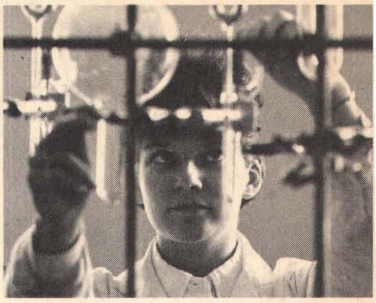
UNDERGRADUATE BULLETIN 1966-67



STATE UNIVERSITY OF NEW YORK
AT STONY BROOK

STATE UNIVERSITY OF NEW YORK AT STONY BROOK

COLLEGE OF ARTS AND SCIENCES

COLLEGE OF ENGINEERING

THE UNDERGRADUATE BULLETIN

1966–1967

CONTENTS

ACADEMIC CALENDAR
1966 - 1967

Fall Semester 1966	
Freshman Orientation	September 19-21
Registration	September 20-21
Classes Begin	September 22
Thanksgiving Holiday	November 24-27
Classes Resume	November 28
Christmas Holiday	December 22—January 3
Classes Resume	January 3
Last Day of Classes	January 14
Semester Examinations	January 16-26
Spring Semester 1967	
Registration	February 3
Classes Begin	February 6
Spring Recess	March 26—April 2
Classes Resume	April 3
Last Day of Classes	May 20
Semester Examinations	May 22—June 1
Commencement	June 4
Summer Session 1966	
Registration	June 13
Classes Begin	June 14
Last Day of Classes	July 22

STATE UNIVERSITY OF NEW YORK

The State University of New York was established by the State Legislature in 1948. It comprises 61 colleges and centers. At present 58 of these are conducting classes: four University Centers, two Medical Centers, ten Colleges of Arts and Science, eight Specialized Colleges, six two-year Agricultural and Technical Colleges and 28 locally-sponsored, two-year Community Colleges.

Two additional Colleges of Arts and Science, in Westchester and Nassau Counties, were established by the University's Trustees in the Spring of 1965. These colleges are in the earliest planning stages and by present plans are scheduled to accept their first classes in September of 1970. The Trustees also have approved establishment of a 29th community college, to be located in Herkimer County.

State University further comprises the Atmospheric Sciences Research Center, which has its field headquarters at Whiteface Mountain; the Ranger School, a division of the College of Forestry which offers a 43-week technical forestry program at Wanakena; the Center for International Studies, located at Oyster Bay; the Marine Sciences Research Center, administered as a part of State University at Stony Brook, and the Western New York Nuclear Research Center, Inc. at State University at Buffalo.

The University offers programs in agriculture; American folk culture; business administration; ceramics; dentistry; engineering; forestry; home economics; industrial and labor relations; law; liberal arts and sciences; library science; maritime service; medicine; nursing; pharmacy; professional museum work; public administration; social work; teacher education and veterinary medicine.

Its two-year programs also include nursing and liberal arts study and a wide variety of technical courses in such areas as agriculture, business, and the industrial and medical technologies.

Graduate study at the doctoral level is offered by the University at 13 of its campuses, including the University Centers and the Graduate School of Public Affairs. While graduate work can be pursued at 24 of the colleges, the programs at the majority of these colleges are now limited to the master's level. The University, however, is continuing to broaden and expand over-all opportunities for advanced degree study.

Governed by a Board of Trustees appointed by the Governor, State University of New York comprises all State-supported institutions of higher education,

with the exception of the four-year colleges of City University of New York. Each college and center of State University is locally administered. Although separated geographically, all are united in the purpose to improve and extend opportunities for youth to continue their education beyond high school.

The State University motto is: "Let Each Become All He Is Capable of Being."

Representative of the high goals of scholarship toward which university students strive are Stony Brook's Distinguished Professors Chen Ning Yang, left, Einstein Distinguished Professor of Physics; Bentley Glass, Distinguished Professor of Biology and Academic Vice President, and Alfred Kazin, Distinguished Professor of English.

A COMMUNITY OF SCHOLARS

The real goal of the State University of New York is summarized in our motto: "Let each become all he is capable of being." There are as many different programs of study as there are individual students, and we hope each will choose the path that is best for him.

We endeavor to help each student fulfill his own purpose. Many factors contribute to this goal: dedicated teaching by scholars whose research keeps them at the forefront of their fields; independent study by the student inspired by curiosity; the dialogue of learning between student and teacher and between student and classmate; the extracurricular intellectual, cultural, social and athletic activities which add depth and breadth to the whole person.

A university is much more than a collection of classes. By its oldest definition, it is a community of scholars in which all of its members work together to extend their understanding of nature, society, and our cultural heritage.

Basic to this whole effort is that fragile thing called "academic atmosphere," which includes the spirit of free inquiry. Each member of the community of scholars must find his own answers to the problems that he is exploring. Academic atmosphere requires a tradition of politeness, a tradition in which all ideas can be presented in a considerate, dignified way.

Because the State University at Stony Brook is still in its formative years, this generation of students will be creating the traditions that future generations will follow. Stony Brook aims especially to foster intellectual tolerance and respect for creativity and scholarship. We are all students here. By such respect, for each student and for the community of scholars, we help one another to develop our talents and understanding.

STATE UNIVERSITY OF NEW YORK AT STONY BROOK

The State University at Stony Brook is one of four University Centers of the burgeoning State University of New York. As a comprehensive university, it is devoted to undergraduate and graduate education in the traditional areas of human inquiry, to the discovery of new knowledge through research and other creative endeavor, and to an ever expanding role of public service to its community, region and state.

While the Stony Brook campus is growing rapidly to meet the soaring demand for higher education, its growth is governed by the rate at which the faculty and facilities necessary to maintain high standards can be provided. As prescribed in the Master Plan for the State University, the emphasis is on excellence of program, teaching and student performance.

History and Location

The University was founded in 1957 at Oyster Bay, Long Island. Its original charter was a modest but important one: to become a center for educating secondary school teachers of mathematics and science. In 1960, however, within the context of a fast-growing State University, it was designated a University Center and given the mandate to develop undergraduate and graduate programs through the Ph.D. in the humanities, sciences, social sciences and engineering. As a comprehensive university, it was also to become a center for research.

In order to realize its larger goals, the University moved in 1962 to a new and larger campus at Stony Brook, originally consisting of a 480-acre tract of land given to the state for this purpose by philanthropist Ward Melville. Today, there are 16 major buildings on the campus, the acreage has almost doubled, and the University has embarked on a $40 million expansion program. The academic program continues to expand at both the undergraduate and graduate

levels, the aim being a balanced institution with strength in all areas of the arts and sciences and engineering. In addition, a comprehensive medical center is being planned for the Stony Brook campus.

Stony Brook is located in a region of woods and hills and small historic villages on the north shore of Long Island some 50 miles northeast of New York City. The area has a distinctive New England flavor, having been settled more than three centuries ago by colonists sailing across Long Island Sound from what is now Connecticut and Rhode Island. Despite its long history and nearness to great centers of population, it retains a pastoral character.

The University thus enjoys the relative seclusion of a semi-rural setting, coupled with proximity to the cultural, scientific and industrial resources of the nation's largest city. The campus is linked to Manhattan by a pattern of four- and six-lane highways and by the Long Island Railroad (see map at back of bulletin).

Faculty and Students

One of the most telling measures of excellence in any institution of higher learning is its faculty. As of September 1966, Stony Brook will have approximately 350 faculty members, many of them acknowledged leaders in their fields. Some 75 percent hold earned doctorates.

A complete directory of faculty members can be found in the back pages of this bulletin. Their present distinction is only partially revealed in the listing of degrees earned and the institutions that have awarded them.

The level of student qualifications and performance at Stony Brook has also been high. Most entering students come from the top twenty percent of their high school graduating classes. However, academic achievement is only one of a number of factors considered in admitting a new student. The important judg-

ment to be made is whether he is capable of successfully meeting the demands of the academic program.

Enrollment, which totaled 145 students nine years ago, will mount to approximately 3,900 in the 1966-67 academic year. This is expected to approach 10,000 by 1970.

Programs and Accreditations

All new undergraduate students enter either the College of Arts and Sciences *or* the College of Engineering.

The College of Arts and Sciences with 17 departments offers Bachelor of Arts and Bachelor of Science degrees and programs of concentration in 21 subjects. Programs leading to provisional certification in elementary and secondary education are also available.

The College of Engineering with four departments grants the Bachelor of Engineering degree.

