer Architecture
MSC 346 Computer Communications
MSC 370 Digital Simulation and Modeling
MSC 371 Computer Graphics
MSC 380 Microprocessors and Programmed Logic
MSC 381 Microprocessors and Programmed Logic II
MSC 487 Research in Computer Science (no more than 3 credits)

Computer Engineering

More and more frequently the solutions to current design problems in computer and data processing equipment lie in the area between strictly hardware or software solutions. It is important for students who wish to specialize in computer hardware to be fluent in modern software techniques and to be familiar with digital electronics and the application of large scale integrated devices.

The following course sequence shows how to shape a program appropriate to computer engineering and simultaneously meet the requirements of the Bachelor of Engineering degree in Electrical Engineering. Students' attention is also particularly drawn to two courses which are basic to computer engineering, namely ESE/MS 380 Microprocessors and Programmed Logic, and MSC 306 Operating Systems.

Note: HUM/SOC elective courses must be chosen to satisfy College distribution requirements on p. 156.

Sample Course Sequence in Computer Engineering

<u>Freshman</u>	Fall Credits	<u>Sophomore</u>	Fall Credits	<u>Junior</u>	Fall Credits	<u>Senior</u>	Fall Credits
EGL 101	3	CHE 131	4	ESG 312	2	ESG 440	2
PHY 101	4	CHE 133	1	ESG 372	4	ESE 330	3
MSM 131	4	ESG 261	4	MSA 301	3	ESG 333	3
MSC 111 or 112	3	MSM 221	3	HUM/SOC elective	3	Technical elective	3
HUM/SOC elective	3	HUM/SOC elective	3	ESI 281	4	HUM/SOC elective	3
	<u>Total</u> 17		<u>Total</u> 15		<u>Total</u> 16	Open elective	<u>Total</u> 17

	Spring Credits		Spring Credits		Spring Credits		Spring Credits
PHY 102	4	ESG 211	2	MSA 310	3	ESG 441	4
MSM 132	4	ESG 271	4	Technical elective	3	ESE 346	3
MSC 120	4	ESE 318	4	ESG 314 or 315	2	MSC 345	3
HUM/SOC elective	3	MSC 201	3	ESE 316	3	Technical elective	3
	<u>Total</u> 15	MSA 361	4	MSC 304	3	HUM/SOC elective	3
			<u>Total</u> 17	HUM/SOC elective	3		<u>Total</u> 16
					<u>Total</u> 17		

Department of Electrical Engineering

Professors

Ludwig Braun, Ph.D. Polytechnic Institute of Brooklyn (Computers in education; bioengineering)

H.R. Carleton, Ph.D. Cornell University (Optical materials; electro-optics; ultrasonics; optical instrumentation)

Sheldon S.L. Chang, Ph.D. Purdue University (Optimal control; computer architecture; information theory; economic theory)

Chi-Tsong Chen, Ph.D. University of California, Berkeley (Systems and control theory; digital signal processing)

Velio A. Marsocci, Eng.Sc.D. New York University (Solid state electronics; integrated electronics; biomedical engineering)

Paul Richman, Part-time, M.S. Columbia University (Field effect transistors and integrated circuits)

Stephen D. Shapiro, Chairman, Ph.D. Columbia University (Computing systems and computer organization; picture processing and pattern recognition)

David R. Smith, Ph.D. University of Wisconsin (Logic design; computer architecture)

John G. Truxal, Sc.D. Massachusetts Institute of Technology (Control and systems engineering; science education)

Hang-sheng Tuan, Graduate Program Director, Ph.D. Harvard University (Electromagnetic theory; integrated and fiber optics; microwave acoustics)

Armen H. Zemanian, Eng.Sc.D. New York University (Network theory; mathematical models in economic geography)

Associate Professors

Timothy J. Driscoll, Part-time, M.S. Polytechnic Institute of Brooklyn (Electrical power and distribution systems)

Maurice Halioua, Part-time, Ph.D. University of Paris (Optical information processing; applications in biology, medicine, and engineering)

Jayantkumar P. Parekh, Ph.D. Polytechnic Institute of Brooklyn (Microwave acoustics and magnetics; microwave electronics)

Stephen S. Rappaport, Ph.D. New York University (Communication theory; systems)

Kenneth L. Short, Undergraduate Program Director, Ph.D. State University of New York at Stony Brook (Digital system design; instrumentation)

Assistant Professors

Patrick E. Barry, Part-time, Ph.D. State University of New York at Stony Brook (Systems and control; optimization theory)

Mansour Eslami, Ph.D. University of Wisconsin (Systems and control)

Yih-Chyun Jeng, Ph.D. Princeton University (Data and computer communications)

Stephen Sussman-Fort, Ph.D. University of California, Los Angeles (Electronic circuits; solid state electronics; electromagnetics)

Donald R. Ucci, Ph.D. City College of the City of New York (Systems and control; signal processing)

Charles R. Waters, Part-time, Ph.D. State University of New York at Stony Brook (Control and systems engineering)

Teaching Assistants

Estimated Number: 40

The Department of Electrical Engineering offers a major leading to the Bachelor of Engineering degree in Electrical Engineering with course offerings that span the subject matter of contemporary electrical engineering. Through the Department's offerings a student can develop the requisite background and skills suited to his or her own interests and career goals. While most electrical engineering students go into industry upon graduation, many go directly to graduate school for further study in business or other professions. Many continue their education on a part-time basis. The programs described below have sufficient flexibility to meet a large variety of individual objectives. Students interested in specializing in one of the areas of electrical engineering should declare their major sometime during the freshman year.

Requirements for the Electrical Engineering Major

The major requires a minimum core of any six technical electives (excluding ESE 499) to be taken in the Electrical Engineering Department. In addition, it is suggested that Engineering Experimentation (ESG 315) and Engineering Design (ESG 440, 441) be carried out under the supervision of the Electrical Engineering faculty, unless another option is approved by the undergraduate committee. The core sequence, along with additional courses and technical electives, is chosen in consultation with a faculty advisor, taking into consideration the particular interest of the student. This will provide a thorough foundation fitted to individual goals.

Minimum Requirements

- A. Total credits: 128
- B. University graduation requirements, p. 156
- C. College of Engineering and Applied Sciences: Distribution and residence requirements, p. 156. Credits
21-24
- D. Mathematics: MSM 131, 132, 221 and any two of the following courses with at least one chosen from the first group: (MSA 301, MSA 361*, MSA 362*) (MSA 310, MSA 311) 17 minimum
- E. Natural Sciences: PHY 101, 102, CHE 131 and 133 or CHE 141 and 143, and one of: ESI 281, PHY 251, CHE 132, CHE 142, MSC 120, or any BIO course 17 minimum
- F. Computer Science: MSC 111 or 112 3 minimum
- G. Engineering Sciences: ESG 271, 372, 211, 261, 312 and one of: ESG 302, 332, 333* 20 minimum
- H. Engineering Synthesis Design: ESG 315, ESG 440, ESG 441 (Projects to be carried out under the supervision of the faculty of Electrical Engineering unless approved otherwise by the undergraduate committee) 8 minimum

*The courses denoted by the asterisk are recommended unless a more suitable course is chosen in consultation with a faculty advisor.

- I. Engineering Specialization and Technical Elective: Nine technical elective courses. Of these nine, at least six must be chosen from the technical elective courses offered by the Department, except for ESE 499 and no more than 3 credits of ESE 390 27 minimum
- J. Open Electives: Any undergraduate University course offered for academic credit may be chosen for open elective credits. No more than 3 credits of Physical Education can be used to satisfy open elective requirements. Graduate level courses may be taken to satisfy either open elective or technical elective requirements with approval Variable
Total 128

Sample Course Sequence in the Electrical Engineering Major

The following is a sample course sequence for students interested in electrical engineering and undecided about specialization in a particular area. This sequence insures that prerequisite and corequisite courses are taken in proper order.

Note: HUM/SOC elective courses must be chosen to satisfy College distribution requirements on pp. 156-157.

	Fall Credits		Fall Credits
<i>Freshman</i>		<i>Junior</i>	
MSM 131	4	MSA 361*	4
PHY 101	4	ESG 312	2
EGL 101	3	ESG 372	4
HUM/SOC elective	3	ESE 340	3
HUM/SOC elective	3	ESE 319	3
	Total 17		Total 16
	Spring Credits		Spring Credits
MSM 132	4	ESG 315	2
PHY 102	4	ESE 315	3
MSC 111 or 112**	3	ESE 311	3
HUM/SOC elective	3	HUM/SOC elective	3
HUM/SOC elective	3	ESE 380	4
	Total 17		Total 15
	Fall Credits		Fall Credits
<i>Sophomore</i>		<i>Senior</i>	
MSM 221	3	ESG 333	4
CHE 131 or 141**	4	ESG 440	2
CHE 133 or 143**	1	Technical elective	3
PHY 251 or ESI 281	4	Technical elective	3
ESG 261	4	HUM/SOC elective	3
	Total 16		Total 15
	Spring Credits		Spring Credits
MSA 362	4	ESG 441	4
ESG 211	2	Open elective	3
ESG 271	4	HUM/SOC elective	3
HUM/SOC elective	3	Technical elective	3
ESE 318	4	Open elective	2
	Total 17		Total 15

*The courses denoted by the asterisk are recommended unless a more suitable course is chosen in consultation with a faculty advisor.

**Can be taken instead in fall semester of first year.

Specialized Areas in Electrical Engineering

Some of the major areas of specialization are listed below. This list is not meant to be exhaustive. For more detailed information concerning additional areas and specific course recommendations students should consult "Undergraduate's Guide to Electrical Engineering Program" which is available from the office of the Department of Electrical Engineering, Room Y205.

Biomedical Engineering
 Communications and Information Sciences
 Control and System Theory
 Computer Engineering
 Electrical Power Systems
 Electronic Networks and Circuits
 Solid State Electronics and Electromagnetics

BE/MS Program

An engineering student may apply at the end of the junior year for admission to this special program, which will lead to a Master of Science and a Bachelor of Engineering degree (either in Electrical Engineering or Engineering Science) at the end of the fifth year. Students in the program take, in the senior year, 3 credits of ESE 599 which replace 4 credits of ESG 441, and 3 credits of a graduate course which replace 3 credits of technical electives. In the fifth year the student will take 24 graduate credits, of which at least 15 credits are course work and 6 credits are ESE 599. The advantages of this program over the regular M.S. program are that a student may start his or her M.S. thesis in the senior year, and that only 24 credits are needed in the fifth year as opposed to 30 credits for a regular M.S. student.

Courses

Open Electives

ESE 475 Undergraduate Teaching Practicum

Students assist the faculty in teaching by conducting recitation or laboratory sections that will supplement a lecture course. The student will receive regularly scheduled supervision from the faculty instructor. May be used as an open elective only and repeated once.

Prerequisites: Senior standing as an undergraduate major within the College; a minimum grade point average of 3.0 in all Stony Brook courses and the grade of B in the course in which the student is to assist; permission of department.

Fall and spring, 3 credits

Technical Electives

ESE 303 Electronic Circuits and Instrumentation

A course which presents the elements of electronic circuitry and instrumentation at an introductory level: operation of electronic devices; operational aspects of power supplies, amplifiers, oscillators, and logic circuits; application to instrumentation; television, radio, audio amplifiers, and re-

corders; a discussion of the new advances in electronic devices and circuits. This course is designed primarily for non-electrical engineering students.

Prerequisites: PHY 101 and 102 or permission of instructor.

Fall, 3 credits

ESE 304 Electronic Instrumentation and Operational Amplifiers

The design of electronic instrumentation: structure of basic measurement systems, transducers, analog signal conditioning with operational amplifiers, sampling, multiplexing, A/D and D/A conversion; digital signal conditioning, data input and display, automated measurement systems. Application of measurement systems to pollution, biomedical and industrial monitoring will be considered.

Prerequisite: ESG 372

Fall, 3 credits

ESE 310 Modern Circuit Theory

Circuit elements and n-ports. Linearity, time-invariance, causality, passivity, and stability. Graph theory and its algebraic descriptions. Tellegen's theorem. State-variable representation and time-domain solutions. Small-signal and global analysis of nonlinear networks. Stability analysis.

Prerequisite: ESG 271.

Spring, 3 credits

ESE 311 Electronics Circuits Design

Engineering design concepts applied to electronic circuits. Basic network concepts, computational analysis and design techniques; models of electronic de-

vices; biasing and compensation methods; amplifiers and filters designed by conventional and by computer-aided techniques.

Prerequisite: ESG 372.

Spring, 3 credits

ESE 312 Electronic Circuits Design II

Material covered will be a continuation of that introduced in ESE 311 with special emphasis placed on computer-aided design of electronic circuits.

Prerequisite: ESE 311.

Spring, 3 credits

ESE 315 Introduction to Feedback Control Theory

An introduction to the concepts of system control through feedback and the mathematical techniques required in the modeling, analysis, and design of feedback control systems. Examples are from such fields as electronics, aircraft guidance, economics, biology, and machine control.

Prerequisite: ESG 271.

Spring, 3 credits

ESE 316 Digital Devices and Circuits

Switching characteristics of devices: Bipolar transistors, MOS-FETS's, C.C.D.'s. Circuit analysis of leading IC gate technologies: TTL, ECL, MOS, CMOS, dynamic MOS. Interfacing logic families. Application of small scale IC's in control and timing circuits. Large scale integrated circuits: organization and characteristics of R.A.M.S., ROM's and PLA's. Optoelectrical devices. A small number of laboratory sessions included.

Prerequisite: ESG 372.

Fall, 3 credits

ESE 318 Digital Systems Design

Intended to be of use to non-specialists, and, in addition, to be part of the digital circuits and systems sequence. The course starts from a description of digital circuits regarded as functional blocks and leads to a consideration of the logical design of combinational and sequential digital systems. It is presented from an applied point of view, utilizing demonstrations and laboratory experiments. Topics include: binary representation of information, gate types, combinational circuit design, counters, registers, arithmetic circuits, sequential circuit design, and programmed logic.

Fall and spring, 4 credits

ESE 319 Introduction to Electromagnetic Fields and Waves

Fundamental experimental results of electromagnetism. Topics include mathematical formulation of integral laws and derivation and physical interpretation of differential Maxwell equations in free space; interaction of electromagnetic sources and fields, engin-

earing applications; electromagnetic energy and power; generation of electromagnetic fields and waves in unbounded media by known sources; and simple antenna theory.

Fall, 3 credits

ESE 321 Electromagnetic Waves and Fiber Optics

Propagation of electromagnetic waves in free space and dielectrics; wave propagation in anisotropic media and crystals; guided electromagnetic waves and surface waves; microwave waveguides, thin film planar optical waveguides, and optical fibers; introduction to the fundamentals of optical fiber communication components and systems.

Prerequisite: ESE 319.

Spring, 3 credits

ESE 330 Integrated Electronics

An introduction to semiconductor electronics leading to the characterization of various passive and active devices, with emphasis on integrated electronic structures: theory of p-n junction transistors; device design techniques; the applications of these devices in active networks; operation principles of analog circuits.

Prerequisite: ESG 372.

Fall, 3 credits

ESE 331 Physical Electronics

A study of the physical principles involved in the operation of electronic devices such as bipolar transistors, field effect transistors, lasers, superconducting and magnetic devices.

Prerequisites: ESI 281 (or PHY 251) and ESG 271.

Fall, 3 credits

ESE 332 Lasers and Optical Electronics

Basic radiation theory, Gaussian beams, optical resonators; interaction of radiation and atomic systems, theory of laser oscillation; investigation of specific solid, gas and semiconductor lasers; parametrics and second harmonic generation; modulation and detection of optical radiation; noise processes in optical generation and detection.

Prerequisite: ESG 372.

Spring, 3 credits

ESE 333 Lasers Technology and Utilization

Reviews briefly the fundamentals of laser theory, and then addresses itself in its main part to the various types of lasers, from the point of view of theory as well as of construction and design.

Singled out are lasers which have found their most widespread application in areas ranging from engineering measurements and physics (including spectroscopy) to optical image processing and astronomy, as well as in many different areas of medicine and biology. Appropriate mathematical background is introduced in the course.