Currently, graduate work may be pursued in biological sciences, chemistry, English, history, mathematics, physics, psychology and engineering. By 1970, it is expected that graduate programs through the Ph.D. will be offered by all present University departments.

There is a six-week summer session which offers undergraduate courses.

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 Engineers' Council for Professional Development. The Department of Chemistry is accredited by the American Chemical Society.

The Stony Brook Campus

The Stony Brook campus is situated minutes away from the coves and beaches of Long Island Sound. The Atlantic shore is about 35 miles to the south. The campus consists of 850 acres of rolling, densely wooded terrain, with the central core area largely cleared for the buildings now in use.

There are five large academic structures which provide classroom, lecture hall, laboratory and office space for the divisions, schools or departments they serve. These include the Humanities Building which also serves the Social Sciences departments until a new two-building complex is completed in Spring, 1967, and buildings for Chemistry, Biology and Engineering. The Physics Building houses the departments of Physics, Mathematics, and Earth and Space Sciences.

Six two-story brick residence halls afford living quarters for 2,000 students and contain numerous lounges and dining halls. The Gymnasium, with its swimming pool, basketball and squash courts, and rooms for gymastics and ballet, serves the curricular, intramural and intercollegiate athletic programs. It also supplies space for the Office of Physical Education and the University Theater.

The Frank Melville, Jr. Memorial Library, in addition to the customary books, periodicals, microfilm, music collections, and listening and reading facilities, provides temporary quarters for the University administration.

Libraries

The Melville Library, a three-story air-conditioned structure, is designed for 350,000 volumes and will seat 700 students for immediate reading and study purposes. It is intended as the first part of a large structure that will house a million volumes at its next stage of development. Supplemental technical and scientific collections are housed in the science buildings and in the College of Engineering. All are centrally administered from the main library. In all campus libraries, users have free access to the open bookstacks with reading areas and bookstacks integrated throughout and no barriers separating the two.

Seminar rooms and soundproof typing rooms are available in the Melville Library. There is a special room for the housing and use of microform equipment, including reading machines for microfilm, microcards, microprint, and microfiche and a microprint reader-printer. A photocopy machine is available for the purpose of copying pages from magazines and reference books.

The University Library is a selective government depository and receives large numbers of publications issued by the U.S. government. About 3,000 periodicals are currently received covering all areas of knowledge, and the staff is processing books at the rate of 48,000 volumes per year. The collection now numbers 175,000 volumes and 48,000 documents.

The library furnishes students with recordings of speeches, poetry, and drama as well as music. The music library will occupy a portion of the first floor when the facilities are complete. The latest electronic equipment will be installed, including the use of tapes and cartridges operated by remote control under the direction of a music librarian and a skilled electronics engineer.

The Computing Center

The Computing Center, another essential central facility of the University, has many objectives. It not only introduces students to concepts of modern com-

puting technology through course work and the integration of the computer-oriented approach in problem courses, but also makes the computing facilities freely available for such student activities as term papers, research projects, and theses.

The Center serves the faculty in both sponsored and unsponsored research activities and the administration in such areas as institutional research and administrative data processing. Short courses in programmng and problem oriented languages are held periodically for faculty and administative staff.

The present equipment consists of an IBM 7044/1401 computing system (with 32,768 words of main storage in the 7044 computer), a disk, 10 magnetic tape units (one connected to a high speed automatic plotter) and associated peripheral equipment. Currently, the equipment is housed in two rooms in the basement of the Engineering Building. A major new equipment complex is planned for installation in the fall of 1967.

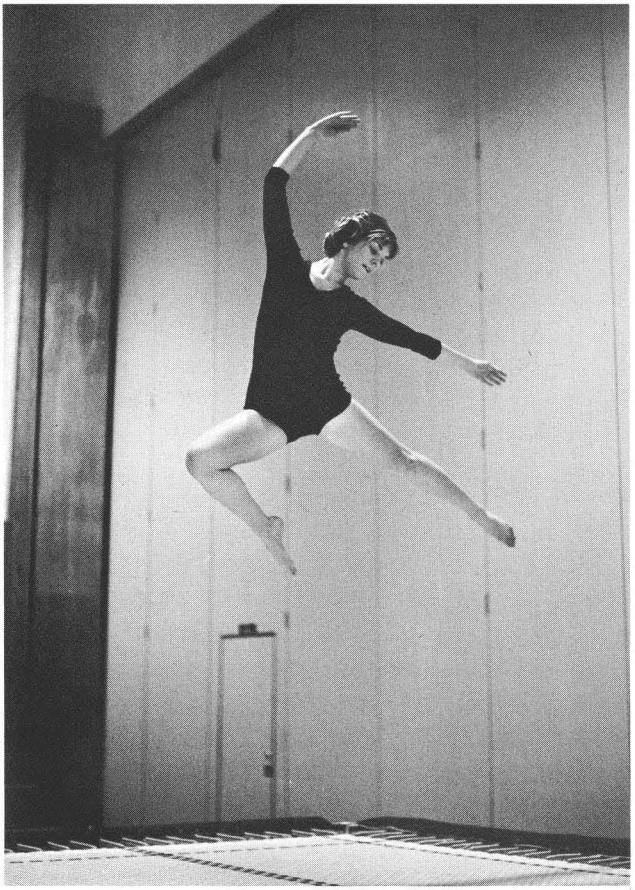
Campus Expansion Program

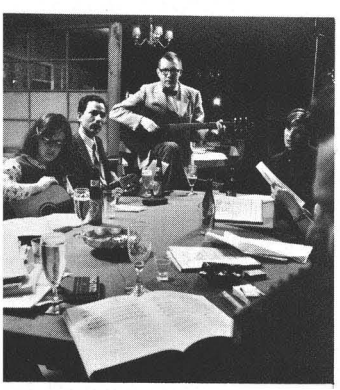
A host of other new facilities, offering an interesting variety in architectural styling as well as academic purpose, will be constructed over the next two and one-half years. Prominent among the 30 new buildings to be erected will be a Campus Center, with meeting rooms, recreational facilities, an auditorium, and extensive dining facilities; a Lecture Hall Center; an Earth and Space Sciences building, and a Fine Arts Center, with buildings for music, art and theater.

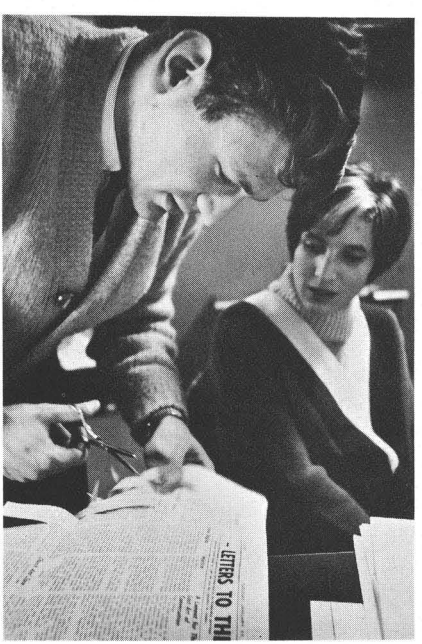
Other structures will include additional facilities for the College of Engineering; a semi-underground extension of the Physics Building to house the new Van de Graaff nuclear accelerator; an Administration Building, and an Instructional Resources Center in which new methods of visual presentation of course material will be developed.

The system of residence halls will be continuously enlarged as needs increase. New complexes now under construction employ the suite style of room arrangement as opposed to the more conventional corridor concept.

The new medical center at Stony Brook will admit its first students in 1971; and because of its location near the seashore and its growing strength in the biological sciences, Stony Brook has been designated as the site of the State's Marine Sciences Research Center.



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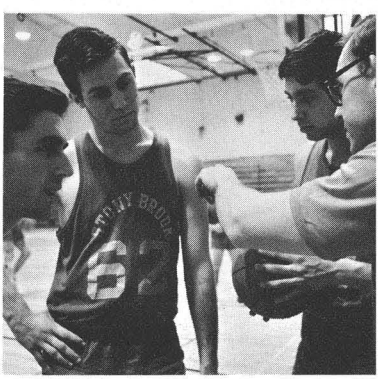


STUDENT SERVICES AND ACTIVITIES

Student programs and services—including residence halls, health services, psychological counselling, financial aid, placement, recreation, intercollegiate athletics, general advisement and student activities—are administered through the Dean of Students Office. Through these programs, students are offered opportunities to develop group and leadership skills, to seek counselling or advice regarding personal or professional needs in programs under competent professional guidance, or simply to satisfy their needs as individuals. Whenever possible, programming and staffing in the Dean of Students Office are coordinated with institutional academic goals and personnel to aid, through student life and services, in establishing a community purpose and style.