Prerequisites: ESG 271 and 372.
Spring, 3 credits

ESE 340 Basic Communication Theory

Basic concepts in both analog and digital data communications: signals, spectra, and linear networks; Fourier transforms, energy and power spectra, filtering; amplitude, frequency, phase and pulse modulation schemes; time and frequency multiplexing; discussion of problems encountered in practice; noise and band-width considerations; data transmission; simple error-checking codes.

Fall, 3 credits

ESE 341 Information Theory and Coding

Statistical characteristics of languages, information sources as random processes, measurement of information, noiseless coding; the binary symmetric channel and other digital channels; channel capacity; introduction to algebraic coding, theory for noisy channels, communication with feedback.

Prerequisite: ESG 271.

Spring, 3 credits

ESE 342 Data Communications Systems

Pulse modulation and sampling. All-digital networks. Pulse code modulation. Digital modulation techniques including ASK, FSK, PSK, DPSK. Error Control Coding. Exchange of reliability for rate. Synchronous and asynchronous systems. Line control. Equalization. Message and circuit switching. Packet radio channels.

Prerequisite: ESE 340.

Spring, 3 credits

ESE 345 Computer Architecture

Crosslisted with MSC 345.

Spring, 3 credits

ESE 346 Computer Communications

Basic communication concepts, signals, spectra, bandwidth, data rate. Sampling and pulse modulation, all-digital networks. High-speed synchronous digital transmission, asynchronous transmission. Error control. Circuit switching and message switching. Full duplex and half duplex transmission modes. Packet radio channels. Pure and Slotted Aloha and Reservation systems. Throughput and capacity. Com-

munication protocols. May not be taken for credit in addition to ESE 340 or ESE 342. Crosslisted with MSC 346.

Prerequisite: 3 semesters of calculus.

Spring, 3 credits

ESE 347 Digital Signal Processing

Covers the following main topics: Sampling and reconstructing of signals, z-transform, fast Fourier transform and its implementation and application; design of finite-impulse-response (IIR) filter and optimal filters; realization problems; effects and analysis of quantization errors; power spectrum analysis.

Fall, 3 credits

ESE 348 The Computer as a Laboratory Instrument

Computer-system architecture and design philosophy is described in lectures; laboratory experiments demonstrate basic principles of real-time measurement, control, and computation. Role of computer as dedicated system component in data acquisition, control, automated testing, real-time transforms, and signal processing is developed by "hand on" experiments.

Prerequisite: ESE 318 or permission of instructor.

Fall, 3 credits

ESE 349 An Introduction to Fault Diagnosis of Digital Systems

Designed to be a follow-up to ESE 318, in order to acquaint students with fault diagnosis of logic circuits. Both combinational and sequential circuits are considered. Concepts of faults and fault models are presented followed by the discussions of test generation, test selection, and fault dictionaries. Emphasis is on test generation for fault detection, fault location, fault location within a module, and fault correction. Some basic reliability enhancing design techniques for digital circuits and systems are also discussed.

Prerequisite: ESE 318.

Spring, 3 credits

ESE 350 Electrical Power Systems

Fundamental engineering theory for the design and operation of a modern electric power system. Modern aspects of generation, transmission, and distribution will be considered with appropriate inspection trips to examine examples of these facilities. The relationship between the facilities and their influence on our environment will be reviewed. Topics included are: power system fundamentals, characteristics of transmission lines, generalized circuit constants, transformers, control of power flow and of voltage, per unit system of computation, system stability, and extra-high voltage a.c. and d.c. transmission.

Prerequisite: Junior or senior engineering majors; senior non-engineering majors with permission of instructor.

Spring, 3 credits

ESE 351 Energy Conversion

Natural and secondary energy sources; methods of energy conversion including thermionic, thermoelectric and magnetohydrodynamic converters, fuel cells and solar cells. Crosslisted with ESI 351.

Prerequisites: ESG 271 and 301.

Spring, 3 credits

ESE 352 Electromechanical Energy Converters

Basic principles of energy conversion; D.C., induction, and synchronous rotary converters; the three-phase system and symmetrical components; the relationships between voltage, current, flux, and m.m.f.; equivalent circuits and operating characteristics of rotary converters; analysis of saturation effects.

Prerequisite: ESG 372.

Fall, 3 credits

ESE 360 Optical Information Processing I

An introduction to the field of modern image processing and optical computing, together with all required mathematics. Particular emphasis is placed on generally applicable fundamentals and on the principles of experimental implementations. The theory is developed and illustrated with examples drawn from the most recent applications, including holography (3-D laser imaging), optical pattern recognition, image deblurring, holographic interferometry (vibration and stress analysis), information storage and retrieval, optical memories. Electron microscopy, microwave, radar, X-ray and ultrasonic imaging, including medical applications are discussed. All the necessary fundamentals of modern optics are introduced at appropriate times throughout the course.

Fall, 3 credits

ESE 361 Optical Information Processing II

The field of modern image processing and optical computing together with all required mathematics, including additional fundamentals and ramifications based on the material presented in ESE 360.

Spring, 3 credits

ESE 370 Digital Simulation and Modeling

Modeling of engineering, social, biological systems, and deterministic and random signals. Topics include model structuring, parameter identification, scaling, data sampling and restoration. Simulation on large and small computers with GPSS, Fortran, and machine language. Crosslisted with MSC 370.

Prerequisite: ESG 271 or equivalent.

Fall, 3 credits

ESE 371 Computer Graphics

Display devices and processors, with emphasis on processor-cathode ray tube interface. Generation of characters, straight lines, and curves specified by description geometry and by differential equations. Geometrical transform. Input devices, and basic instruction sets. Processor logic steps in instruction handling. Introduction to three-dimensional graphics. Crosslisted with MSC 371.

Prerequisite: ESE 318.

Spring, 3 credits

ESE 380 Microprocessors and Programmed Logic

This course presents the concepts and design techniques necessary for the implementation of digital systems using programmed logic devices such as microprocessors, read only memories (ROMs) and programmable logic arrays (PLAs). Emphasis is on microprocessor based systems design. Hardware and software design techniques are equally emphasized. Laboratory work involves the actual structuring, programming and debugging of programmed logic systems. Crosslisted with MSC 380.

Prerequisites: ESE 318 and MSC 120.

Fall and spring, 4 credits

ESE 381 Microprocessors and Programmed Logic II

This course is a continuation of ESE 380 and emphasizes systematic approaches to and trade-offs in the design of microprocessor-based systems from initial specification to implementation. Crosslisted with MSC 381.

Prerequisite: ESE 380.

Spring, 3 credits

ESE 390 Special Topics in Digital Systems

A vehicle for new course material of current interest in the area of digital systems. When offered, a specific title and course description will be made available at registration time. Only three credits may be counted as technical electives.

Prerequisite: ESE 318 or equivalent.

Spring, variable and repetitive credit

ESE 499 Research in Electrical Sciences

An independent research project with supervision by the faculty. Permission to register will require that the student have an average grade of B in all engineering courses and the agreement of a faculty member to supervise the research. Only three credits of research electives (MSA 487, MSC 487, ESE 499, ESC 499, ESM 499, EST 499) may be counted towards fulfillment of technical elective requirements.

Fall and spring, 3 credits, repetitive

Inter-departmental Program in Energy Technology

Participating Faculty

Abraham L. Berlad, Mechanical Engineering (Program Chairman)
Sheldon S.L. Chang, Electrical Engineering

Edward E. O'Brien, Mechanical Engineering

Leslie L. Seigle, Materials Science and Engineering

Franklin F.Y. Wang, Materials Science and Engineering

Lin-Shu Wang, Mechanical Engineering

Chin H. Yang, Mechanical Engineering

The industrial and population expansions of the world have created demands for energy which are rapidly exhausting our traditional supplies. Problems in energy utilization and conservation and the development of new energy sources are of critical importance to the future of our society. Demand is growing for engineers trained in various aspects of the energy technology field to work on the solution to these problems in industrial organizations and governmental agencies. This program offers courses for students in all departments interested in energy technology and a suggested curriculum for those who wish to concentrate in this field.

Suggested Curriculum

Students should plan to satisfy the requirements for the Bachelor of Engineering degree in engineering science, electrical engineering, or mechanical engineering, including the courses listed below.

Engineering Science Core Program

ESG 301 or ESG 302, ESG 363 or ESG 364

Interdepartmental Open and Technical Electives

ESI 193 or ESI 194, ESI 301, ESI 351, ESI 491

Engineering Specialization and Technical Electives

Six courses chosen from among the following departmental offerings: ESE 350, ESE 352, ESE 370, ESM 328, ESM 352, ESC 305, ESC 323, ESC 328, ESC 393, ESC 398

Courses

ESI 193 Introduction to Energy Engineering
ESI 194 Energy and Society
ESI 301 Fuel Technology
ESI 351 Energy Conversion
ESI 491 Senior Seminar in Energy Technology
ESE 350 Electrical Power Systems*
ESE 352 Electromechanical Energy Converters*
ESE 370 Digital Simulation and Modeling*
ESM 328 Introduction to Nuclear Engineering*
ESM 352 Materials in Energy Conversion*
ESC 305 Heat and Mass Transfer*
ESC 323 Combustion*
ESC 328 HVAC and Energy Conservation*
ESC 393 Engineering Fluid Mechanics*
ESC 398 Thermodynamics of Power Generation*

*See course description under departmental listing.

Open Electives

ESI 193 Introduction to Energy Engineering

An introductory course designed for science and CEAS students: energy technology and systems; safety, environmental impacts and cost effectiveness of present and anticipated energy systems.

Fall, 3 credits

ESI 194 Energy and Society

Comprehensive treatment of technology and economy of energy resources: conversion, transmission, and distribution of energy; interaction of energy problems with the home, community, nation, and the world. Student participation is required in the form of role-enacting and presentation of reports. Three hours of lecture per week. The course is primarily intended for non-engineering majors.

Spring, 3 credits

Technical Electives

ESI 301 Fuel Technology

Introduction to nuclear and fossil fuel processing and fabrication. Topics will include: uranium isotope separation and fuel enrichment; fuel conversion and breeding; fuel element fabrication; chemical and physical methods of petroleum refining; distillation and cracking of petroleum oils; kinetics of hydrocarbon pyrolysis; physical properties and combustion of motor fuels. Composition and properties of coal; desulfurization and combustion processes; methods of coal hydrogasification and mathanation.

Prerequisites: PHY 102 and CHE 131 and 133.

Spring, 3 credits

ESI 351 Energy Conversion

Natural and secondary energy sources; methods of energy conversion including thermionic, thermoelectric, and magnetohydrodynamic converters, fuel cells, and solar cells. Crosslisted with ESE 351.

Prerequisites: ESG 271 and 301.
Spring, 3 credits

ESI 491 Senior Seminar in Energy Technology

Current topics in energy technology are discussed by students, faculty members, and outside invited speakers. Grading shall be Satisfactory/Unsatisfactory only.
Spring and fall, 1 credit

Interdisciplinary Program in Engineering Chemistry

Program Committee

Patrick Herley, Materials Science
and Engineering

Robert Kerber, Chemistry

The interdisciplinary program in engineering chemistry (ECM), which leads to the Bachelor of Science degree, is designed to provide students with a basic understanding of the chemistry and materials technology underlying modern materials engineering.

This program emphasizes a strong background in physical chemistry infused with an orientation toward the solid state sciences and materials technology. Its central theme is a chemistry core strengthened by materials science and laboratory courses, the latter with a unique "Chemistry of Materials" component. The choice of suitable electives will enable the student to emphasize such different aspects of solid state sciences as polymeric materials, modern industrial processes, mineral resources, biomaterials, etc.

The program is a basic preparation for training chemical-materials professionals who can enter a wide range of industries or proceed to graduate work in either solid state chemistry or materials science.

Requirements for the Major

The interdisciplinary major in engineering chemistry leads to the Bachelor of Science degree. The following courses are required and must be taken for a letter grade.

No transferred course with a grade lower than C may be used to fulfill any major requirement.

Mathematics and Basic Science Requirements

	<i>Credits</i>
A. MSM 131 Calculus I and MSM 132 Calculus II	8
B. MSM 231 Calculus III and MSM 306 Calculus IV Multivariate Calculus or MSM 221 Calculus III: Differential Equations and MSA 362 Engineering Mathematics, B	6-7
C. MSC 111 Computer Science for Engineers	3
D. CHE 131, 132 General Chemistry or CHE 141, 142 Honors Chemistry	8
E. CHE 133, 134 General Chemistry Laboratory or CHE 143, 144 Honors Chemistry Laboratory	2
F. PHY 101, 102 General Physics I, II; PHY 251 General Physics III or ESI 281 An Engineering Introduction to the Solid State	11-12
<i>Sub-Total</i>	<u>38-40</u>

Note: The following alternate calculus sequences may be substituted: MSM 141, 142 or 125, 126, 127 for 131, 132; MSM 241 for 231; MSM 307 for 306.

Core

	<i>Credits</i>
A. CHE 301, 302 Physical Chemistry I, II	6
B. CHE 303 Solution Chemistry Laboratory	2
C. CHE 304 Chemical Instrumentation Laboratory	2
D. CHE 321 or 331 Organic Chemistry	3
E. ESG 332 Materials Science I: Structure and Properties of Materials	4
F. ESG 333 Materials Science II: Electronic Properties	4
G. ESM 302 Materials Design and Techniques	4
<i>Sub-Total</i>	<u>25</u>

Total 63-65

Electives

Selection of technical and open electives to give a total number of credits of 120. Students are advised to divide their electives among courses within the College of Engineering and Applied Sciences and the Chemistry Department that strengthen their professional interests, and courses in the social sciences and humanities that help them place the problems of society and industry in perspective.

Students who wish to meet the American Chemical Society certification requirements must take, in addition to the above, CHE 322, 333, and 334 (organic), CHE 355, and one additional advanced chemistry course.

Engineering Science

The major in engineering science, in which all departments of the College participate, furnishes the student with a broad background in the basic engineering disciplines. It is designed for those who wish an engineering education of a less specialized nature, or whose career goals lie outside the boundaries of the conventional engineering departments. Through the proper choice of electives and design projects a degree of specialization may be achieved within the major. Recommended course sequences in materials science and mechanics for this purpose are indicated below. In addition, with the help of a faculty advisor, the student may design a program uniquely suited to his own interests and objectives which cuts across departmental and college lines. Engineering students who wish to earn a B.E. degree with concentration in applied analysis and statistics, computer science, or materials science should elect the major in engineering science. It is also well suited as preparation for graduate studies in architecture, business, law, or medicine. Information about these studies can be provided by the faculty advisors listed on p. 156.

BE/MS Program

An engineering science student may apply at the end of the junior year for admission to this special program which will lead to a Master of Science degree and a Bachelor of Engineering degree at the end of the fifth year. A student in the program takes, in the senior year, 3 credits of ESE, ESC, or ESM 599, which replace 4 credits of ESG 441, and 3 credits of a graduate course, which replace 3 credits of technical electives. In the fifth year the student will take 24 graduate credits, of which at least 15 credits are course work and 6 credits are ESE, ESC, or ESM 599. The advantages of this program over the regular M.S. program are that a student may start his or her M.S. thesis in the senior year, and that he or she needs only 24 credits in the fifth year as opposed to 30 credits for a regular M.S. student.

Minimum Requirements for the Bachelor of Engineering Degree in Engineering Science.

A. Total credits: 128	
B. University graduation requirements, p. 156	
C. College of Engineering and Applied Sciences distribution and residence requirements, p. 156	Credits 21-24
D. Mathematics: MSM 131, 132, 221, MSA 361, MSA 362 (or approved upper division course in mathematics)	18 minimum
E. Sciences: PHY 101 102, 251 or ESI 281; CHE 131, 132, 133 or CHE 141, 142, 143	21 minimum
F. Introductory Course in Computer Science: MSC 111 or 112	3 minimum
G. Engineering Science Core Program: ESG 211, 312 required. In addition, a student is required to take seven courses of the following nine with at least two courses each in mechanical engineering, materials science, and electrical engineering. Mechanical Engineering ESG 261, 301, 363, 364 Materials Science and Engineering ESG 302, 332, 333 Electrical Engineering ESG 271, 372	32 minimum

H. Engineering Synthesis and Design: Satisfied through the project phase of ESG 313, 314, 315, 316, 317 or 318 and ESG 440 and 441	Credits 2 6
I. Engineering Specialization and Technical Electives: Any two of the required seven engineering science core courses (8 credits) may be used towards satisfying the technical elective requirements. In addition, the student should select courses of specialization suggested by each department to acquire depth of knowledge complementary to the breadth of subject material in the major	28 less 8 core
J. Open Electives and Other Requirements: Any undergraduate University course offered for academic credit may be chosen for open elective credits. No more than 3 credits of physical education may be used to satisfy open elective requirements.	Variable

Total 128

Recommended Course Sequences

Electrical Engineering

Students who wish to major in Engineering Science and who are interested in electrical engineering should choose elective courses in consultation with a faculty advisor in the Electrical Engineering Department. This will assure appropriate consideration of the student's interests and goals.