Academic Advising

Each student is assigned a faculty advisor to aid him in the planning of his academic program. These advisors are also available to counsel students regarding any academic problems that may arise during the school year.

Counselling and Psychological Services

The Office of the Dean of Students consists of a staff of trained counsellors experienced in helping students with personal, social, educational and vocational problems. Students are welcomed and encouraged to meet with members of the Dean of Students staff.

Psychological services are provided for students through the joint sponsorship of the Dean of Students and the Department of Psychology. Psychological services are intended for students who have personal problems or who are experiencing considerable difficulty in adjusting to university life and its demands.

Financial Aids

All inquiries regarding financial assistance should be directed to the Financial Aids Office. Located in Room 67 of the Health and Physical Education Building, this office administers the various State and Federal loan programs as well as University and State grants and scholarships.

Foreign Student Advisor

Students from other nations who are studying at the University have available to them the counsel and facilities of a Foreign Student Advisor. Located in Dormitory H, this office advises students from abroad on non-academic matters and activities.

Health Service

Minor medical care is provided in the Infirmary through the services of a full-time registered nursing staff and the availability of a physician. The functions of this service do not include continuing medical care for chronic or congenital conditions. Students suffering from such conditions should make private arrangements for care by a physician of their choice. A health-insurance program has been adopted to cover the costs of treating major illness, including those of hospitalization and surgery. Any student whose illness in the opinion of the physician requires attention or treatment beyond that available at the University will be referred to his family or guardians for care at home or in a hospital, and by a physician of their choice.

Housing

The majority of the student body at Stony Brook resides on campus in the University residence halls. Unmarried freshmen students who do not live at home during the school year are required to live in the residence halls. Upperclass students may, with the approval of the Director of Student Housing, live in private off-campus residences which meet standards set by the University.

Modern residence hall facilities with 1000 rooms adaptable for double or triple occupancy are currently available on campus and additional residence halls are under construction. Provided for each student are a bed, mattress, bureau, study desk and chair, and closet. Lounges, study areas, and recreation facilities are interspersed throughout the residence halls. All resident students subscribe to a board plan offering 21 meals a week in the residence hall dining rooms. Special à la carte dining facilities are also available for commuting students.

Residence hall life at Stony Brook is considered to be an integral part of the student's educational experience. In addition to providing accommodations, the residence halls offer opportunities for social, intellectual, and cultural development. The halls are organized under a system of student self-government. Full-time professional counsellors and faculty members are in residence.

An expanded program of faculty involvement with the students is planned for 1966-67 in the form of a residential "college plan." This program is designed to expand the cultural and intellectual opportunities in the residences as well as to foster student identity within the University and improve interpersonal relationships. Commuting students, as well as those who live on campus, may be affiliated with the individual colleges which will range in size from 200 to 400 students each. Each college and its students and faculty associates will have the opportunity to develop an individual program, style and tradition.

Orientation

An orientation program is conducted for all incoming undergraduates during a period preceding their initial registration. This program is designed to aid students in acclimating themselves to the academic and social atmosphere of the University.

Placement

The University's Placement Office, located in Room 67 of the Health and Physical Education Building, provides students with essentially two services. The first is aiding students to obtain summer jobs as well as part-time employment during the school year. The second is advising and assisting seniors, graduates and alumni in the selection and procurement of permanent employment. The permanent credentials file is maintained for the benefit of the University's alumni. Information regarding teaching careers is available through the University's Department of Education.

Special Projects

Students interested in community activities are encouraged to take advantage of the facilities of the Office of Special Projects. There are a number of opportuni-

ties for participation in community work such as tutoring, various programs for the disadvantaged, hospital volunteer work and youth organizations. Further information can be obtained from the Director of Special Projects located in Room 67 of the Health and Physical Education Building.

Athletics

Intramural leagues have been organized in such sports as touch football, volleyball, basketball, tennis, and softball.

The intercollegiate program for men consists of seven sports: crew, cross-country, track, basketball, bowling, tennis, and soccer.

Student Organizations

The Student Polity, to which all students belong, allows them to govern themselves to a large extent in extra-curricular matters. The Executive Committee of Polity, composed of elected members, approves student organizations and, with the Student Activity Board, coordinates the social, cultural, and recreational student activities. Student publications include *The Statesman,* the newspaper; *Specula,* the yearbook; and *Soundings,* the literary magazine. The range of organizations will be suggested by the following: the Biological Society, the Chemistry Society, French Club, German Club, Chess Club and Cheerleading Squad, Jewish Students Organization, Newman Club, *Premedical-Predental Society, Student Christian Association. The Student Polity also sponsors art exhibits, concerts, lectures and films, and operates its radio station, WUSB.

*The Premedical-Predental Society acquaints the student with information concerning the medical and dental professions. Students interested in preparing for medical or dental schools are advised to consult with the Premedical Advisory Board before selecting a major field of concentration.

ADMISSION TO THE UNIVERSITY

The State University of New York at Stony Brook is open to men and women who have demonstrated academic competence in their prior schooling.

An applicant is admitted after a careful analysis of data provided by high school or other scholastic records, standardized tests, and school recommendations. In many cases an interview will be held to assess his ability to perform the intellectual tasks required by the curriculum he has selected. Since a student may develop academic competence and intellectual qualities in various ways, both within and outside the context of formal instruction, no particular pattern of secondary school preparation with the exception of three years of mathematics is demanded, and no single criterion for admission based upon academic average or rank in class has been adopted. The degree requirements listed elsewhere in this bulletin will enable a candidate to judge his own preparation in terms of the performance that will be expected of him at the University. A strong standard college preparatory program is advised for most students. Students preparing for engineering, mathematics and science areas are urged to take four years of high school mathematics whenever possible.

Final acceptance will depend in part upon receipt of an acceptable medical report.

No programs are offered at present for part-time students or non-degree candidates.

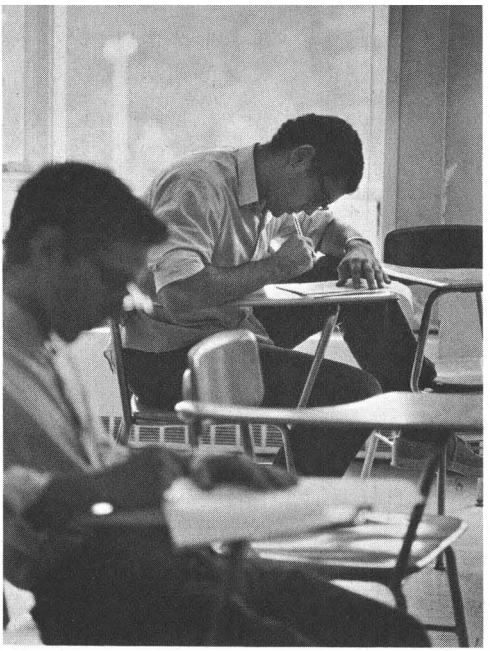
Application Procedure for New Freshmen

An application for admission may be obtained by writing to: *Admissions Office, The State University of New York at Stony Brook, Stony Brook, New York 11790.*

A pamphlet, *How To Apply For Admission,* giving complete instructions for applying, is included with each set of application forms. The candidate is responsible for following the procedure outlined in this pamphlet, and completing the Stony Brook Supplementary Questionnaire.

Personal interviews will be required of some but not all applicants. Candidates may themselves request interviews for purposes of information or clarification. Interviews are of greater usefulness after the applicant's academic record has been filed in the Admissions Office.

Applications for the Spring Semester should be filed before December 15. Experience has shown that little or no residence hall space is available for mid-year entrants. When securing an application for February admission, the candi-



date should be prepared to commute or consider the possibility of a September application as well.

Appointments for interviews may be made by mail or by telephone to the *Admissions Office, Telephone 246-5126 (Area Code 516)*. Appointments may be made between 10:00 a.m. and 4:00 p.m., Monday through Friday.

In addition, the Admissions Office provides an informative talk and a tour of the campus at 3:00 p.m. every Friday during the school year, except holiday week-ends. This is a group meeting and anyone desiring a personal interview should write or telephone in advance. Student guides are available in the lobby of the gymnasium on Saturdays and Sundays for tours of the campus during daylight hours.

Additional information may be obtained by writing to the Office of Admissions at The State University of New York at Stony Brook.