Materials Science and Engineering

A student may acquire professional preparation in the field of materials science by selecting the engineering science courses ESG 302, 332, 333. In addition he or she should take the elective courses ESM 302, 306 and two additional materials science courses from the list given below.

ESM 302	Materials Design and Techniques
ESM 306	Mechanical Properties of Engineering Materials
ESM 307	Physical Metallurgy
ESM 310	Kinetic Processes in Solids
ESM 325	Diffraction Techniques and the Structure of Solids
ESM 336	Electronic Materials
ESM 355	Processing of Materials

Further specialization in various branches of materials science such as physical metallurgy, ceramics, environmental corrosion and protection of materials, strength of materials, electronic and magnetic materials, biomedical materials, may be obtained by

taking additional elective courses. Details concerning elective course sequences in materials science are available in a brochure which can be obtained from the office of the department.

Mechanical Engineering

Specialization may be obtained within the general area of mechanics in the field of energy and environmental engineering, fluid mechanics and geophysics, and structural engineering. Students are advised to select a course sequence in consultation with a departmental advisor in the field. Typical elective sequences are as follows:

Energy and Environmental Engineering

ESC 305, 322, 323, 345, 397, 398; ESE 351

Fluid Mechanics and Geophysics

ESC 345, 361; ESS 310, 323, 351, 352

Structural Engineering

ESC 330, 332, 333, 334, 336, 342, 381; ESM 306

Courses

Engineering Science Courses

MSC 111 or 112 is a prerequisite for all ESG courses.

ESG 211 Engineering Laboratory I: Electrical Circuits and Electronics

Introduction to the measurement of electrical quantities; instrumentation; basic circuits, their operation and applications; electronic devices; amplifiers, oscillators, power supplies, wave shaping circuits, and basic switching circuits.

Corequisite: ESG 271.

Spring, 2 credits

ESG 261 Particle and Rigid Body Mechanics

A review of vector algebra and calculus with kinematic applications such as curves in space, displacement, velocity and acceleration of point particles in classical orthogonal coordinate systems; notion of force; statics of a single particle including gravity, friction, electrostatic and magnetostatic forces; force as a vector field; moment about a point and moment about a line, couples, work; equivalent force systems and the wrench; equilibrium of systems of mass particles; special case of the rigid body. Rigid body kinematics and the kinematics of relative motions; single particle dynamics, including charge carrying particles and elementary linear vibrations; dynamics of clusters of particles; dynamics of the rigid body.

Prerequisite: PHY 101. *Corequisite:* MSM 221.

Fall, 4 credits

ESG 271 Electrical Sciences I

In this course, the efficient generation, storage and transmission of energy and information are used to motivate the student's introduction to the various fields of electrical sciences. Such topics as signal analysis, electrical measurements, Kirchhoff's laws, linear circuit analysis via Laplace transforms, semiconductor devices, and basic electronic circuits are covered both from the theoretical and practical viewpoints. Computer-aided techniques are included. The material in this course is coordinated with the laboratory course ESG 211.

Prerequisites: MSM 221 and MSC 111 or 112. *Corequisite:* ESG 211. *Spring, 4 credits*

ESG 281 An Engineering Introduction to the Solid State (Formerly ESI 281)

The purpose of this course is to prepare students for the understanding of nature and properties of the crystalline solid state, with particular attention to semiconductors and semiconductor technology. Elementary notions of statistical and kinetic theory necessary for an understanding of the behavior of assemblies of particles are introduced. The basic concepts of oscillatory motions, wave-like phenomena, and classical electricity and magnetism are reviewed. Elementary quantum mechanics is introduced and a few simple problems (harmonic oscillator, electron in a box) are solved. The theory is then applied to the hydrogen atom; multielectron conductors are described; the origin of energy bands and energy gaps is explained; concepts such as Fermi energy, density of states, and work function are introduced; and, finally, the optical and transport properties of metals, insulators, and semiconductors are discussed.

Prerequisites: PHY 101 and 102 or equivalent.

Spring and fall, 4 credits

ESG 301 Thermodynamics

The absolute temperature and other thermodynamic variables, including the thermodynamic potentials, are used to describe systems in thermal equilibrium by considering their interrelationships as governed by the laws of classical thermodynamics. Applications to phase transformations, inert and chemically reacting multicomponent systems, power cycles, and engines are considered.

Prerequisite: MSM 221.

Fall, 4 credits

ESG 302 Thermodynamics of Materials

The basic laws and concepts of thermodynamics are elucidated, and the important thermodynamic relationships systematically developed with reference to the behavior of materials. The thermodynamics of solids is discussed, including the thermodynamics of solutions and the calculation of reaction free energies and equilibria in condensed phase reactions such as phase transformations, oxidation, and diffusion.

Corequisite: MSM 221.

Spring, 4 credits

ESG 312 Engineering Laboratory II: Theory and Measurement in Engineering

The following topics will be considered: interaction of theory and experimentation, formulation of the theory, theoretical planning of the experiment, uses of theory in design of experimental apparatus, methods of data analysis, experimental problems involving sensor readout systems, and electronic instrumentation in scientific research.

Prerequisite: Junior standing.

Fall, 2 credits

ESG 313 Engineering Experimentation: Applied Mathematics and Statistics

ESG 314 Engineering Experimentation: Computer Science

ESG 315 Engineering Experimentation: Electrical Engineering

ESG 316 Engineering Experimentation: Materials Science and Engineering

ESG 317 Engineering Experimentation: Mechanical Engineering

ESG 318 Engineering Experimentation: Technology and Society

Projects under faculty supervision which emphasize the principles of experimental design and data evaluation. Projects will generally be undertaken by teams of two students, from a selection of problems submitted by the engineering faculty or suggested by the student with faculty approval. Students should register for the one course number above that names their faculty project advisor's department.

Prerequisites: ESG 211 and 312. *Spring, 2 credits*

ESG 332 Materials Science I: Structure and Properties of Materials

A study of the relationship between the structure and properties of engineering materials and the principles by which materials' properties are controlled. The structure and structural imperfections in simple crystalline materials and the role which these factors play in defining electrical conductivity, chemical reactivity, strength, and ductility are considered. The molecular structure of polymers is discussed and related to the behavior of plastics, rubbers, and synthetic fibers. The principles of phase equilibria and phase transformations in multicomponent systems is developed. These principles are applied to the control of the properties of semiconductors, commercial plastics, and engineering alloys by thermochemical treatment. Corrosion, oxidation, and other deterioration processes are interpreted through the interaction of materials with their environment.

Prerequisite: CHE 131 or 141.

Fall, 4 credits

ESG 333 Materials Science II: Electronic Properties

After a review of quantum mechanics and atomic physics, the binding energy and electronic energy levels in molecules and solids are discussed. The free-electron theory of metals is introduced and applied to the quantitative treatment of a number of electron emission effects. The band theory of solids is developed quantitatively via the Kronig-Penney model and the transport properties of metals and semiconductors are discussed in detail. The physical principle of p-n junctions, transistors, tunnel diodes, etc. is explained. Fundamentals and applications of photoconductors, lasers, magnetic materials, and superconductors are also discussed.

Prerequisite: PHY 251 or ESI 281 (ESG 332 is not a prerequisite).

Spring, 4 credits

ESG 363 Mechanics of Solids

An introduction to the mechanics of deformable solids used in engineering structures. Topics include: two-dimensional descriptions of stress; displacements and strain; elastic stress-strain temperature relations; beam deformations due to bending and axial forces; statically indeterminate beams; influence of plasticity on stress analysis; torsion; buckling.

Prerequisite: ESG 261.

Spring, 4 credits

ESG 364 Introduction to Fluid Mechanics

Fundamental properties of fluids and their conservation laws in the context of applications to common engineering flows. Topics

covered include hydrostatics, surface tension, dimensional analysis and dynamic similitude, Euler's equation, laminar and turbulent boundary layers, lubrication, drag on immersed bodies, open channel and pipe flows, and the rotating coordinate systems.

Prerequisite: ESG 261.
Fall, 4 credits

ESG 372 Electrical Sciences II

The basics of solid state physics, circuit theory, and electromechanics are reviewed and applied to a study of electronic and electromechanical devices, such as klystrons, cathode-ray tubes, solid-state diodes, transistors, and electrical machines. The principle electronic circuits are also examined; these include rectifiers, wave-shaping circuits, electronic switches, gates, biasing circuits, the large-signal and small-signal analysis of amplifiers, and operational amplifiers.

Prerequisite: ESG 271.
Fall, 4 credits

ESG 440 Engineering Design I

Lectures by faculty and visitors on typical design problems encountered in engineering practice. During this semester each student will choose a senior design project for Engineering Design II. A preliminary design report is required.

Prerequisite: Senior standing.
Fall, 2 credits

ESG 441 Engineering Design II

Student groups carry out the detailed design of the senior projects chosen during the first semester. A final and detailed design report must be prepared.

Prerequisite: ESG 440.
Spring, 4 credits

Interdepartmental Open Elective Courses

ESI 100 Engineering Orientation Seminar

One-hour lecture each week by a speaker from outside or from the College of Engineering faculty. Topics will include all the various aspects of engineering offered at Stony Brook. No reports are required. Grading is Satisfactory/Unsatisfactory only, based on attendance, and the course may be taken up to three times. Credit obtained may be applied toward the open elective requirement by an engineering student. Students may not register for both ESI 100 and ESI 101 during the same semester.

Fall and spring, 1 credit, repetitive

ESI 101 Engineering Orientation Seminar and Discussion

Students will attend the same one-hour lecture each week as in ESI 100, and fulfill the attendance requirements. In addition a formal, one hour, weekly discussion group will meet with the coordinator to discuss more fully some of the various aspects of modern engineering. Students will be required to submit a term paper on the specific area of engineering of their study and will be graded accordingly. Credit obtained may be

applied toward the open elective requirement by an engineering student. Students may not register for both ESI 100 and ESI 101 during the same semester.

Fall, 2 credits

Interdepartmental Technical Elective Courses

ESI 280 Introduction to Ocean Engineering

A wide range of ocean and marine systems are examined from the technical viewpoint. These include transportation, submersibles, navigation and control, structures, mining operation, fisheries, and oceanography. Technologies specific to the ocean environment such as underwater sound, materials, global instrumentation, and life support will be treated in sufficient detail to enable quantitative discussion of the role of ocean engineering and coastal zone operations.

Fall, 3 credits

ESI 300 Independent Study Projects

An engineering student may, in consultation with faculty members, develop an individual course of academic investigation and study. The student must prepare an outline of the proposed project clearly stating its scope, intent, and methods which will be used to conduct it. He or she must obtain from two faculty members written approval of the project and

agreement to supervise it and to recommend appropriate academic credit. The project then requires final approval by the Undergraduate Curriculum and Teaching Policy Committee. The maximum allowable total credit for independent study is 30 credits with no more than 18 credits in any one semester. Though independent study may be taken in any semester, it is normally expected that an engineering student will take independent study as a junior or senior. The academic credit assigned to independent study projects is normally drawn from the block of elective credits and engineering design in the curriculum.

Fall and spring, variable credit

ESI 310 Biomedical Engineering

A systematic and basic development of the engineering principles applicable to medicine and biological systems in terms of the following basic principles: biological systems analysis, biomechanics (viscoelastic, rheological properties of tissues, stress distributions in living organisms, etc.), bioenergetics and radiation technology, mass and heat transport in living systems, bioelectronics, and biomaterials sciences. Applications are to bioastronautics, artificial organs, environmental control, man-machine systems, and the simulation of biological systems.

Fall, 3 credits

Department of Materials Science and Engineering

Professors

John C. Bilello, Dean, College of Engineering and Applied Sciences, Ph.D. University of Illinois (Dislocations, mechanical properties; fracture, synchrotron topography)

Herbert R. Carleton, Ph.D. Cornell University (Optical materials; electro-optics)

Allen N. Goland, Adjunct, Ph.D. Northwestern University (Solid state physics)

Craig S. Hartley, Chairman, Ph.D. Ohio State University (Mechanical properties)

Patrick J. Herley, Ph.D. Rhodes University, South Africa; Ph.D. Imperial College, London (Thermal decomposition; catalysis)

Herbert Herman, Ph.D. Northwestern University (Phase transformations; protective coatings)

Franco P. Jona, Ph.D. Eidgenossische Technische Hochschule (Surface structures)

Sumner N. Levine, Ph.D. University of Wisconsin (Electronic materials)

Charles T. Prewitt, Ph.D. Massachusetts Institute of Technology (Crystallography)

Leslie L. Seigle, D.Sc. Massachusetts Institute of Technology (Thermodynamics; diffusion; protective coatings)

Masaki Suenga, Adjunct, Ph.D. University of California, Berkeley (Superconducting alloys; electron microscopy)

Franklin F.Y. Wang, Ph.D. University of Illinois (Magnetism; dielectrics; physical ceramics)

Associate Professor

Joseph Jach, D.Phil. University of Oxford (Chemical reactivity of solids)

Assistant Professors

Clive R. Clayton, Ph.D. University of Surrey (Corrosion; ESCA)

John M. Liu, Ph.D. Johns Hopkins University (Fracture mechanics; non-destructive testing)

John A. Strozier, Jr., Adjunct, Ph.D. University of Utah (Surface physics)

Teaching Assistants

Estimated Number: 30

The Department of Materials Science and Engineering offers a wide range of interdisciplinary programs in conjunction with other science and engineering departments on campus. These programs are designed to provide a basic training for prospective graduates who can enter a wide range of industries or proceed to further graduate studies in materials science. These joint programs are aimed at the materials aspect of mechanical engineering, ocean engineering, electrical engineering, and chemistry. For example, see the Engineering Chemistry program or the Program in Energy Technology. For a program within the framework of the Mechanical Engineering Program a materials option is available using the following four courses as technical electives: ESG 302, ESM 302, 306, and 307. Individualized programs are also available in biomedical materials, electronic materials, environmental properties of materials, and materials in energy conversion.

BE/MS Program

An engineering student may apply at the end of the junior year for admission to this special program, which will lead to a Master of Science degree and a Bachelor of Engineering degree at the end of the fifth year. A student in the program takes, in the senior year, 3 credits of ESM 599 which replace 4 credits of ESG 441, and 3 credits of a graduate course, which replace 3 credits of technical electives. In the fifth year the student will take 24 graduate credits, of which at least 15 credits are course work and 6 credits are ESM 599. The advantages of this program over the regular M.S. program are that a student may start his or her M.S. thesis in the senior year, and that he or she needs only 24 credits in the fifth year as opposed to 30 credits for a regular M.S. student.

The Physics of Materials Program

Physics majors who wish to pursue a career in engineering physics, particularly in the application of solid state physics to materials science and engineering, are encouraged to take part in this program. In addition to completing the requirements for the B.S. in physics, these students take courses during the junior and senior years in the Department of Materials Science and Engineering. After the successful completion of a minimum of five courses in the Department of Materials Science and Engineering, the student would be eligible for admission to the master's degree program in materials science and engineering. Interested students should consult with the Chairman of the Department of Materials Science and Engineering in their junior year.

Courses

Open Electives

ESM 205 Materials in the Modern World (Formerly ESI 205)

A study of modern materials, focusing on the synthesis and structure of newly developed materials and their use in today's technology. The fundamental nature of metals, ceramics, glasses, polymers, and composite materials will be explored, and their multiple uses in domestic and industrial construction will be discussed together with environmental impact. This course will provide a basic

understanding of the atomic architecture of these materials, and it will show how this knowledge can be used to tailor-make materials that fulfill certain novel criteria for modern technology relating specifically to their mechanical, electrical, magnetic, and thermal properties.
Spring, 3 credits

ESM 475 Undergraduate Teaching Practicum

Students assist the faculty in teaching by conducting recitation or laboratory sections that will supplement a lecture course. The student will receive regularly scheduled supervision from the faculty instructor. May be used as an open elective only and repeated once.