Advanced Placement

Advanced placement may be extended to new freshmen who have completed advanced courses in secondary school or who have in other ways developed academic competencies which entitle them to special consideration. However, all students will be expected to complete the required credit hours. Candidates undertaking advanced placement courses in secondary school are expected to take the appropriate examinations and to request that their scores be forwarded to this institution. Others desiring advanced placement should submit a written request for a review of their qualifications. In most cases a special examination or examinations will be required.

Notification of Admission

Notices of admission to the State University of New York at Stony Brook normally are mailed during the month of April. In some cases earlier notification may be made. Some negative decisions may also be made prior to the usual notification period.

Acceptance is conditional upon the successful completion of academic work in progress at a level commensurate with the work upon which acceptance is based.

Entrance Examination

Applicants for admission must take the entrance examination described in *How To Apply For Admission*. Candidates are urged to complete this requirement as early in the application process as possible.

Although the Scholastic Aptitude Test (SAT) of the College Entrance Examination Board is not required for admission, all applicants who sit for this examination are urged to have the results forwarded to the Admissions Office.

Candidates who reside out of state and are unable to take the regularly scheduled State University Entrance Examination may request permission to substitute the Scholastic Aptitude Test. Such requests must be made in writing to the Director of Admissions at the earliest date possible.

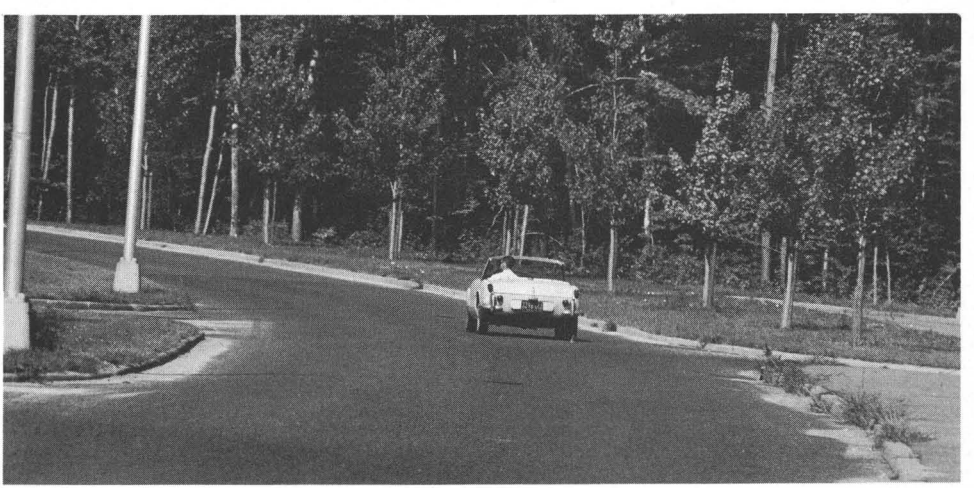
Transfer Students

Any applicant who has been previously registered at a degree-granting institution must apply as a transfer student. Each transfer student, in addition to completing the application procedure outlined for new freshmen, must submit the following:

An official transcript of record from each collegiate institution attended. (If no grades were earned, a statement of attendance and honorable dismissal is required.)

A Course Evaluation Request (forms may be obtained from the Office of Admissions) for each course the applicant wishes considered for advanced standing.

Advanced standing will be granted to students completing acceptable courses in accredited collegiate institutions with a grade of "C" or better. Courses in the major field will be evaluated by the department concerned for applicability to major requirements. The Admissions Office evaluates all other courses and determines if general education requirements or elective credit is to be granted. Remedial work, high school equivalents, and some technology courses will generally not receive collegiate credit.



FINANCIAL INFORMATION

Tuition and fee costs are based on the schedule printed below. All charges are due and payable on the first day of the period indicated.

Charge or Fee	First Semester	Second Semester	Year
Tuition			
N.Y. State Resident	$200.00	$200.00	$400.00
Out-of-State Resident	300.00	300.00	600.00
Graduate Program	300.00	300.00	600.00
State University Fee	12.50	12.50	25.00
*Student Health Insurance Fee**	26.50		26.50
Student Activity Fee	50.00		50.00
Identification Card	2.00		2.00
Damage Deposit	20.00		20.00
Telephone Deposit	15.00		15.00
Orientation (Freshmen Only) **	20.00		20.00
Graduation (Seniors Only)	15.00		15.00

Room	*1st Qtr.*	*2nd Qtr.*	*3rd Qtr.*	*4th Qtr.*	*Total*
Double Occupancy	$ 93.75	$ 93.75	$ 93.75	$ 93.75	$375.00

Board	*1st Qtr.*	*2nd Qtr.*	*3rd Qtr.*	*4th Qtr.*	*Total*
21 Meal Plan	$110.00	$110.00	$110.00	$110.00	$440.00

*Student health insurance fee waived if proof of both hospital and medical insurance is presented prior to registration.

**Includes orientation fees and charges for room and board.

A statement of all charges will be sent to the student at the beginning of the academic year, or upon his admittance. This statement contains a complete schedule of all charges, along with due dates for payment. It will be the responsibility of the student to see that all obligations are paid promptly. Complete instructions accompany each schedule.

Students who register after the official registration period must pay a late registration fee of $15.00.

Two free transcripts will be provided each student who graduates; additional transcripts are available at a cost of $1.00 each.

The above fees are subject to change without notice.

The University reserves the right to cancel the registration of any student who fails to meet his obligations at the University. It will be the responsibility of each student to arrange a private meeting with the Business Officer or his representative to agree on a deferred payment plan, if circumstances preclude the paying of expenses when due.

Preadmission Deposit

Each new student is required to pay an advance deposit of $50.00. This deposit, payable upon tentative or conditional acceptance, is applied against charges incurred by the depositor at the start of his attendance. The deposit is required on or before May 1st for students notified of acceptance before April 1st. For those students notified of acceptance after April 1st, or for admission in other than the Fall semester, deposits are payable within thirty days after acceptance or before registration, whichever is earlier. The deposit is refundable only in the case of those students who, having forwarded their deposits upon conditional acceptance, have later been refused admission.

New students who are remiss in paying this advance deposit may experience delay in official acceptance of offer of admission.

Refunds

A student who withdraws after the first five days of a semester is entitled to only a partial refund of monies collected for tuition and fees. A schedule of refunds is available at the Business Office.

Withdrawal from a Meal Plan, with the approval of University officials, takes effect on the Monday following withdrawal and refunds will be computed on this basis.

Residence Charges

Room charges for an academic year are listed in the above schedule. Once a student has registered and occupied a room, no refund will be granted for pay-

ment made for that quarter. An advance room deposit of $25.00 is required of all resident students, prior to each fall semester. This amount will be credited to the student's room account. The advance room deposit is refundable if application is made in writing before July 1.

Students living in the residence halls must pay for board as stated in the schedule. Payments are refundable, on a percentage basis, after official notification has been received by the Business Office. No refunds are made to students who leave the campus on weekends, nor are refunds made to any student who, for any other reason, misses meals.

Laundry service is provided at nominal cost. Arrangements are made between the student and the laundry service. Coin operated washing machines and dryers are available in the residence halls.

Each room is provided with a private telephone. A deposit of $15.00 (listed in the schedule) must be paid prior to taking up residence. Upon graduation or withdrawal from the University, this deposit will be refunded, less any charges outstanding.

Summer Session

Expenses for the 1966 summer session are as follows:

Charge or Fee

Tuition, New York State Resident	$13.50 per credit hour
Out-of-State Resident	$20.00 per credit hour
Graduate Courses	$20.00 per credit hour
State University Fee	$ .85 per credit hour
*Damage Deposit	$20.00
Student Services Fee	$ 5.00

Room

Double Occupancy	$ 9.00 per week
Single Occupancy	$13.00 per week
Telephone rental charge	$ 4.75

Board

A la carte

*Applies to all students except those registered in the previous Spring Semester who have an outstanding deposit.

Scholarships and Loans

Regents' College Scholarships are granted by New York State to high school graduates by counties on the basis of an annual written scholastic competition. Application should be made through the local high school principal.

Scholar Incentive Awards are available, for each semester of attendance, to anyone matriculated in a college in the State of New York in a full-time program leading to a degree, provided he has been a resident of New York State for the preceding year and meets the prescribed academic requirements. (An undergraduate who is a legal resident but has not been a resident for a full year may qualify for an award if he was a resident during his last year of high school. Similarly, a graduate student may qualify if he has been a resident from the beginning of his last year of college attendance until the time he matriculates for graduate study.)