Prerequisites: Senior standing as an undergraduate major within the College; a minimum grade point average of 3.0 in all Stony Brook courses and the grade of B in the course in which the student is to assist; permission of department.
Fall and spring, 3 credits

Technical Electives

ESM 302 Materials Design and Techniques

The relationship between the microscopic structure of materials and their macroscopic properties will be studied in a laboratory/lecture course in which the student will perform investigations using research grade equipment. Techniques for the production of new materials or the modification of existing materials in order to satisfy design criteria for engineering applications will be discussed and carried out in the laboratory. Topics such as crystal growth, impurity doping (e.g., in semiconductors), heat treatment, precipitation, and solute hardening will be covered. The effects of such treatments upon the structure of a wide range of materials (metals, semiconductors, ceramics, and glasses) will be studied using X-ray diffraction, and optical and electron microscopy. The effects of structural change upon the mechanical, electrical, magnetic, optical, and environmental-sensitive properties of materials will be measured and correlated with the controlling treatments.

Prerequisite: Permission of instructor.

Fall, 4 credits

ESM 305 Materials for Ocean Engineering

The engineering properties of various alloys and non-metals will be examined relative to marine applications. Of central importance will be the deterioration of materials in the sea due to corrosion; erosion, cavitation, biofouling, etc. These effects will be considered in the selection of materials for desalination plants, deep submersibles, hulls and superstructures, propulsion systems, marine hardware and fasteners.

Prerequisite: Junior standing or permission of instructor.

Spring, 3 credits

ESM 306 Mechanical Properties of Engineering Materials

A unified approach for all solid materials will be made with regard to the correlation between microstructure and their macroscopic mechanical properties. The course deals with various testing techniques for delineating mechanical properties of materials, considering elasticity, anelasticity, plasticity, dislocation theory, cohesive strength, fracture, and surface wear. Attention is given to strengthening mechanisms for

solids, metals, ceramics, and polymers, with a view towards learning how manipulation of microstructure can be used to design materials of specified properties. Discussion of the various engineering applications of materials and of materials selection for a number of specified tasks is pursued.

Prerequisite: Permission of instructor.

Spring, 3 credits

ESM 307 Physical Metallurgy

A study will be made of the physical and mechanical properties of a wide range of metals and alloys, with special reference to engineering practice. Industrial processing and heat treatment of ferrous alloys will be emphasized. Lecture, demonstrations, and laboratories.

Prerequisite: ESG 332.

Fall, 3 credits

ESM 309 Thermodynamics of Solids

This course is concerned with the application of thermodynamics to analysis of phase equilibria and reactions in solids. Topics include ideal and real solutions, phase equilibrium diagrams, first and higher order phase transitions, and thermodynamics of diffusion, oxidation, and corrosion reactions.

Prerequisite: ESG 301 or 302.

Fall, 3 credits

ESM 310 Kinetic Processes in Solids

Atomistic rate processes in solids will be studied, with emphasis on diffusion in crystals. Theory of diffusion and experimental techniques will be developed, and the role played by a broad class of crystalline imperfections will be examined. Topics will include annealing of deformed materials, kinetics of defect interactions, thermally controlled deformation, kinetics of nucleation and growth, and solidification and precipitation.

Prerequisite: ESG 332 or 302.

Spring, 3 credits

ESM 325 Diffraction Techniques and Structure of Solids

The structure of solids can be studied using X-ray, neutron, and electron diffraction techniques. X-ray diffraction techniques are emphasized in this introductory course. Topics covered are: coherent and incoherent scattering of radiation, structure of crystalline and amorphous solids, stereographic projection, and crystal orientation determination. The concept of reciprocal vector space is introduced early in the course and is used as a means of interpreting diffraction patterns. Laboratory work in X-ray diffraction patterns is also included to illustrate the methods.

Prerequisite: ESG 332.

Fall, 3 credits

ESM 328 Introduction to Nuclear Engineering

Introduces the concepts used in modern nuclear engineering practice. The fundamentals of atomic and nuclear physics are reviewed and this is followed by discussions of neutron diffusion and moderation, nuclear reactor theory in the steady state, and the time-dependent reactor. Some other topics covered will be the interaction of radiation with matter; radiation protection and shielding; and licensing, safety, and environmental aspects of nuclear engineering.

Prerequisites: CHE 131 or equivalent; MSM 131 or equivalent.
Fall and spring, 3 credits

ESM 329 Problems in Nuclear Technology

A sequel to ESM 328, treating nuclear reactors in greater depth. In addition, there will be an introduction to topics such as nuclear fusion, reactor moderator and fuel materials, radiation protection and reactor safeguards.

Prerequisite: ESM 328.
Spring, 3 credits

ESM 335 Introduction to Polymers

The objective of this course is to provide an introductory survey of the physics, chemistry, and technology of polymers. The topics covered include classification of polymers, molecular forces and bonds, structure of polymers,

measurement of molecular weight and size, rheology and mechanical properties, thermodynamics of crystallization, polymerization mechanisms, and commercial polymer production and processing.

Prerequisite: ESG 332.
Fall, 3 credits

ESM 336 Electronic Materials

The properties of intrinsic and extrinsic semiconductors are discussed with particular attention first to the equilibrium distribution of electrons in the bands and then to the non-equilibrium transport of charge carriers. The properties and applications of photoconductors and of luminescent materials are then described. The concept of stimulated emission is introduced, laser operation explained, and laser materials discussed in relation to their applications in science and technology. Other topics considered are the properties of magnetic materials, of dielectric materials, and of superconductors.

Prerequisite: ESG 333.
Fall, 3 credits

ESM 337 Dielectric and Magnetic Materials

A survey of the properties of dielectric and magnetic materials pertinent to their application in modern technology. Emphasis is given to the practical material parameters which determine their uses.

Prerequisite: ESM 336.
Spring, 3 credits

ESM 346 Physical Chemistry of Solid Interfaces

The behavior and chemical properties underlying solid-gas, solid-liquid, and solid-solid interfaces: the principal concepts determining the energetics and kinetics of nucleation at solid surfaces; ad-

sorption and the specific factors influencing heterogeneous catalysis on gas-solid interfaces, with examples drawn from industrial processes; the colloidal state, including the classification, preparation, and properties of colloids. This course is identical with CHE 346.

Prerequisite: CHE 302 or permission of instructor.
Spring, 3 credits

ESM 348 Electrochemistry at Metal-Liquid Interfaces

Introduction to basic electrochemical processes occurring at metal-solution interfaces under free and controlled conditions. Emphasis on electrochemistry of corrosion, plating processes, and batteries. Crosslisted with CHE 348.

Prerequisites: PHY 102 and CHE 301 or ESG 301.
Spring, 3 credits

ESM 351 Materials in Medical and Dental Sciences

A thorough survey of the uses of materials in the medical and dental sciences. Current research and the problems encountered in each area will be reviewed. Topics include general considerations of materials requirements; corrosion and wear under physiological conditions; mechanical stress; interaction of materials with blood and the problems of clotting; transport of biological substances through membranes; application to the development of artificial arteries, hearts, heart valves, oxygenators, artificial kidneys, and other organs; bone and dental implants.

Prerequisite: Permission of instructor.
Spring, 3 credits

ESM 352 Materials in Energy Conversion

The efficiency of energy conversion devices is limited by the availability and properties of essential materials. The use of materials in energy conversion systems is examined, with emphasis on advanced devices such as magnetohydrodynamics, thermoelectrics, thermionic devices, solar energy converters, and fuel cells. The way in which materials properties influence device capability is analyzed, and factors controlling energy output and conversion efficiency are explained. Materials problems in energy storage systems are examined.

Prerequisite: ESG 332 or 333.
Spring, 3 credits

ESM 355 Processing of Materials

The mechanical and thermal processing of a wide range of metallic and non-metallic materials will be reviewed. Both traditional and more modern forming operations will be examined. Recently developed schemes of thermomechanical treatment and thermal processing for the control of microstructure and properties will be explored.

Prerequisite: ESG 332.
Spring, 3 credits

ESM 499 Research in Materials Science

A course which involves the student in an independent research project with supervision by the faculty. Permission to register requires that the student have an average grade of B in all engineering courses and the agreement of a faculty member to supervise the research. Only three credits of research electives (MSA 487, MSC 487, ESE 499, ESM 499, ESC 499, EST 499) may be counted toward fulfillment of technical elective requirements.
Fall and spring, 3 credits, repetitive

Department of Mechanical Engineering

Professors

Fred Berg, Jr., Part-time, M.A. Polytechnic Institute of Brooklyn (Machine design and servomechanisms)

Abraham L. Berlad, Ph.D. Ohio State University (Combustion; energy technology)

W.S. Bradfield, Ph.D. University of Minnesota (Vehicular dynamics; fluid mechanics; hydrofoil hydrodynamics)

R.D. Cess, Ph.D. University of Pittsburgh (Planetary atmosphere; climatology)

Rene Chevray, Ph.D. University of Iowa (Fluid mechanics)

Fu-Pen Chiang, Ph.D. University of Florida (Experimental stress analysis; solid mechanics)

Stewart Harris, Chairman, Ph.D. Northwestern University (Physics of fluids; environmental engineering)

T.F. Irvine, Jr. Ph.D. University of Minnesota (Heat transfer, thermodynamics)

R.S.L. Lee, Ph.D. Harvard University (Suspension flow; fire research; bio-fluid mechanics)

E.E. O'Brien, Ph.D. Johns Hopkins University (Fluid mechanics; turbulence)

George Stell, Ph.D. New York University (Thermodynamics, statistical dynamics)

James Tasi, Ph.D. Columbia University (Mechanics of solids)

Ching H. Yang, Ph.D. Lehigh University (Structural design; energy technology; combustion theory)

Associate Professors

John Caldwell, Adjunct, Ph.D. University of Wisconsin (Astronomy)

Sultan Hameed, Adjunct, Ph.D. University of Manchester, England (Atmospheric physics and chemistry)

Joseph Hogan, Ph.D. New York University (Planetary atmospheres; satellite meteorology)

Prasad Varanasi, Ph.D. University of California, San Diego (Planetary spectroscopy)

Lin-Shu Wang, Ph.D. University of California, Berkeley (Dynamic meteorology)

Teaching Assistants

Estimated Number: 25

In addition to participating in the program leading to the Bachelor of Engineering degree in Engineering Science (described on p. 169), the Department of Mechanical Engineering also offers the Bachelor of Engineering in Mechanical Engineering. This major is designed to meet the special needs of the student who wishes to pursue in depth studies in the area of mechanical engineering as preparation for either a professional career or graduate study.

Mechanical engineering is a broad field concerned with all aspects of the planning, design, development, manufacture, and evaluation of energy conversion, power generation, environmental control systems, land and marine transport vehicles, and production machines. These concerns, in recent times, are made evident in mechanical engineers' special interest in areas typified by high-speed transportation, control of pollution from power-producing devices, noise abatement, and new sources of power such as fuel cells, solar energy, and nuclear reactors.

In addition to studies in the areas of humanities and social sciences, and the engineering concentration requirements, mechanical engineering majors must also take the mechanical engineering concentration which consists of courses in technical drawing, manufacturing processes, kinematics and design processes, applied thermodynamics, heat and mass transfer, and mechanical engineering laboratory. Although mechanical engineering is broad in scope it is still possible for the student to obtain a measure of specialization through his choice of elective courses, which can be in the areas of power/energy, or mechanical engineering design, including structural analysis and design. The requirements for the mechanical engineering degree and a typical course sequence are given below.

BE/MS Program

An engineering student may apply at the end of the junior year for admission to this special program, which will lead to a Master of Science degree and a Bachelor of Engineering degree (either in Mechanical Engineering or Engineering Science) at the end of the fifth year. A student in the program takes in the senior year 3 credits of ESC 599, which replace 4 credits of ESG 441, and 3 credits of a graduate course, which replace 3 credits of technical elective. In the fifth year the student will take 24 graduate credits of which at least 15 credits are course work and 6 credits are ESC 599. The advantages of this program over the regular M.S. program are that a student may start his or her M.S. thesis in the senior year, and the he or she needs only 24 credits in the fifth year as opposed to 30 credits for a regular M.S. student.

Degree Requirements—Mechanical Engineering

A. Total credits: 128

B. University graduation requirements, p. 156

C. College of Engineering and Applied Sciences distribution and residence requirements, p. 156

D. Engineering Concentration Requirements:

1. Mathematics:

MSM 131, 132, 221 and MSA 361

2. Sciences:

PHY 101, 102, 251 (or ESI 281) and CHE 131 or 141, 133 or 144

3. Computer Science:

MSC 111 or 112

4. Engineering Science:

ESG 211 and 312

5. Mechanics:

ESG 301 Thermodynamics

ESG 261 Particle and Rigid Body Mechanics

ESG 363 Mechanics of Solids

ESG 364 Mechanics of Fluids

6. Materials Science:

ESG 332 Structure and Properties of Materials 4

7. Electrical Sciences:

ESG 271 Electrical Sciences I 4

8. Engineering Synthesis and Design:

Requirements satisfied through the project phase of ESG 313, 314, 315, 316, 317, or 318; and ESG 440 and 441 2

E. Mechanical Engineering Core Courses:

The following courses must be taken to satisfy the mechanical engineering core requirements

ESC 202 Technical Drawing

ESC 305 Heat and Mass Transfer

ESC 310 Machine Kinematics and Design

ESM 355 Processing of Materials

ESC 398 Thermodynamics of Power Generation 15

F. Technical Electives:

Central to the engineering curriculum is concentrated study to achieve a depth of understanding of one or more of the engineering disciplines. Specialized programs in Mechanical Engineering will be suggested by the Department. No more than three credits of ESC 499 may be used. 15

G. Open Electives and Other Requirements:

Any undergraduate University course offered for academic credit may be chosen for open elective credits. No more than three credits of Physical Education can be used to satisfy open elective requirements. Graduate level courses may be taken to satisfy either open elective or technical elective requirements with approval. No more than six credits of ESC 499 may be used.

Variable

Total 128

Sample Course Sequence Satisfying Minimum Requirements for a B.E. in Mechanical Engineering

Note: HUM/SOC elective courses must be chosen to satisfy College distribution requirements on pp. 156-157.

<i>Freshman</i>	<i>Fall Credits</i>	<i>Sophomore</i>	<i>Fall Credits</i>
MSM 131	4	MSM 221	3
PHY 101	4	ESI 281 or PHY 251	4
EGL 101	3	CHE 131 or 141	4
HUM/SOC elective	3	CHE 133 or 143	1
HUM/SOC elective	3	ESG 261	4
<i>Total</i>		<i>17</i>	<i>Total</i>
			<i>16</i>

	<i>Spring Credits</i>		<i>Spring Credits</i>
MSM 132	4	MSA 361	4
PHY 102	4	ESG 211	2
MSC 111	3	ESG 271	4
ESC 202	3	ESG 363	4
HUM/SOC elective	3	HUM/SOC elective	3
<i>Total</i>		<i>17</i>	<i>Total</i>
			<i>17</i>

Junior	Fall Credits	Senior	Fall Credits
ESG 312	2	ESG 440	2
ESG 301	4	Tech. elective	3
ESG 364	4	Tech. elective	3
ESG 332	4	Tech. elective	3
HUM/SOC elective	3	HUM/SOC elective	3
Total	17	Total	14

	Spring Credits		Spring Credits
ESG 317	2	ESG 441	4
ESC 305	3	Tech. elective	3
ESC 310	3	Tech. elective	3
ESC 398	3	HUM/SOC elective	3
ESM 355*	3	Open elective	3
Total	14	Total	16

*May be taken in the senior year.

Courses

Open Electives

ESC 205 Introduction to Atmospheric Science

The nature and causes of atmospheric phenomena. Basic physical and chemical processes and energetics. Atmospheric thermodynamics, hydrostatics, dynamics, kinematics. Atmospheric wind systems and pressure patterns, clouds and precipitation, severe storms. This course is identical with ESS 205.

Prerequisites: PHY 101 and MSM 126 or 131 or 141.
Spring, 3 credits

ESC 475 Undergraduate Teaching Practicum

Students assist the faculty in teaching by conducting recitation or laboratory sections that will supplement a lecture course. The student will receive regularly scheduled supervision from the faculty instructor. May be used as an open elective only and repeated once.

Prerequisites: Senior standing as an undergraduate major within the College; a minimum grade point average of 3.0 in all Stony Brook courses and the grade of B in the course in which the student is to assist; permission of department.
Fall and spring, 3 credits

Technical Electives

In addition to the courses listed below, ESC majors may take ESG 302, ESG 333, ESG 372 as technical electives.

ESC 202 Fundamentals of Technical Drawing

Undertakes a thorough study of basic rendering techniques and skills required for technical drawing including orthographic axonometric projections, rotations, and perspective. Drafting techniques such as line quality, lettering, and accuracy will be emphasized.

The final four weeks will consist of an individual project which reflects the student's interests and reinforces the material taught in the course.

Fall and spring, 3 credits

ESC 305 Heat and Mass Transfer

The fundamental laws of momentum, heat and mass transfer; and the corresponding transport coefficients. Principles of steady-state and transient heat conduction in solids are investigated. Laminar and turbulent boundary layer flows are treated, as well as condensation and boiling phenomena, thermal radiation, and radiation heat transfer between surfaces. Applications to heat transfer equipment are covered throughout the course.

Prerequisite: ESG 301.
Spring, 3 credits

ESC 310 Machine Kinetics and Design

Analysis of displacements, velocities, accelerations, and associated forces in plane motion mechanisms by mathematical and computer methods; study of the fundamental principles of design as applied to mechanical components such as bearings, gears, shafting, springs, screws, belts, and clutches under both static and dynamic loading; principles of lubrication.

Prerequisite: ESG 261.
Spring, 3 credits

ESC 322 Nonequilibrium Processes in Environmental Systems

Introduction to the kinetic rate processes, flow, and stability of nonequilibrium systems; combustion, condensation, vaporization, and related environmentally important thermokinetic processes;

thermokinetic stability and the stability of coupled ecological systems; combustion and air pollution. Applications are to nonequilibrium atmospheric processes.

Prerequisite: ESG 301.

Fall, odd numbered years, 3 credits

ESC 323 Combustion

Lectures and laboratory work designed as an introduction to the fundamentals of combustion processes: Combustion theory; experimental properties of the ignition, quenching, propagation, and stability of flames; explosions and detonations; combustion processes and air pollution; radiative properties of flames; dust explosions. Applications are to modern systems.

Prerequisite: ESG 301.

Fall, 3 credits

ESC 328 HVAC and Energy Conservation

Engineering performance; efficiency; and applications of heating, ventilating, and air conditioning technology. Relation of energy conversion and storage systems to energy conservation in the home, commerce, industry, and transportation.

Corequisite: ESG 301.

Spring, 3 credits

ESG 329 Chemical Reactor Design

Application of combustion, thermodynamic, chemical kinetic, and fluid mechanical principles to chemical reactor design: reactor stability; performance criteria and design optimization; Batch reactors; the continuous Stirred Tank Reactor; Plug Flow and Laminar Flow Tubular Reactors; Heterogeneous Reactors; Solid-Fluid, Gas-Liquid, and Liquid-Liquid Reactors.

Prerequisite: ESC 323 or permission of instructor.

Spring, even numbered years, 3 credits

ESC 330 Structural Analysis

Structural stability. Statically determinate and indeterminate structures. Analysis of trusses and frames in two dimensions. Displacement of structures using the method of virtual work. Method of superposition for analyzing statically indeterminate structures. Slope-deflection equations and moment distribution.

Prerequisite: ESG 363.

Alternate years, 3 credits

ESC 332 Model Analysis of Architectural and Civil Structures

The use of models to study the behavior of structures under various loadings. The principle of similitude which governs the relationship between a model and its prototype will be discussed in detail. The principle of Muller-Breslau and the methods based on the principle for obtaining influence lines will be demonstrated. Students will be formed into small

groups and each group will carry out a complete project involving the design, manufacture, testing, and analysis of the model.

Prerequisite: ESG 363.

Spring, even numbered years, 3 credits

ESC 333 Reinforced Concrete Design

Introduction to concrete design code: foundation planning and general information; design of reinforced concrete slabs, girders and columns; pile foundation and spread footing; and prestressed concrete beam design.

Prerequisite: ESG 363.

3 credits

ESC 334 Structural Steel Design

Introduction to structural steel design codes: analysis of loading; design of steel tension and compression members, beams, built-up sections, composite sections, and riveted, bolted, and welded connections; design of steel buildings; plastic design and analysis.

Prerequisite: ESG 363.

Spring, odd numbered years, 3 credits

ESC 336 Soil Mechanics

Identification of soils; seepage problems; influence of porewater pressure on stress and compressibility; theory of consolidation and settlement; strength theory and conditions of failure.

Prerequisites: ESG 363 and 364.

Alternate years, 3 credits

ESC 342 Introduction to Experimental Stress Analysis

The concepts of three dimensional stress and strain, their transformation laws, and their mutual relationships will be discussed in detail. Results from theory of elasticity as pertinent to experimental stress analysis will also be presented. Experimental techniques studied include two-dimensional photo-elasticity, resistance strain gauge, moiré method, brittle coating, and analog methods. The application of different techniques to the measurement of stress and strain in models as well as actual structures will be demonstrated. Students will be formed in small groups and each group will be assigned different laboratory projects to gain experience in various experimental stress analysis methods.

Prerequisite: ESG 363.

Fall, 3 credits

ESC 345 Theoretical Meteorology

This course is an introduction to the quantitative interpretation of the thermal and dynamical struc-

ture of planetary atmospheres. Topics to be covered include: hydrostatic equilibrium; hydrostatic stability and convection; solar and terrestrial radiation; the atmospheric equations of motion for a rotating planet; atmospheric energy relationships and general circulation.

Prerequisite: ESC 205.
Spring, 3 credits

ESC 346 Dynamic Meteorology

Introduction to the structure and dynamics of the large-scale atmospheric motions that are responsible for weather and climate. Topics will include: principles of fluid dynamics; Coriolis force, geostrophic equilibrium, and the Proudman-Taylor theorem; circulation and vorticity; baroclinic instability, cyclogenesis, frontogenesis, and the weather systems; climate and the general circulation of the atmosphere.

Prerequisite: ESC 205.
Fall, 3 credits

ESC 348 Elements of Atmospheric Science

An introduction to the physical and chemical processes which determine the structure and composition of our atmosphere. A discussion of the chemical composition of the neutral atmosphere and ionosphere will be followed by the development of the basic equations governing atmospheric structure. The major processes at work in each region of the atmosphere will be delineated. The origin and history of our atmos-

phere will be discussed and man's impact on its future will be considered. Comparisons will be drawn between our own environment and the atmospheres of other planets.

Prerequisite: ESC 205.
Fall, 3 credits

ESC 361 Vehicular Dynamics

Covers air, sea, and interface vehicles, emphasizes the application of fluid dynamic principles in evaluating the performance potential of student originated (or instructor assigned) vehicle designs. This leads to consideration of static and dynamic lifters; fluid mechanical thrusters (including foils, propellers, windmill propulsion systems, and jets); fluid dynamic drag; the prediction of vehicle rectilinear performance; the fluid mechanics of maneuvering; and static and dynamic stability. The study of these topics is carried out by the students through application to the individual design analysis of vehicles of their choice.

Prerequisite: ESC 364.
Spring, odd numbered years, 3 credits

ESC 381 Structural Dynamics

The dynamic response of engineering structures is studied for steady state and transient load conditions. Topics studied are: single degree of freedom system; multi-degree of freedom system with normal coordinates; dynamic response of elastic strings, rods, and beams to mechanical loading; effect of viscoelastic behavior.

Prerequisite: ESC 363.
Alternate years, 3 credits

ESC 393 Engineering Fluid Mechanics

This course has two objectives: to study the application of the principles of fluid mechanics to impor-

tant areas of engineering practice such as turbomachinery, hydraulics, and wave propagation; and to prepare students for advanced course work in fluid dynamics. As such it extends the study of viscous effects, compressibility, and inertia begun in ESC 364.

Prerequisite: ESC 364.
Spring, 3 credits

ESC 397 Air Pollution and Its Control

Air pollution is studied from the standpoint of causes, effects, and controls. This includes a study of air resources, climatology, and meteorological considerations in air pollution studies. The causes of air pollution are stressed, with consideration being given to variations in characteristics in different parts of the country. Physical, chemical, and physiological effects of air pollution on man, plants, animals, and structures are considered. Social costs are also reviewed to determine an economic basis for control in addition to aesthetic and health bases. The scientific principles of controlling gaseous and particulate air pollution are discussed and related to

engineering practices in the control of air pollution.

Prerequisite: Senior standing or permission of instructor.
Fall, 3 credits

ESC 398 Thermodynamics of Power Generation

Review of the fundamentals of thermodynamics. Applications of thermodynamics to the analysis of power-producing systems, including internal combustion engines and gas turbines. Considerations such as the increase of efficiency, improved design, optimum operating conditions, and alternate methods of power generation are given on the basis of the second law of thermodynamics. Changes in energy technology required in the light of energy and related environmental problems are discussed.

Prerequisite: ESC 301.
Spring, 3 credits

ESC 499 Research in Mechanics

A course which involves the student in an independent research project with supervision by the faculty. Permission to register requires that the student have an average grade of B in all engineering courses and the agreement of a faculty member to supervise the research. Only three credits of research electives (MSA 487, MSC 487, ESE 499, ESM 499, ESC 499, EST 499) may be counted towards fulfillment of technical elective requirements.
Fall and spring, 3 credits, repetitive

Department of Technology and Society

Distinguished Teaching Professor

John G. Truxal, Sc.D. Massachusetts Institute of Technology (Technology and society; automatic control)

Professors

Ludwig Braun, Ph.D. Polytechnic Institute of Brooklyn (Computers in education; bioengineering)

Emil J. Piel, Chairman, Ed.D. Rutgers University (Technology and society; decision making; curriculum development)

Marian Visich, Jr., Associate Dean, College of Engineering and Applied Sciences, Ph.D. Polytechnic Institute of Brooklyn (Technology and society; space mechanics; aerospace propulsion)

Associate Professors

Thomas T. Liao, Ed.D. Columbia University (Science education; educational technology; curriculum development)

Lester Paldy, Dean of Center for Continuing and Developing Education, M.S. Hofstra University (Physics; science policy and education)

Yupo Chan, Ph.D. Massachusetts Institute of Technology (Transportation planning, systems, decision making)

Assistant Professor

Robert H. Seidman, Ph.D. Syracuse University (Computer-based educational technologies; theory of educational systems)

Lecturer

Arthur Gilmore, Executive Director, Center for Industrial Cooperation, M.S. University of Colorado (Aeronautical engineering; engineering economics)

Individuals are increasingly dependent on modern technology which now impinges on almost every facet of life. Furthermore, governmental decisions require public understanding of the capabilities, characteristics, and limitations of modern technology. Finally, industrial and government employees in all careers increasingly find a working knowledge of modern technology to be of critical importance in their work.

The Minor in Technology and Society

The College of Engineering and Applied Sciences offers through the Department of Technology and Society courses for students majoring in disciplines within the College of Arts and Sciences. Credit for at least six courses in modern engineering and the technology-society interface will represent completion of a minor in technology and society.

Students may apply for admission to the minor program at any time after completion of the first year of college, although individual courses may be taken during that time. Requirements for admission are completion of the required course EST 190 Man, Technology, and Society or EST 192 Introduction to Modern Engineering and one year of college mathematics or the equivalent.

Courses

EST 100 Societal Impact of Computers

The computer is the most complex and most powerful technological device ever developed, and is being used in many ways in our society. Many of these applications are explored with the focus on the benefits and problems generated by them. Also considered are the organization of computers and elementary programming techniques. Crosslisted with MSC 100.

Fall and spring, 3 credits

EST 190 People, Technology, and Society

In a consideration of the interaction of technology with both the individual and the social institution, case studies of current socio-technological problems are used to introduce the major concept of modern information science. The concepts include modeling, decision making, feedback, stability, and dynamics. Particular areas include energy, solid waste, transportation, health delivery, and communication. In each case study the emphasis is on the people-technology interaction. The course includes the science background of social and political decisions, and then consideration of the values of the available alternatives. Primarily intended for non-engineering majors. Cannot be taken for credit by students who have completed EST 192.

Fall and spring, 3 credits

EST 191 Introduction to Technology Assessment (Issues, Methods, and Cases)

Technology assessment and the consideration of alternative futures in relation to social control of technological development. Technology-initiated assessment

methods will be discussed via cases such as the elimination of the SST (Super Sonic Transport) program and a technology assessment of weather modification. Assessments initiated by a socio-technological problem will also be studied by considering examples such as options for United States energy policy and mass transportation options. A series of innovative small-group activities will be used. Besides the usual seminar format for discussing issues, student activities will include a classroom presentation of the public television program called "The Advocates," working with analog and digital computer simulations and doing a term project as part of an interdisciplinary team. Primarily intended for non-engineering majors.

Prerequisite: EST 190 or 192 recommended.

Spring, 3 credits

EST 192 Introduction to Modern Engineering

This course is designed to familiarize students with systems and decision-making concepts of modern engineering and technology. The conceptual areas to be studied include engineering approach to problem solving and design, modeling of dynamic systems, and technology assessment. The artificial heart program, solar energy technology, and building access for the handicapped are some of the socio-technological case studies that will be used. Cannot be taken for credit by students who have completed EST 190.

Fall, 3 credits

EST 194 Patterns of Problem Solving

A survey of techniques and methods of problem solving as developed by the engineer and applied scientist. Applications drawn from a broad range of fields. Primarily intended for non-engineering majors. Crosslisted with MSA 194.

Spring, 3 credits

EST 310 The Exploration of Space (Formerly EST 210)

The course presents the basic engineering and scientific concepts of the exploration of space. The main topics covered include the role of man in space, space exploration. The course is primarily intended for non-engineering students.

Prerequisites: EST 190, one year of college mathematics, and junior standing.

Spring, 3 credits

EST 320 Cybernetics (Formerly EST 220)

The course covers the basic concepts of cybernetics: control and communication in machines and men. The four principal topics are signals in electronic systems; sensors for signal detection and modification; communication with machines and people; and automatic feedback control, including automation and natural systems. The course is designed primarily for non-engineering students.

Prerequisites: EST 190, one year of college mathematics and junior standing.

Spring, 3 credits

EST 330 Impact of Technological Change

This course is designed to provide students with an understanding of how past developments in science, technology, and related societal events have interacted to produce modern technological systems. Specific examples include the telephone, synthetic materials, and atomic energy. Study of past socio-technological interactions is one way of anticipating future impacts of technological change.

Prerequisites: EST 190 or HIS 136, junior standing, and permission of instructor.

Fall, 3 credits

EST 340 Introduction to Transportation Systems

Overview of transportation systems including the planning, operations, and functional design of all modes. Survey of technological components such as transportation networks, traffic flow control, guideways, and terminals. The place and function of transportation in a socioeconomic setting is also discussed.

Spring, 3 credits

EST 390 Communication Skills in Engineering and Applied Science

A course to develop written communication abilities in engineering and the applied sciences. A variety of topics will be considered, such as: assembly directions, test procedures and reports, government legislation and regulations,

and technical proposals. The student is introduced to the engineering principles behind these topics; examines and critiques documents; writes technical documents. The object is to become competent in the logical and clear expression of engineering ideas and facts. May be used to satisfy three credits of Arts and Humanities by College of Engineering and Applied Sciences majors.

Prerequisite: Junior standing.

Fall, 3 credits

EST 392 Engineering and Managerial Economics (Formerly EST 290 and 392)

An introduction to the applications of economic and system analysis to decision-making problems arising in engineering and industry. Topics covered include nature of the business enterprise, cash flow and financial statement analysis, the cost of capital, economic life, taxes, analysis under risk and uncertainty, return on investment, and the evaluation of engineering alternatives, budgeting techniques, inventory and critical path techniques, corporate financing, and patent aspects of engineering.

Fall, 3 credits

EST 475 Undergraduate Teaching Practicum

Students assist the faculty in teaching by conducting recitation or laboratory sections that will supplement a lecture course. The student will receive regularly scheduled supervision from the faculty instructor. May be used as an open elective only and repeated once.