The amount of the award will be based on the net taxable balance of the income of the student and of those responsible for his support, as this income is reported on the New York State Income Tax Return for the last calendar year. For married students, at the graduate and undergraduate level, this includes the spouse's income. If more than one child in the family is attending college, the net taxable balance is divided by the number of those attending college. The maximum amount to be awarded for each of the two semesters of an academic year is as follows:

Net Taxable Balance	Undergraduate Study	First Year Graduate or Professional Study	Graduate or Professional Study Beyond First Year
$1,800 or less	$250.	$300.	$400.
$1,801 to 7,500	100.	150.	300.
Over $7,501.	50.	100.	200.

Holders of the award and the University will receive, as soon as practicable, a notice of the maximum award to which the holder will be entitled solely on the basis of financial status. However, the amount of the award cannot exceed the amount by which the college tuition for the semester (not including fees) exceeds $100.00. Application for Scholar Incentive Awards should be made to the Regents Examination and Scholarshp Center, State Education Department, Albany, New York.

A student may also be eligible to apply for a State University Scholarship of up to $200.00 each academic year. To qualify, each applicant must be a resi-

dent of New York State, a full-time student, and have a net taxable family income of less than $1,800.00 as outlined above. In general, entering freshmen holding Regents College Scholarships are not eligible for State University Scholarships. Interested students may direct inquiries as to their eligibility to the Financial Aid Officer of the Universty.

Students are advised to have their Notices of Award with them when registering at the University. These will be received by students from the Regents Scholarship Center in Albany. Deferred payment arrangements can be made only when students have their notices.

Scholarships for Children of Deceased or Disabled Veterans are granted by New York State to eligible applicants on the basis of an annual scholarship examination. Application should be made through the local high school principal, or to the State Education Department, Albany, New York.

Part-time work opportunities on and off campus are available under the federally sponsored *College Work Study Program* for certain students who meet the criteria for financial need.

Exceptionally needy students may be eligible for aid under a program for federal *Educational Opportunity Grants.* These are made in conjunction with a financial aid package worked out between the student and the *Financial Aid Officer* and tailored to the student's individual needs.

Both the State of New York and the Federal Government offer low cost loan programs through the University to help students finance their higher education. Information on these loans and application forms may be obtained from the *Financial Aid Officer.*

It should be noted that student loan funds are limited and thus are not intended as a convenience but as an assistance to students whose families would not otherwise have the means to send their children through college.

A pamphlet entitled *Financial Aid Programs for Undergraduate Students* explains the above programs in greater detail. It may be obtained from the *Financial Aid Officer* of the Office of the Dean of Students.

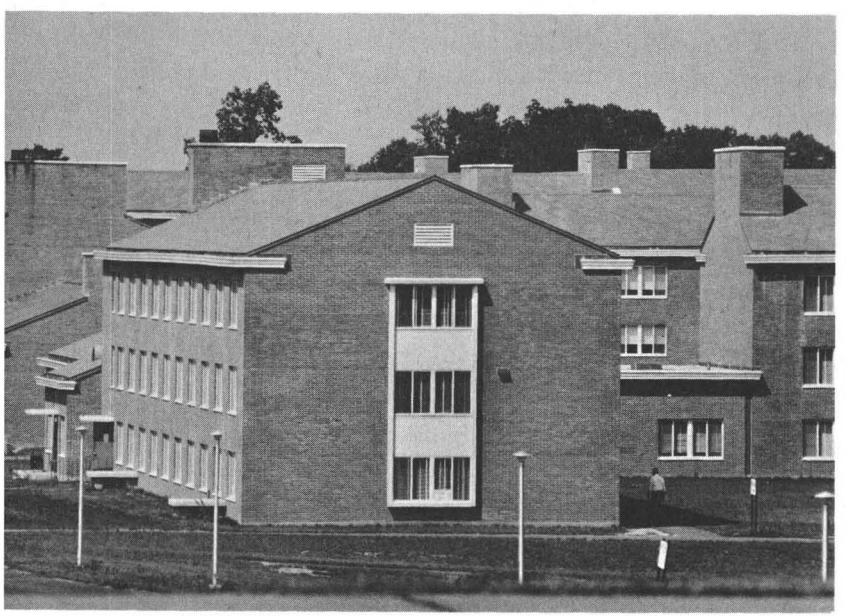
Veterans may attend the State University under the benefits of Public Law 894 (disability) or 550 (Korean War) or 89-358 (effective 6-1-66).

Eligible students may also receive financial assistance from the Division of Vocational Rehabilitation of the New York State Education Department.

When approved by the Business Officer of the University, scholarships held by State University students may be applied directly to such expenses as room,

board, and fees, where a student has made a tuition payment and there are other outstanding balances due on his account.

Students from the member States of the Organization of American States who wish to pursue graduate studies may apply, upon seeking admission to the University, for a fellowship grant under the terms of the Program of Fellowships and Professorships of the Organization of American States. Requests for O.A.S. fellowship applications should be directed to The Technical Secretary, O.A.S. Fellowship and Professorship Program, Pan American Union, Washington, D. C. The deadline for receipt of application for this program is February 28 for those wishing to initiate their studies in the fall, and August 31 for those who wish to enter the University on February 1. Selected advanced undergraduates may be eligible for consideration under the terms of the Organization of American States Program.



ACADEMIC REGULATIONS AND PROCEDURES

Course Selection

Courses are to be chosen in accordance with the regulations of an established degree program and are to be approved by the student's academic adviser. It is the student's responsibility, however, to plan his program so that all degree requirements are met.

Course Load

A student may register for 12 to 19 hours of credit each semester with the approval of his academic adviser. Normally a student will register for a course load of 15 to 18 credit hours.

A student who wishes to register for less than 12 or more than 19 semester hours may petition the Committee on Academic Standing on forms provided by the Office of the Registrar. Petitions to take course work in excess of 19 semester hours will normally be approved only if the student has achieved a grade-point average of 3.00 or better during each of the previous two semesters. Petitions to take less than 12 hours of work will normally be approved when, in the judgment of the Committee, unusual circumstances, such as physical disability, exist. Such petitions should be accompanied by appropriate documentation.

Change of Registration

A student may, with the approval of his academic adviser, change his registration during the first two weeks of the semester. The Office of the Registrar will

make the relevant forms available. No record is made of courses dropped during this period. No courses may be added after the second week.

A student may drop a course between the beginning of the third and the end of the ninth week of the semester, provided that he has the approval of his academic adviser and that this withdrawal does not reduce his course load below 12 semester hours. Students will be assigned the grade of WP (Withdrawn Passing) or WF (Withdrawn Failing) for each course dropped. After the ninth week no changes in registration will be permitted.

Late Registration

Registration after the close of the announced Registration Period entails the payment of a service fee of $15.00. Registration is not permitted after the end of the second week of classes. A student is registered when the appropriate forms have been filed with the Registrar and arrangements regarding tuition and fees have been made with the Business Office.

Auditing

Regularly enrolled students may audit a course by procuring the written permission of the instructor and filing it with the Registrar during the registration period. Attendance of a course for a session or brief period requires only the verbal approval of the instructor. No petitions to change from audit to credit status will be allowed after the second week.

Assignment of Grades

In each course final grades are given at the end of the semester, except in the year-long courses designated by a dash (as Biology 291-292). In such courses a final letter grade is given only after both semesters have been completed; the grade given at the end of the first semester is advisory.

Grades assigned at the completion of a course are as follows: A (Superior), B (Good), C (Satisfactory), D (Minimum Passing), F (Failure). In addition, the following marks may be awarded at the end of the semester:

I (Incomplete) may be given at the discretion of the instructor when a student fails to complete all course requirements due to circumstances beyond his control. The date set for the completion of such requirements will ordinarily be no later than November 1st for courses taken in the prior spring semester and March 15th for courses taken in the prior fall semester. In a final letter grade of A, B, C, or D is not reported to the Registrar by these specified dates, the grade of I will automatically be changed to F. No student will be permitted to graduate with the grade of I on his record. Under unusual circumstances an

instructor may extend the period for completing the course requirements. In such cases the instructor must notify the Registrar in writing before the I expires and specify the date upon which an alternate final grade will be reported. If a grade of A, B, C, or D is not reported to the Registrar by this date, the grade of I will be automatically changed to F.

WP (Withdrawn Passing) indicates withdrawal from a course while the student is doing passing work or before evaluation is possible.

WF (Withdrawn Failing) indicates withdrawal from a course while the student is doing failing work.

R (Registered) indicates attendance during the first semester in a year-long course, the final grade of which will be assigned only after the completion of two semesters.

J (Audit) means registered as an auditor.

P (Pass) is used to indicate passing work in those courses where the only evaluation that can be made by the instructor is either Pass or Fail.

Repeating Courses

With the approval of his adviser, a student may repeat a course in which he has received a grade of D or F. All grades and semester hours will be computed in the grade-point average, but a single course may be counted only once in satisfying credit-hour requirements.

Grade-Point Average

For the purpose of determining grade-point averages, letter grades have the following values: A, 4 points, B, 3 points, C, 2 points, D, 1 point, and F, no points. Grades of I, WP, WF, R, and J are not included in the grade-point average. To work out the cumulative grade-point average, the number of points equivalent to the letter grade earned in a given course is multiplied by the number of semester hours that the course carries; the total number of points earned in all courses is then divided by the total number of semester hours for which the student has been registered. Only courses taken at Stony Brook are included in a student's grade-point average.

Transfer Students

For the purpose of interpreting academic regulations, transfer students will be placed in class according to the following schedule of semester hours earned elsewhere and accepted for credit in the University: Freshman 0-23, Sophomore 24-54, Junior 55 or more.

Academic Standing

During the freshman and sophomore years (or the first four semesters of registration) a student must earn a grade-point average of at least 1.75 each semester to remain in good standing. Students earning a grade-point average below 1.75 during any semester will be placed on academic probation for the following semester.

During the junior and senior years (or after four semesters of registration) students must earn a grade-point average of at least 2.00 each semester to remain in good standing. A cumulative grade-point average of 2.00 for all work undertaken after entrance into the junior year (or begun after four semesters of registration) is required for graduation. Upperclassmen earning a grade-point average of under 2.00 during any semester will be placed on academic probation for the following semester.

Students on probation whose gradepoint average for the probationary semester is less than 1.75 for a freshman or sophomore, or less than 2.00 for an upperclassman, will be suspended. Students who are placed on probation for a third time or those who in any semester receive more failing than passing grades will be eligible for suspension, as will those already registered if during the semester the change of an I to a letter grade places them below the level required for good standing. One semester must elapse before suspended students will be eligible for readmission. Petitions for readmission will be considered by the Committee on Academic Standing after appropriate forms have been filed with the Office of Admissions. A student who has been suspended twice will not be eligible for readmission.

Deans' List

Students registered for 12 or more semester hours who achieve a grade-point average of at least 3.00 during the semester (calculated after any grades of I have been made up), and who have not failed a course, will be placed on the Deans' List. This list will be circulated to all members of the faculty. Attainment of the Deans' List will be noted on the student's official transcript.

Withdrawal from the University

Withdrawal from the University, for any reason, will be recorded only when the form entitled "Withdrawal from the University" has been completed and submitted to the Registrar.

These forms may be obtained from the Office of the Registrar. The date upon which this form is filed, and not the date of the last class attendance, is considered the official date of withdrawal. Non-attendance or notification to the

instructors does not constitute formal withdrawal. Students who withdraw on or before the day of the last class meeting prior to the final examinations will receive the grade of WP or WF for each course in which they are registered. Students who terminate their attendance at the University without filing formal notification of withdrawal on the appropriate form will be automatically assigned the grade of I in each course for which they are registered.

Readmission to the University

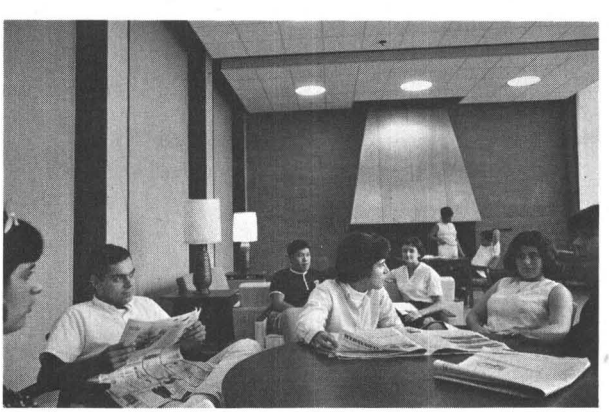
Students who have withdrawn from the University and who wish to be readmitted must file a petition with the Committee on Academic Standing on forms provided by the Office of Admissions.

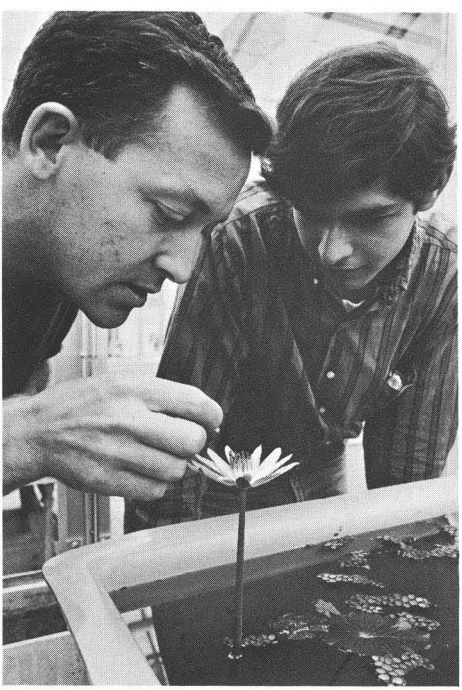
Residence

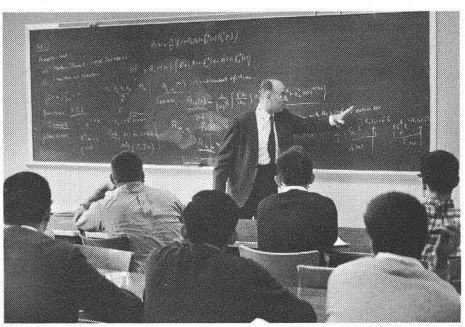
For a student to be certified for a degree, he must have been registered as a full-time student at the University for the two semesters immediately preceding his graduation.

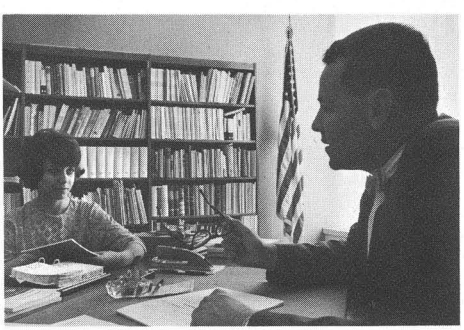
Cancellation of Courses

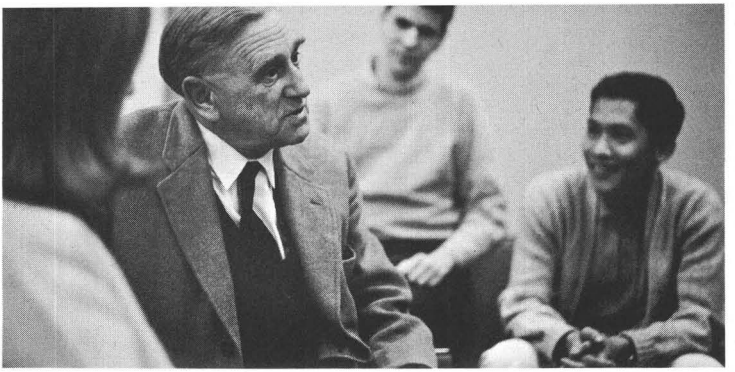
The University reserves the right to change academic regulations or to cancel any course for whatever reasons it may deem appropriate.











COLLEGE OF ARTS AND SCIENCES

Degree Requirements

All candidates for the Bachelor of Arts and Bachelor of Science degrees must satisfy the following requirements, normally by attaining a passing grade in appropriate courses and exceptionally by being granted an exemption:

a. English 101, 102 — 6 credits

b. Humanities — 12 credits

c. Social Science — 12 credits
(This requirement is to be satisfied by the successful completion of courses from 3 of the 6 Social Science departments.)

d. Two one-year sequences of course work in the areas of mathematics and science (biology, chemistry, earth and space sciences, physics), with one of the years in a course that includes a laboratory; in meeting this requirement no more than one year of course work may be taken in a single department. — 14-16 credits

e. Physical Education — 2 semesters

Students are to complete the above requirements at the earliest possible time, except in Physical Education in which case the requirement is to be completed *after* the Freshman year.