Prerequisites: Senior standing as an undergraduate major within the College; a minimum grade point average of 3.0 in all Stony Brook courses and the grade of B in the course in which the student is to assist; permission of department.

Fall and spring, 3 credits

EST 499 Research in Technology and Society

An independent research project with faculty supervision. Permission to register will require an average grade of B in all engineering courses and the agreement of a faculty member to supervise the research. Only three credits of research electives (MSA 487, MSC 487, ESE 499, ESC 499, ESM 499, EST 499) may be counted toward fulfillment of technical elective requirements.

Fall and spring, 3 credits, repetitive

Technology and Society Courses Approved as Engineering Technical Electives

EST 340 Introduction to Transportation Systems
EST 392 Engineering and Managerial Economics
EST 499 Research in Technology and Society (may be used only once).



Health Sciences Center

The Health Sciences Center is a major division of the State University of New York at Stony Brook. It is the fourth and newest health center in the SUNY system.

The decision to develop a new Health Sciences Center at Stony Brook grew out of the Muir Commission Report presented to former Governor Rockefeller in 1963, which assessed the State's immediate health manpower and service needs. Noting that the then 2 1/2 million residents of the two Long Island counties of Nassau and Suffolk were among the largest populations in the United States not served by an academic medical center, the Muir Commission recommended the development of a Health Sciences Center within the State University at Stony Brook to meet the health teaching and related service needs of the Long Island geographic area.

The Health Sciences Center now consists of five Schools: the Schools of Allied Health Professions, Dental Medicine, Medicine, Nursing, and Social Welfare. In addition, a full range of professional, technical, and laboratory resources are available to the Center, providing academic support services for students and faculty.

The Health Sciences Center has also established a partnership with four Long Island hospitals, referred to as "clinical campuses," where students receive their essential patient care experience in the "field." These are Hospital of the Medical Research Center, Brookhaven National Laboratory; Long Island Jewish-Hillside Medical Center, and Queens Hospital Center Affiliation of LIJ-HMC; Nassau County Medical Center; and Northport Veterans Administration Medical Center. In addition, the five Schools have affiliation agreements with over 80 other hospitals and health agencies in the Long Island area.

Buildings and Facilities

The Health Sciences Schools share instructional space, multi-disciplinary laboratories, lecture halls, and the support services

of the Division of Laboratory Animal Resources, the Health Sciences Center Library, Media Services, and the Office of Student Services.

Planning for a new dental facility as part of the Center is presently underway and it is expected that the School of Dental Medicine will move from its temporary facilities in the early 1980's, bringing all of the five Schools of the Center to one location.

The University Hospital, a central teaching facility for all the educational programs of the Health Sciences Center, opened in 1980. University Hospital includes surgical suites, laboratories, emergency and ambulatory care units capable of handling up to 300,000 visits per year, and ancillary facilities. When fully operational, nearly half of the 540-bed hospital will be dedicated to intensive and specialty care.

Specialized services in the hospital include an open heart surgery program, a comprehensive renal dialysis facility, a transplant service, full perinatal care (including high-risk obstetrics, and neonatal and pediatric intensive care units), acute psychiatric services for adults and children, and a broad-based diagnostic and therapeutic rehabilitation program.

While the University Hospital will provide a hospital teaching environment for students, the Health Sciences Center will continue to utilize the clinical facilities currently being provided for its students in Long Island hospitals and health agencies which have entered into partnership agreements with the Health Sciences Center.

Program Offerings

Current offerings include both undergraduate and post-baccalaureate programs. All undergraduate programs begin in the upper division.

The School of Allied Health Professions offers baccalaureate degree programs in cardiorespiratory sciences, medical technology, physical therapy, and physician's assistant education. Baccalaureate degree programs are also offered by the Schools of Nursing and Social Welfare.

The Health Sciences Center enrolls M.D. candidates in the School of Medicine, D.D.S. candidates in the School of Dental Medicine, and master's degree candidates in the Schools of Social Welfare, Nursing, and Allied Health Professions. Post-graduate doctoral degree programs are offered in anatomical sciences, microbiology, pathology, pharmacological sciences, and physiology and biophysics.

Admissions Procedures

There are no freshman admissions to the Health Sciences Center. High school students interested in eventual enrollment in any of the Health Sciences Center baccalaureate programs must apply for admission to Stony Brook or to another college to complete their freshman and sophomore years.

Applications for all undergraduate programs can be obtained from the Office of Student Services in the Health Sciences Center. Applications for most undergraduate programs are available in the fall of the year preceding the year of anticipated matriculation. Admissions are in the fall of each year only. Admission decisions are made by committees in each of the Schools; application processing and records are handled in the Health Sciences Center Office of Student Services.

Eligibility

All baccalaureate programs are upper division programs and last approximately two years. To be eligible for consideration, students must have completed 57 university credits or their equivalent before matriculating in the program to which they seek admission. Some programs require specific course prerequisites.

Admission to all undergraduate programs is by formal application only. Standards set by professional accrediting bodies limit enrollments in each of the programs, and, therefore, admission is on a selective basis. Applications are accepted from both Stony Brook students and from students transferring to Stony Brook from other educational institutions. Stony Brook undergraduate students are not automatically admitted to HSC programs; they should note that admission to any of the undergraduate programs is not simply a "change of major."

Courses Open to Main Campus Undergraduates

The courses listed in this section are offered by the Health Sciences Center but are open for elective credit to undergraduate students enrolled in courses of study in all departments of the University. To register for these courses students should have completed their freshman and sophomore years, or have earned a minimum of 57 university credits.

If students are not able to preregister for these courses, they may register by submitting an add card during the Health Sciences Center regular registration or during the add-drop period.

The Health Sciences Center academic calendar differs from the main campus calendar because some of the Health Sciences Center programs are scheduled on a modular basis, each of five weeks' duration.

Basic Health Sciences

Courses in Anatomical Sciences

HBA 320, 321 Gross Anatomy for Artists

In the first semester, after working on elementary techniques in depiction of anatomy, students will become familiar with the human skull and parts of the skeleton. Lectures on the gross anatomy of the human body. Laboratory demonstrations using models, dissections, and other materials. The second semester will consist of laboratory demonstrations of the human cadaver and continued drawing practice. Each student

will maintain a portfolio of drawings. HBA 320, 321 is identical with ARS 355, 356.

Prerequisites to HBA 320: ARS 152 and permission of instructors. *Prerequisites to HBA 321:* HBA 320 and permission of instructors. *Fall and spring, 2 credits each semester*

HBA 364 Primate Evolution

The evolution of non-human primates and humans will be considered from the viewpoints of the fossil record and comparative morphology of living forms. The course will include discussion of the origin of primates, the radiation into major groups, the diversity of living primates, and human emergence. Emphasis will be

placed on relating the structure of fossil and living forms to their behaviors.

Prerequisites: ANT 120, 121, an introductory course in biology, and permission of instructor. *Spring, 4 credits*

HBA 393, 394 Special Topics from the Anatomical Sciences Literature

Tutorial readings in anatomical sciences with periodic conferences, reports, and examinations

arranged with the instructor. Open to junior or senior students.

Prerequisite: Permission of instructor.

Fall and spring, 1-2 credits each semester

HBA 398, 399 Research Project in Anatomical Sciences

An independent research project under faculty supervision, with emphasis on the principles of experimental design, data collection, evaluation of findings, and reporting of results. The student is expected to prepare a report on the project and be able to discuss his or her work. Open to junior or senior students.

Prerequisites: Laboratory experience and permission of the supervising instructor.

Fall and spring, 2 to 4 credits each semester

Courses in Microbiology

HBM 320 General Microbiology

A course in microbiology, with emphasis on molecular structure and function of bacteria and viruses, mechanism of antibiotic action and resistance, and immunology. Included are some representative examples of well known infectious disease processes such as occur with diphtheria. This course satisfies the microbiology requirement for admission to nursing, veterinary, and optometry professional schools.

Prerequisites: CHE 112, 133, BIO 206, and permission of instructor.

Spring, 3 credits

HBM 321 General Microbiology Laboratory

Designed to complement the lecture material of HBM 320, the optional laboratory will cover basic and applied microbiological methods. Techniques such as growth of bacteria and liquid and agar media, quantitative methods of determination of bacterial concentrations, antibiotic sensitivity, and Gram-staining are included. For pre-health science professions students.

Prerequisites: CHE 112, 133, BIO 206, and permission of instructor.

Corequisite: HBM 320.

Spring, 1 credit

HBM 393, 394 Special Topics from the Microbiology Literature

Tutorial readings in microbiology with periodic conferences, reports, and examinations arranged with the instructor. Open to junior or senior students.

Prerequisite: Permission of instructor.

Fall and spring, 1-2 credits each semester

HBM 398, 399 Research Project in Microbiology

An independent research project under faculty supervision, with emphasis on the principles of experimental design, data collection, evaluation of findings, and reporting of results. The student is

expected to prepare a report on the project and be able to discuss his or her work. Open to junior or senior students.

Prerequisites: Laboratory experience and permission of the supervising instructor.

Fall and spring, 2 to 4 credits each semester

Courses in Pathology

HBP 310 Pathology

A study of the basic mechanisms of disease and the pathophysiology of the important illnesses of man. Primarily for Health Sciences Center students; others admitted with special permission.

Prerequisites: BIO 151, 152 and permission of instructor.

Modules 3 through 6, 3 credits

HBP 390 Selected Topics in Experimental Pathology

Seminars by members of the faculty in the Department of Pathology covering a broad spectrum of topics that include cardiovascular disease, arthritis, defects in the immune system, connective tissue diseases, transplantation immunology, experimental carcinogenesis, immunohistochemistry, radiation pathology, tumor immunology, environmental pollutants and chronic obstructive lung disease, and cell culture as a tool for the study of disease.

Prerequisite: Advanced courses in biology. An understanding of biochemistry will be useful.

Fall, 3 credits

HBP 393, 394 Special Topics from the Pathology Literature

Tutorial readings in pathology, with periodic conferences, reports, and examinations arranged with the instructor. Open to junior or senior students.

Prerequisite: Permission of instructor.

Fall and spring, 1-2 credits each semester

HBP 398, 399 Research Project in Pathology

An independent research project under faculty supervision, with emphasis on the principles of experimental design, data collection, evaluation of findings, and reporting of results. The student is expected to prepare a report on the project and be able to discuss his or her work. Open to junior or senior students.

Prerequisites: Laboratory experience and permission of the supervising instructor.

Fall and spring, 2 to 4 credits each semester

Courses in Pharmacological Sciences

HBH 100 Drugs and Society

A series of lectures offered by the Department of Pharmacological Sciences will analyze modern concepts in the mechanism of action and application of some important drugs. The course is designed primarily for undergraduate science majors with the view of creating an appreciation of the nature of research on drugs and chemicals and their profound influence on all members of society.

Prerequisite: Introductory courses in biology and chemistry would be helpful, but are not required.

Fall, 1 credit

HBH 331 Fundamentals of Pharmacology

A course in general pharmacology, emphasizing basic principles that underlie actions of drugs on physiological processes with particular reference to their therapeutic and toxic actions. Primarily for nursing and allied health students; others by special permission.

Prerequisites: BIO 206 or HBV 350 or BIO 230; HBP 310; permission of instructor.

Modules 4 through 6, 5 credits

HBH 372 Pharmacology: Selectivity of Drugs—Its Physical Basis

This lecture and discussion course will begin with a statement of the nature and aims of selectivity. As necessary introduction to methods of building selectivity into a drug molecule, those basic principles will be discussed that underlie the action of drugs (and other biologically active agents) on cells. The treatment will be at the level of underlying physical and chemical principles and will include, among others, the following topics: the nature of receptors, distribution phenomena, structure-action relationships, drug metabolism, chemotherapy, and pharmacodynamics. The second part of the course deals with the three cardinal principles of selectivity, namely the use of favorable differences in distribution, biochemistry, and cell structure.

Prerequisites: BIO 361, CHE 322 or 332, and permission of instructor.

Fall, 3 credits

HBH 393, 394 Topics in Pharmacology

Tutorial readings in pharmacology with periodic conferences, reports, and examinations arranged with the instructor. Open to junior or senior students.

Prerequisite: Permission of instructor.

Fall and spring, 1-2 credits each semester

HBH 398, 399 Research Project in Pharmacology

An independent research project under faculty supervision, with emphasis on the principles of experimental design, data collec-

tion, evaluation of findings, and reporting of results. The student is expected to prepare a report on the project and be able to discuss his or her work. Open to junior or senior students.

Prerequisites: Laboratory experience and permission of supervising instructor.

Fall and spring, 2 to 4 credits each semester

Courses in Physiology and Biophysics

HBV 310 Cell Physiology

The physiology of animal cells; excitation, conduction, transduction, transport, motility, secretion, and responses to transmitters and hormones.

Prerequisites: PHY 101 or 103 and BIO 230.

Spring, 3 credits

HBV 350 Physiology

The normal functioning of human tissues and organs and their regulation by the nervous and endocrine systems. Special emphasis will be given to physiological control systems and the preservation of the constancy of the internal environment. Lectures, conferences, demonstrations. Does not count as an upper division course for Arts and Sciences students.

Prerequisites: College courses in biology and chemistry. Some background in physical science. Primarily for Health Sciences students; others by permission of instructor.

Modules 1 through 4, 4 credits

HBV 393, 394 Special Topics from Physiology and Biophysics Literature

Tutorial readings in physiology and biophysics and periodic conferences, reports, and examinations arranged with the instructor. Open to junior or senior students.

Prerequisite: Permission of instructor.

Fall and spring, 1-2 credits each semester

HBV 398, 399 Research Project in Physiology and Biophysics

An independent research project under faculty supervision, with emphasis on the principles of experimental design, data collection, evaluation of findings, and reporting of results. The student is expected to prepare a report on the project and be able to discuss his or her work. Open to junior or senior students.

Prerequisites: Laboratory experience and permission of supervising instructor.

Fall and spring, 2 to 4 credits each semester

Department of Community and Preventive Medicine

The Department of Community and Preventive Medicine is, in part, an expression of the Health Sciences Center's commitment to integrate University disciplines with the training of health professionals and to provide undergraduates with an opportunity to study the social implications of health care. Some members of the Department also hold faculty appointments in various social sciences and humanities departments in the College of Arts and Sciences.

In an effort to increase awareness of the historical, social, economic, political, and philosophic aspects of health and health care, the Department offers interdisciplinary learning experiences designed to develop critical thinking and substantive knowledge about the place of health professions in our society. As part of its service to main campus undergraduates, the Department teaches introductory courses on social sciences and humanities in health care and sponsors curriculum development of follow-up courses in the regular undergraduate programs.

Note: Graduate students wishing to work in areas with 300 listings may, by taking independent study (HMC 590), arrange a course of study.

Courses

HMC 300 Medicine and Society (Formerly HSH 300)

An examination of some traditional concerns of the humanities and social sciences as they occur in basic health care and its delivery. Clinical cases will be presented to the class each week by practicing physicians or other health care professionals. Topics will include allocation of scarce resources, issues of dying and killing, experiments on humans, etc. Discussion will focus on the social, historical, ethical, and artistic import of the cases.

Fall, 3 credits

HMC 331 Legal and Ethical Issues in Health Care (Formerly HSH 331)

This course is intended to introduce students to some of the major ethical and legal doctrines that affect health care professionals. The doctrines will be discussed by addressing ourselves to specific problem situations. Some of the topics are: the right to refuse medical, mental, and social care; the right to life and its limits (e.g., suicide, euthanasia, abor-

tion); the right to receive care; access to and evaluation of health care delivery. Since the goal of the course is to sensitize professionals to legal and ethical issues like those they will be called upon to resolve, students will be expected to take part in class discussions and do readings.

Spring, alternate years, 3 credits. Not offered in 1982-83

HMC 365 Illness and Health in the Social Context (Formerly HSH 365)

Illness as a social fact: structural sources of health and illness in family and community; health restoring agents, physician and nurse; the function and organization of hospitals.

Fall, 2 credits

HMC 487 Independent Study (Formerly HSH 487)

Projects must be approved by the Department.

Prerequisite: Permission of instructor.