Each candidate is required before graduation to demonstrate a two-year level of achievement in the foreign language approved for his program. This achievement may be demonstrated either by (a) passing a proficiency examination upon admission to this institution or (b) satisfactorily completing a second-year course in the foreign language approved for his program. Proficiency is thus the level of achievement normally attained after approximately two years of college study of the foreign language.

For graduation a student must have earned at least 120 credits. Furthermore,

he must have a cumulative grade-point average of 2.00 over his last four semesters.

The undergraduate must meet the requirements of one of the departmental programs of concentration.

Any student admitted without advanced standing will in his first year take two semesters of English composition; one year of mathematics or natural sciences; two semesters of Humanities *or* two semesters of Social Science.

Courses to meet the Humanities requirement are to be chosen from the following: Humanities 103, 104, 105, 106, 113, 114, 115, 116, 121, 122, 123. No more than 6 hours of work may be taken in any one of the following areas: Fine Arts (Humanities 113, 114, 115, 116), Literature (Humanities 103, 104, 105, 106), Philosophy (Humanities 121, 122, 123). There is no prescribed sequence nor prerequisite for any of the Humanities courses.

Courses to meet the Social Science requirements are to be chosen from the following: Anthropology 101, 102; Economics 101, 102; History 101, 102; Political Science 101, 102; Psychology 101, and any Psychology course for which the prerequisites have been fulfilled and Sociology 101, 102.

Students satisfactorily completing Mathematics 102 are assumed to have a retroactive exemption from Mathematics 101. Thus, although they will only receive the normal three credits they will be considered to have met the one-year-of-mathematics requirement in paragraph "d" above.

Students majoring in the Departments of English, Fine Arts, Philosophy, Romance Languages, and Germanic and Slavic Languages must select two semesters from the above Humanities courses in the freshman year.

Students majoring in the Departments of Anthropology, Economics, History, Political Science, Psychology, and Sociology must select two semesters from the above Social Science courses in the freshman year.

It is strongly recommended that a foreign language be elected in the freshman year.

A student may be exempted from any of the course requirements on the recommendation of the agency supervising the course.

Subjects of Instruction

Courses are numbered in accordance with the following general pattern:

101-199, freshman-sophomore courses

201-399, junior-senior courses

401-499, graduate courses

Courses, the titles of which are bracketed, will not be offered in 1966-1967.

DEPARTMENT OF ANTHROPOLOGY

Professor: Louis C. Faron (*Chairman*)
Associate Professor: Paula Brown
Assistant Professor: Margaret C. Wheeler

The undergraduate program in anthropology is designed to provide the student with an introduction to the general field of anthropology, its branches, its theories and methods, and its relation to the other social sciences and the humanities. It is also intended to provide the anthropology major with an academic background suitable to specialization in a graduate program of anthropology. The curriculum emphasizes the fields of cultural and social anthropology.

Requirements for the Major

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are required for the major in Anthropology:

A. Study within the area of the major

1. *Anthropology* 101, 102 (Introduction to Anthropology, Social Organization of Non-Western Peoples).

2. A one-semester course in *World Ethnology* (to be taken after the completion of *Anthropology* 101).

3. Nine credits, including one course in each of the following categories:
   a) a specific area course, such as *South American Ethnology, the Ethnology of South East Asia, etc.*
   b) a topical course, such as *Primitive Religion, Primitive Economics, etc.*
   c) a course on socio-cultural change or *Peasant Societies and Cultures.*

4. Two advanced courses of one semester each:
   1) Development of *Ethnological Theory and Methods.*
   2) Readings in Social Anthropology.
   (These courses are to be offered as colloquia or seminars.)

B. A selection of six additional units, either among listed departmental course alternatives or appropriate courses in other departments with the approval of adviser.
Language proficiency requirement to be met in French, German or Spanish.

Courses of Instruction

ANT 101. Introduction to Anthropology

An introduction to the study of man's biological and cultural heritage through a consideration of the principal sub-disciplines in the field of Anthropology: 1) Physical Anthropology, with emphasis on human origins and physical variations of the human species and with the evidence for human evolution; 2) Linguistics, dealing with the description and distribution of human language; 3) Pre-historic archaeology, emphasizing the development of social and cultural systems in the old and new worlds; and 4) Ethnology, treating the life ways of contemporary peoples with emphasis on the range of social and cultural variation in the non-western world, and a critical survey of its classification.
Prerequisite: None.
Mrs. Wheeler
Fall, Spring, 3 credits

ANT 102. Social Organization of Non-Western Peoples

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, juridical or religious and economic organizations.
Prerequisites: ANT 101 or permission of instructor.
Mrs. Brown
Fall, Spring, 3 credits

ANT 161. 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.
Prerequisites: ANT 101, 102 or permission of instructor.
Mrs. Wheeler
Fall, 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, etc.
Prerequisites: ANT 101 and 102.
Mr. Faron
Fall, 3 credits

ANT 205. Peoples of Africa

After a brief biological and archaeological introduction the course will focus on the range of social, economic, artistic, political and religious variations in the pre-contact

period, followed by a brief discussion of the colonial period and the emerging African nations.
Prerequisites: ANT 101, 102 or permission of instructor.
Mrs. Brown
Spring, 3 credits

ANT 261. Peasant Societies and Cultures

1.) The concept of peasantry will be examined from political, religious, and social class angles as well as from the more traditional economic view. 2.) These agricultural peoples, who are essentially preliterate and preindustrial are described and analyzed, especially in relation to the national societies of which they form a part. 3.) Special attention is given peasant societies in Latin America.
Prerequisites: ANT 101 and 102.
Mr. Faron
Spring, 3 credits

ANT 271. 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.
Prerequisites: ANT 101, 102 or permission of instructor.
Mr. Faron
Spring, 3 credits

DEPARTMENT OF BIOLOGICAL SCIENCES

Professors: FRANK C. ERK *(Chairman)*, BENTLEY GLASS

Associate Professors: EDWIN H. BATTLEY, VINCENT P. CIRILLO, RAYMOND F. JONES, ROBERT W. MERRIAM, MONICA RILEY, *ROBERT E. SMOLKER, *BERNARD D. TUNIK, *GEORGE C. WILLIAMS

Assistant Professors: ALBERT D. CARLSON, LELAND N. EDMUNDS, JR., JAMES A. FOWLER, *JOHN J. GAUDET, GEORGE J. HECHTEL, HOWARD C. HOWLAND, R. PETER KERNAGHAN, MARVIN J. ROSENBERG

Instructor: STEVEN OBREBSKI

The undergraduate program in biology is designed to prepare students for advanced study in the biological sciences, for secondary school teaching, and for certain positions in industry and research. The core of the program consists of two one-year courses and a field course in ecology. In addition certain courses in mathematics, chemistry, and physics are required; these courses contribute to an adequate understanding of the content of the program, and are essential for advanced work in the biological sciences.

Requirements for the Major in Biological Sciences

In addition to the general University requirements for the Bachelor of Science degree, the following courses are required for the major in Biological Sciences:

A. Study within the area of the major
   Biology 151, 152 *(Cytology, Genetics and Evolution)*
   Biology 201, 202 *(General Physiology)*
   Biology 233, 234 or *Biology* 235 *(Field and Theoretical Ecology)*
   Fourteen additional credits in biology or in related courses, approved by the student's advisor.

B. Courses in related fields
   Chemistry 101, 102 *(General Chemistry)*
   Physics 161, 162 *(Introductory Physics)*
   Mathematics 102, 103 *(Calculus I, II)*
   Foreign Language (Proficiency in French, German, or Russian)

*On leave academic year 1966-67.

Courses in the Biological Sciences

BIO 101, 102. Introduction to Biological Science

An introductory course in biological science which acquaints the student with the nature of living organisms in terms of their structure and function; their reproduction, heredity, and development; their interrelationships with the environment; and their evolution. Closely correlated with lectures and the assigned readings are laboratory exercises which encourage the student, through independent work, to develop skill in the design, performance, and critical analysis of experiments. Three hours of lectures, and one three-hour laboratory per week. Primarily intended for non-biology majors.

Fall and Spring, 4 credits each semester

BIO 151, 152. Cytology, Genetics and Evolution

The emphasis is on the cytological and genetic mechanisms which underlie and provide the theoretical bases of our modern understanding of the origin, development, and modification of the individual, the population, the race, and the species. Three hours of lectures or discussion, and one three-hour laboratory per week.