Fall or spring, 1 to 3 credits

School of Dental Medicine

Courses

HD 320, 321 Oral Biology Research I, II

The student will conduct his or her independent research projects under the supervision of one or more members of the Department of Oral Biology and Pathology. The student is expected to submit a written report detailing his or her experimental methods, results, and conclusions. These courses are offered for third-year under-

graduate students. A copy of the student's transcript must be submitted with the application.

Prerequisite: Permission of department. BIO 152 and CHE 132 and 134 recommended. *Prerequisite for HD 321:* HD 320.

Fall and spring, 4 credits each semester

HD 420, 421 Oral Biology Research III, IV

The student will conduct his or her research project under the supervision of one or more members of the Department of Oral Biology and Pathology. The student is expected to submit a written report detailing his or her experimental

methods, results, and conclusions. HD 420, 421 is offered for fourth-year undergraduate students in Arts and Sciences. A copy of the student's transcript must be submitted with the application.

Prerequisite: Permission of department. BIO 152 and CHE 132 and 134 recommended. *Prerequisite for HD 421:* HD 420.

Fall and spring, 4 credits each semester

HDH 301 Independent Readings and Research

The student will conduct his or her research project under the supervision of one or more members of the Department of Dental Health. The student is expected to submit a written report detailing his or her research activities and conclusions. This course is offered for undergraduate students who demonstrate an interest in the health care delivery system of the United States.

Prerequisites: SOC 390 (Health Care Delivery) and approval of Department Chairman.

Fall and spring, 3 credits

HDP 320, 321 Introduction to Periodontal Research

The student will be taught various techniques and procedures used in current periodontal research. He or she will be expected to undertake a small research project implementing these techniques.

Prerequisites: CHE 132 and 134, BIO 152, and permission of instructor.

Fall and spring, 1 to 4 credits, repetitive to 8 credits maximum

HDP 390, 391 Special Topics from Periodontal Literature

Tutorial readings in periodontal and related research. Includes studies in bone metabolism in health and disease with emphasis on current research on the specific metabolic bone diseases and

on the mechanisms of alveolar bone destruction in periodontal diseases, cell and tissue culture, oral immunology, and microbiology. Readings will be accompanied by periodic lectures, conferences, and group discussions. Written reports and examinations will be arranged with the instructor.

Prerequisites: CHE 132 and 134, BIO 152, and permission of instructor.

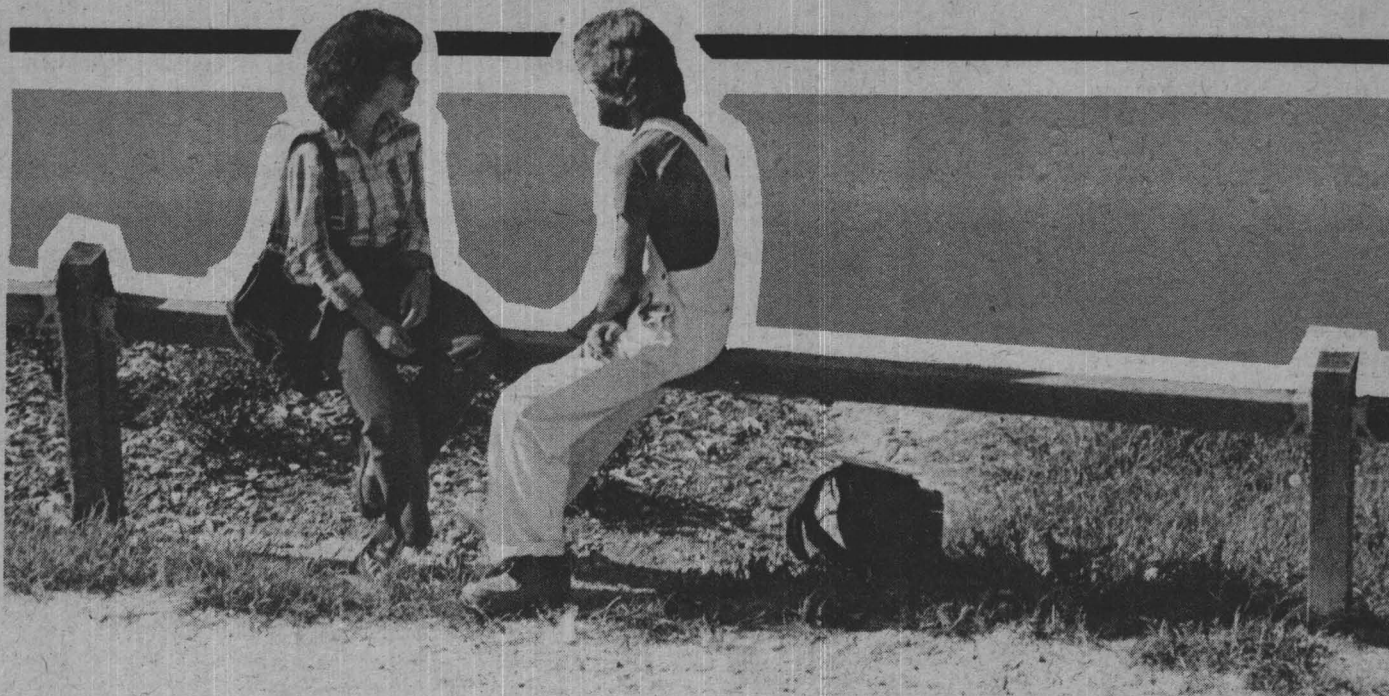
Fall and spring, 1 or 2 credits

HDP 420, 421 Research in the Biology and Pathology of Periodontium

An independent research project under faculty supervision with emphasis on the principles of experimental design, data collection, evaluation of findings, and reporting of results. The student is expected to prepare a report on the project and be able to discuss his or her work. Open to upper division students.

Prerequisites: HDP 320, 321 and permission of instructor.

Fall and spring, 2 to 4 credits, repetitive to 8 credits maximum



Directories, Maps, Index

STATE UNIVERSITY OF NEW YORK

General Statement

State University's 64 geographically dispersed campuses bring educational opportunity within commuting distance of virtually all New York citizens and comprise the nation's largest, centrally managed system of public higher education.

When founded in 1948, the University consolidated 29 State-operated, but unaffiliated, institutions. In response to need, the University has grown to a point where its impact is felt educationally, culturally and economically the length and breadth of the State.

More than 370,000 students are pursuing traditional study in classrooms or are working at home, at their own pace, through such innovative institutions as Empire State College, whose students follow individualized and often non-traditional paths to a degree. Of the total enrollment more than 100,000 students are 24 years or older, reflecting State University's services to specific constituencies, such as refresher courses for the professional community, continuing educational opportunities for returning servicemen and personal enrichment for the more mature persons.

State University's research contributions are helping to solve some of modern society's most urgent problems. It was a State University scientist who first warned the world of potentially harmful mercury deposits in canned fish, and another who made the connection between automobile and industrial smoke combining to cause changes in weather patterns. Other University researchers continue important studies in such wide-ranging areas as immunology, marine biology, sickle-cell anemia and organ transplantation.

More than 1,000 public service activities are currently being pursued on State University campuses. Examples of these efforts include: special training courses for local government personnel, State Civil Service personnel, and the unemployed; participation by campus personnel in joint community planning or project work; and campus-community arrangements for community use of campus facilities.

A distinguished faculty includes nationally and internationally recognized figures in all the major disciplines. Their efforts are recognized each year in the form of such prestigious awards as Fulbright-Hayes, Guggenheim and Danforth Fellowships.

The University offers a wide diversity of what are considered the more conventional career fields, such as engineering, medicine, literature, dairy farming, medical technology, accounting, social work, forestry and automotive technology. Additionally, its responsiveness to progress in all areas of learning and to tomorrow's developing societal needs has resulted in concentrations which include pollution, urban studies, computer science, immunology, preservation of national resources and microbiology.

SUNY programs for the educationally and economically disadvantaged have become models for delivering better learning opportunities to a once-forgotten segment of society. Educational Opportunity Centers offer high school equivalency and college preparatory courses to provide young people and adults with the opportunity to begin college or to learn marketable skills. In addition, campus-based Educational Opportunity Programs provide counseling, developmental education and financial aid to disadvantaged students in traditional degree programs.

Overall, at its EOC's, two-year colleges, four-year campuses and university and medical centers, the University offers 3,600 academic programs. Degree opportunities range from two-year associate programs to doctoral studies offered at 12 senior campuses.

The 30 two-year community colleges operating under the program of State University play a unique role in the expansion of educational opportunity by providing local industry with trained technicians in a wide variety of occupational curriculums; by providing transfer options to students who wish to go on and earn advanced degrees; and by providing the community with yet another source for technical and professional upgrading as well as personal enrichment.

During its brief history, State University has graduated more than 705,000 alumni, the majority of whom are pursuing their careers in communities across the State.

State University is governed by a Board of Trustees, appointed by the Governor, which directly determines the policies to be followed by the 34 State-supported campuses. Community colleges have their own local boards of trustees whose relationship to the SUNY board is defined by law. The State contributes one-third to 40 percent of their operating cost and one-half of their capital costs.

The State University motto is: "To Learn—To Search—To Serve."

Campuses

University Centers

State University of New York at Albany
State University of New York at Binghamton
State University of New York at Buffalo
State University of New York at Stony Brook

Colleges and Centers for the Health Sciences

Downstate Medical Center at Brooklyn
Upstate Medical Center at Syracuse
Health Sciences Center at Buffalo*
Health Sciences Center at Stony Brook*

Colleges of Arts and Science

Empire State College
State University College at Brockport
State University College at Buffalo
State University College at Cortland
State University College at Fredonia
State University College at Geneseo
State University College at New Paltz
State University College at Old Westbury
State University College at Oneonta
State University College at Oswego
State University College at Plattsburgh
State University College at Potsdam
State University College at Purchase

Agricultural and Technical Colleges

Agricultural and Technical College at Alfred
Agricultural and Technical College at Canton
Agricultural and Technical College at Cobleskill
Agricultural and Technical College at Delhi
Agricultural and Technical College at Farmingdale
Agricultural and Technical College at Morrisville

Specialized Colleges

College of Environmental Science and Forestry at Syracuse
Maritime College at Fort Schuyler
College of Technology at Utica/Rome
Fashion Institute of Technology at New York City**

Statutory Colleges***

College of Agriculture and Life Sciences at Cornell University
 College of Ceramics at Alfred University
 College of Human Ecology at Cornell University
 School of Industrial and Labor Relations at Cornell University
 College of Veterinary Medicine at Cornell University

Community Colleges

(Locally-sponsored, two-year colleges under the program of State University)

Adirondack Community College at Glens Falls
 Broome Community College at Binghamton
 Cayuga County Community College at Auburn
 Clinton Community College at Plattsburgh
 Columbia-Greene Community College at Hudson
 Community College of the Finger Lakes at Canandaigua
 Corning Community College at Corning
 Dutchess Community College at Poughkeepsie
 Erie Community College at Williamsville, Buffalo and Orchard Park
 Fashion Institute of Technology at New York City**
 Fulton-Montgomery Community College at Johnstown
 Genesee Community College at Batavia
 Herkimer County Community College at Herkimer
 Hudson Valley Community College at Troy
 Jamestown Community College at Jamestown
 Jefferson Community College at Watertown
 Mohawk Valley Community College at Utica
 Monroe Community College at Rochester
 Nassau Community College at Garden City
 Niagara County Community College at Sanborn
 North Country Community College at Saranac Lake
 Onondaga Community College at Syracuse
 Orange County Community College at Middletown
 Rockland Community College at Suffern
 Schenectady County Community College at Schenectady
 Suffolk County Community College at Selden, Riverhead and Brentwood
 Sullivan County Community College at Loch Sheldrake
 Tompkins Cortland Community College at Dryden
 Ulster County Community College at Stone Ridge
 Westchester Community College at Valhalla

*The Health Sciences Centers at Buffalo and Stony Brook are operated under the administration of their respective University Centers.

**While authorized to offer such baccalaureate and master's degree programs as may be approved pursuant to the provisions of the Master Plan, in addition to the associate degree, the Fashion Institute of Technology is financed and administered in the manner provided for community colleges.

***These operate as "contract colleges" on the campuses of independent universities.

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STATE UNIVERSITY OF NEW YORK AT STONY BROOK

Members of the Council

Subject to powers of State University trustees defined by law, the operations and affairs of the State University at Stony Brook are supervised locally by a ten-member Council. Nine are appointed by the Governor; the tenth, a student member with all the rights and responsibilities of the other members, is elected by the student body. All positions listed are correct as of February 9, 1981.

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L. Donald Jaffin Manhasset	Ena Townsend Central Islip
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Officers of Administration

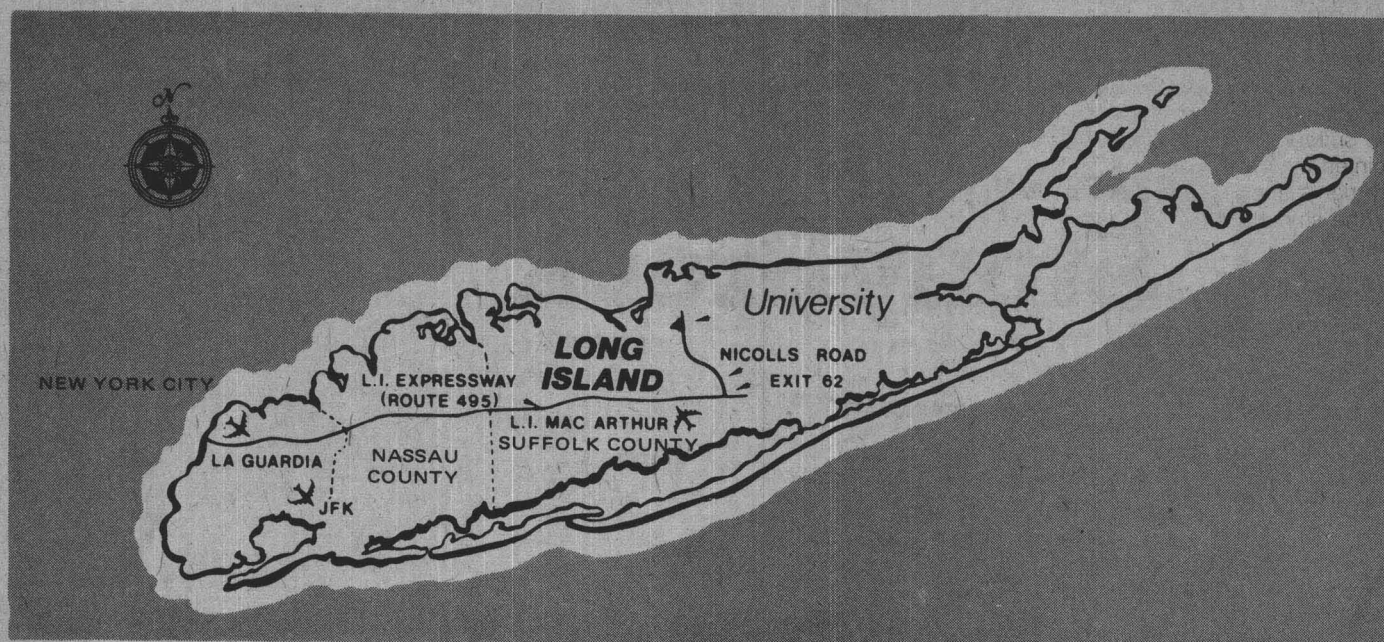
All positions are correct as of February 6, 1981

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James B. Black, B.S. Vice President for University Affairs
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Joan Moos, B.A., M.A., Ph.D. Associate Vice Provost for Curriculum and Instruction
Edward Podolnick, B.A., M.A., Ph.D. Director of University Counseling Center
Richard Solo, B.Sc., Ph.D. Director of Orientation
William Strockbine, A.B., M.A./L.S. Director of University Records
Samuel R. Taube, B.A., M.A., Ph.D. Associate Dean of Students



Transportation to Stony Brook

BY CAR

Take the Long Island Expressway (Route 495) east from the Queens Midtown Tunnel (Manhattan) or from the Throgs Neck or Whitestone Bridges (Bronx). Take Exit 62 and follow Nicolls Road (Route 97) north for nine miles.

BY RAILROAD

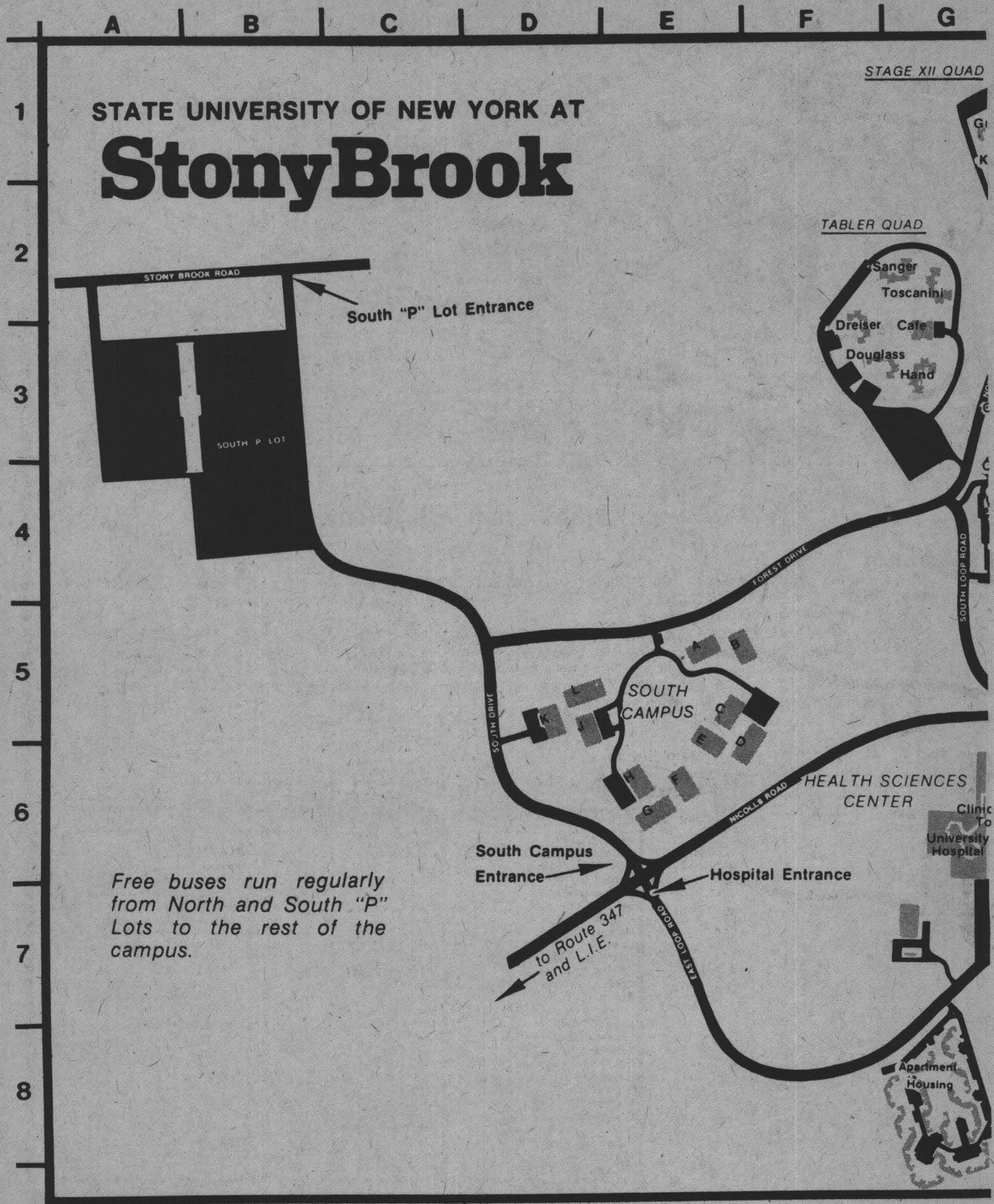
Take the Long Island Rail Road's Port Jefferson line from Penn Station (Manhattan) or Flatbush Ave. (Brooklyn). Change at Jamaica or Huntington, per timetable, for Stony Brook. Cross tracks for free campus bus.

BY AIR

Land at Kennedy or LaGuardia Airports, 50 miles west of campus, or at Long Island MacArthur Airport (USAir: 516-588-7771), 10 miles south of campus. MacArthur has 24-hour limousine and taxi service to campus.

BY BUS

Use the Coram Bus Service, which provides routes from Coram, Port Jefferson, Lake Grove, Smithhaven Mall, St. James and East Setauket to about 10 stops on campus. For schedules, rates and routes, call 516-732-5518.



STATE UNIVERSITY OF NEW YORK AT
Stony Brook

STAGE XII QUAD

TABLER QUAD

STONY BROOK ROAD

South "P" Lot Entrance

SOUTH P LOT

FOREST DRIVE

SOUTH CAMPUS

HEALTH SCIENCES CENTER

South Campus Entrance

Hospital Entrance

to Route 347 and L.I.E.

Free buses run regularly from North and South "P" Lots to the rest of the campus.

Clinic To University Hospital

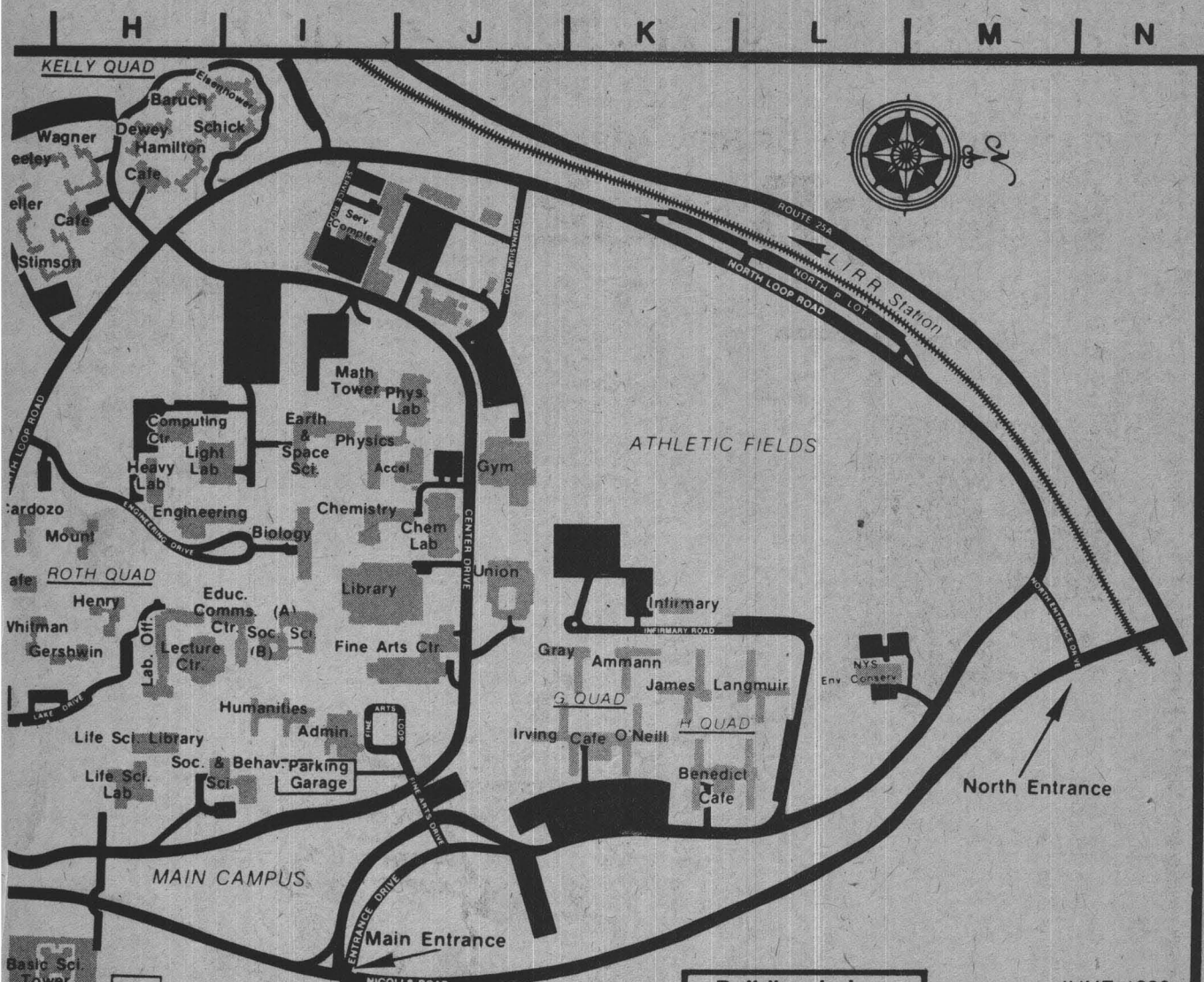
Apartment Housing

G
K

SOUTH LOOP ROAD

NICOLL'S ROAD

EAST LOOP ROAD



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JUNE 1980

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Chemistry Lab 3J	Henry College 4H	Service Complex 1I
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ACADEMIC CALENDAR

Summer Session 1981

Term I: June 1-July 8

Term II: July 9-August 14

April 27, Monday-May 29, Friday: Registration and payment of fees for Summer Session Terms I and II.

May 31, Sunday: Summer Session residence halls open at noon.

June 1, Monday: Classes begin for Term I students. Late registration period begins with \$20 late fee assessed.

June 3, Wednesday: Late registration period ends for Term I; last day to add a course; last day to drop a course without a W (Withdrawal) being recorded.

June 8, Monday-July 8, Wednesday: Registration and payment of fees continue for Summer Session Term II students not previously registered.

June 19, Friday: Last day for Term I undergraduate and CED students, and for all non-CED graduate students, to file applications for August graduation: undergraduates file at Office of Records/Registrar; graduate students (except CED) file at Graduate School Office; CED students file at CED Office.

June 26, Friday: Last day to drop a Term I course without withdrawing from the Summer Session; last day for undergraduate students to change Term I courses to or from Pass/No Credit.

July 3, Friday: Independence Day celebrated (no classes).

July 6, Monday: Last day to withdraw from Term I.

July 8, Wednesday: Term I ends; final grades due in Registrar's Office 72 weekday hours after last class meeting. Students registered only for Term I must vacate residence halls by 5 p.m.

July 9, Thursday: Classes begin for Term II students. Late registration period begins with \$20 late fee assessed. Residence halls open at 5 pm. for students registered only for Term II.

July 13, Monday: Late registration period ends for Term II; last day to drop a Term II course without a W (Withdrawal) being recorded.

July 14, Tuesday: Last day for Term II undergraduate and CED students to file application for August graduation: undergraduates file at Office of Records/Registrar; CED students file at CED Office.

August 5, Wednesday: Last day to drop a Term II course without withdrawing from the Summer Session; last day for undergraduate students to change Term II courses to or from Pass/No Credit.

August 12, Wednesday: Last day to withdraw from Term II.

August 14, Friday: Summer Session ends; final grades due in Registrar's Office 72 weekday hours after last class meeting. Residence halls close at 5 p.m.

August 26, Wednesday: Last day for departments to submit Completion Statements for August master's and doctoral candidates.

Fall Semester 1981

August 31, Monday: Foreign students arrive.

August 31-September 4, Monday-Friday: Final registration and payment (or proper deferral) of fees for all students not previously registered (schedule announced prior to registration); foreign student orientation.

September 2-4, Wednesday-Friday: Undergraduate student orientation for students not having participated previously. Residence halls open for new student check-in.

September 3-4, Thursday-Friday: Residence halls open for returning, non-preregistered student check-in.

September 5-6, Saturday-Sunday: Residence halls open for returning, preregistered student check-in.

September 7, Monday: Labor Day (no day or evening classes).

September 8, Tuesday: Classes begin; late registration begins with \$20 late fee assessed.

September 21, Monday: End of late registration period; last day for undergraduate students to add a course or to drop a course without a W (Withdrawal) grade being recorded; last day for all students to drop a course without tuition liability; last day for undergraduates to apply for change of status to or from full-time/part-time.

September 29-30, Tuesday-Wednesday: Rosh Hashanah recess (no classes on September 28 after 4:30 p.m.).

October 7, Wednesday: Last day for graduate students to add or withdraw from a course. Last day to file for December graduation: undergraduates file application at the Office of Records/Registrar; graduate students (except CED) file at Graduate School Office; CED students file at CED Office. Yom Kippur recess begins (no classes after 4:30 p.m.).

October 8, Thursday: Yom Kippur (no day or evening classes).

October 12, Monday: Columbus Day (classes in session).

October 22, Thursday: Last day for payment of deferred Fall Semester fees.

October 30, Friday: Fall quarter housing period ends. Last day for removal of Incomplete and NR (No Record) grades from the Spring Semester and Summer Session.

November 3, Tuesday: Election Day (classes in session).

November 9, Monday: Last day for undergraduate students to withdraw from a course without withdrawing from the University; last day to change courses to or from Pass/No Credit.

November 16, Monday: Advance registration for Spring Semester 1982 begins (schedule announced prior to registration).

November 24, Tuesday: All classes will follow Thursday's schedule.

November 25, Wednesday: Thanksgiving recess begins at close of classes.

November 30, Monday: Classes resume.

December 7, Monday: Bills for Spring Semester 1982 to be mailed to preregistered students.

December 15, Tuesday: Last day of classes; last day to withdraw from the University.

December 16, Wednesday: Reading Day.

December 17, Thursday: Final examinations begin; final grades due in Registrar's Office 72 weekday hours after last class meeting or scheduled examination. Last day for graduate students to submit theses and dissertations to Graduate School for December graduation.

December 23, Wednesday: Final examinations end; Fall Semester ends; residence halls close for Fall Semester; winter recess begins at close of examinations.

December 24, Thursday: Intersession housing begins.

January 8, Friday: Last day for departments to submit Completion Statements for December master's and doctoral degree candidates.

Spring Semester 1982

January 4, Monday: Last day for mail payment of Spring Semester fees for preregistered students.

January 21, Thursday: Last day for preregistered students to pay Spring Semester fees in person without late payment penalty; foreign students arrive.

January 27, Wednesday: Intersession housing ends; residence halls open for returning non-preregistered student check-in.

January 27-29, Wednesday-Friday: Final registration and payment (or proper deferral) of fees for all students not previously registered (schedule announced prior to registration).

January 29, Friday: Residence halls open for returning, preregistered student check-in.

February 1, Monday: Classes begin; late registration period begins with \$20 late fee assessed.

February 12, Friday: End of late registration period; last day for undergraduate students to add a course or to drop a course without a W (Withdrawal) grade being recorded; last day for all students to drop a course without tuition liability; last day for undergraduates to apply for change of status to or from full-time/part-time. Lincoln's Birthday (classes in session).

February 19, Friday: Last day for undergraduates to file for May graduation at the Office of Records/Registrar.

February 22, Monday: Washington's Birthday (classes in session).

February 26, Friday: Last day for graduate students to add or withdraw from a course. Last day for graduate students to file for May graduation: graduate students (except CED) file at Graduate School Office; CED students file at CED Office.

March 12, Friday: Last day for payment of deferred Spring Semester fees.

March 15, Monday: Last day for removal of Incomplete and NR (No Record) grades from the Fall Semester.

March 26, Friday: Spring quarter housing period ends.

April 2, Friday: Last day for undergraduates to withdraw from a course without withdrawing from the University; last day to change courses to or from Pass/No Credit. Spring recess begins at close of classes.

April 12, Monday: Classes resume.

April 19, Monday: Advance Registration for Fall Semester 1982 begins (schedule announced prior to registration). Bills for Fall Semester to be mailed approximately June 1 with payment due during latter part of July.

April 23, Friday: Last day for graduate students to submit theses and dissertations to Graduate School for May graduation.

April 26, Monday: Registration begins for Summer Session 1982 with fees payable at time of registration.

May 10, Monday: Last day of classes; last day to withdraw from the University. Last day for departments to submit Completion Statements for May doctoral candidates.

May 11-12, Tuesday-Wednesday: Reading days.

May 13, Thursday: Final examinations begin; final grades due in Registrar's Office 72 weekday hours after last class meeting or scheduled examination.

May 19, Wednesday: Final examinations end; Spring Semester ends.

May 23, Sunday: Commencement; all residence halls close.

June 2, Wednesday: Last day for departments to submit Completion Statements for May master's candidates.

Admissions

State University of New York at Stony Brook
Stony Brook, NY 11794

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