Prerequisite: Chemistry 102 or 104.

Fall and Spring, 4 credits each semester

BIO 201, 202. General Physiology

This course considers the cell as a unit of function. Problems of tissue and organ function and interaction within organisms are considered from this viewpoint. Knowledge of the physiology of the cell is brought to bear on problems of growth, reproduction, differentiation, and maintenance. Emphasis is placed on the delineation of the broad problem areas which current and future research may enlighten. Both single-celled and multi-cellular organisms are used, representing both plants and animals. Two hours of lectures or discussion, and two three-hour laboratories per week.

Prerequisites: Chemistry 101, 102.

Corequisite: Physics 161, 162.

Fall and Spring, 4 credits each semester

BIO 233. Field and Theoretical Ecology I

An examination of the interactions of living organisms with their physical and biological environments. The subject matters of modern population biology, including population ecology and dynamics, ecological genetics, paleoecology, and zoogeography, will be discussed, with emphasis on their relevance to the study of evolving biotic communities and the origin of species. Credit is granted upon completing BIO 234. Two hours lecture, one four-hour laboratory period per week.

Prerequisite: Junior status or permission of instructor.

Fall, 3 credits

BIO 234. Field and Theoretical Ecology II

A continuation of BIO 233.

Prerequisite: Satisfactory completion of BIO 233.

Spring, 3 credits

BIO 235. Field and Theoretical Ecology

The contents of BIO 233 and BIO 234 are here combined into a single course given in the summer. This course offers more extensive field experience than is possible during the academic year. Class meets six hours each day for six weeks in summer.

Prerequisite: Junior status or permission of instructor.

Summer, 6 credits

BIO 239. Materials and Methods in Teaching Biology

This course, designed for prospective secondary school teachers of biology, emphasizes methods and materials appropriate to the teaching of an experimental science at that level. Two hours of lectures or discussion, and one three-hour laboratory per week.

Prerequisite: Attainment of junior status.

Spring, 3 credits

BIO 244. Form and Function in Higher Plants

This course emphasizes the developmental pathways in examining the relationships between form and function in green plants. The laboratory consists of an analysis of the development, physiology, and morphology of a variety of living plants. Two hours of lectures or discussion, and two two-hour laboratories per week.
Spring, 4 credits

BIO 247. Invertebrate Zoology

An examination of the invertebrate phyla from the viewpoint of increasing levels of structural and functional organization. Living materials are used whenever possible to emphasize the dynamic aspects of invertebrate life. Two hours of lectures or discussion, and two three-hour laboratories per week.
Fall, 4 credits

BIO 248. Vertebrate Zoology

This course emphasizes the structural and developmental aspects of vertebrate animals in an evolutionary context. Extensive experience with these forms is gained by detailed dissection of several key representatives of the group. Two hours of lectures or discussion, and two three-hour laboratories per week.
Spring, 4 credits

BIO 251, 252. Physical and Chemical Bases of Biological Systems

This course treats fundamental biological concepts, with emphasis on the contributions of the physical sciences to the understanding of biological problems. It utilizes lectures, discussions, and laboratory work to acquaint the student with biology as a whole, but especially with the experimental framework underlying our present concepts of dynamic life processes. This course is especially suitable for students doing their major study in chemistry or physics. Three hours of lectures or discussion, and one three-hour laboratory per week.
Prerequisites: One year of physics, one year of chemistry, and mathematics through calculus.
Fall and Spring, 4 credits each semester

BIO 255. Current Topics in Biology

The participants in this informal seminar course present brief talks based on selected readings from the current literature of some area of biological investigation. The work of each semester concentrates on a different area of biology, and the course may be repeated for credit.
Prerequisite: Open to juniors and seniors with the permission of the instructor.
Fall and Spring, 1 credit each semester

BIO 291-292. Senior Project

In this course the more capable senior biology major may work under the supervision of a member of the staff in developing an individual project making use of the knowledge and techniques acquired in previous courses. He is expected to prepare an appropriate report on his project and to present a student seminar. Credit is determined on the basis of the adequacy of the project presented.
Prerequisite: Open to qualifying biology majors, after the completion of their junior year, with the consent of the chairman and the staff member who will supervise the work.
Fall and Spring, 2 to 4 credits

BIO 301. Biometry

A course in the design and conduct of experiments and the analysis of biological data. Topics included are parent and derived distributions, probability, confidence intervals, tests of hypotheses, sample size, and the analysis of variance. Two hours of lectures or discussion, and one three-hour laboratory.
Prerequisites: One year of college mathematics that includes calculus or probability; and 16 credits of Biology and/or Psychology courses.
Fall, 3 credits

BIO 311. Aquatic Botany

A consideration of the systematics, distribution and evolution of aquatic plants, as exemplified by the aquatic flora of Long Island. The physical, chemical and biological aspects of the aquatic environment will be investigated by means of field and laboratory experiments. The class meets six hours each day for six weeks in the summer.
Prerequisite: Chemistry 102 or 104.
Summer, 6 credits

BIO 331. Microbiology

An introduction to the study of microorganisms through a series of problems which include considerations of taxonomy, development, structure, physiology, reproduction, and ecology. Two hours of lectures or discussion, and one two-hour laboratory per week.

Prerequisites: Chemistry 201, 202 and 203 or permission of instructor.
Fall, 4 credits

BIO 336. Marine Biology

An introduction to the marine ecosystem with emphasis on the fishes of coastal and estuarine habitats. The demography, behavior, and physiological ecology of marine organisms are explored with relation to physical variables. Work in the field and laboratory will emphasize quantitative sampling of populations and standard oceanographic techniques in the collection of data. Two hours of lectures or discussions and six hours of laboratory and field work on Saturdays.

Prerequisites: BIO 247, 301, or equivalent.
Spring, 4 credits

[BIO 341. Integrative Mechanisms]

This course, which considers muscular physiology, neurophysiology, endocrinology, and sensory physiology, focuses upon the physiological mechanisms involved in animal behavior and the roles they play in coordinating and integrating the activities of organisms. Two hours of lectures or discussion, and two three-hour laboratories per week.

Prerequisites: BIO 201, 202.
Fall, 4 credits

[BIO 342. Ethology]

A sequel to Biology 341, this course examines the behavioral activities of diverse groups of animals from the ethological, or comparative, standpoint. The evolution of inherited motor patterns which adapt organisms to their particular environments, and the relationships of such motor behavior to concepts in taxonomy, genetics, and ecology, are emphasized. Two hours of lectures or discussion, and two three-hour laboratories per week.

Prerequisites: BIO 201, 202, 341.
Spring, 4 credits

BIO 343 (same as PSY 343). Seminar in Synaptic Processes

The morphological, ionic, pharmacological, and electrical factors associated with transmission across excitatory and inhibitory synapses and neuroeffector junctions will be compared. Consideration will also be given to trophic and plastic properties of synapses such as those associated with development, regeneration, and learning. Open to juniors and seniors.

Prerequisites: BIO 202, BIO 341, or Psychology 340.
Fall, 2 credits

BIO 344. 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; the role of nucleus and cytoplasm; 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): breakdown of circadian organization: possible mechanisms of the clock. Three hours per week of lecture, discussion, and reports.

Prerequisite: BIO 202, or permission of instructor.
Spring, 3 credits

BIO 398, 399. Special Topics from the Biological Literature

Tutorial reading for senior students majoring in the biological sciences. Reading lists compiled by various instructors are available in the Departmental office. Periodic conferences, final report and examination arranged with instructor on an individual basis.
Fall and Spring, 1 credit each semester

Graduate Courses

Certain graduate courses are open to qualified advanced undergrauates. Consult the *Graduate Bulletin* for details about these courses.

DEPARTMENT OF CHEMISTRY

Professors: FRANCIS T. BONNER (*Chairman*), HAROLD L. FRIEDMAN, EDWARD M. KOSOWER, FAUSTO RAMIREZ, SEI SUJISHI; *Visiting Professor:* WALTER C. HAMILTON

Associate Professors: JOHN M. ALEXANDER, ALBERT HAIM, PAUL C. LAUTERBUR, WILLIAM J. LE NOBLE

Assistant Professors: IVAN BERNAL, ROBERT S. BOIKESS, GEORGE F. EMERSON, *THEODORE D. GOLDFARB, ROBERT C. KERBER, C. WILLIAM KERN, ROBERT F. SCHNEIDER, RICHARD SOLO.

The undergraduate 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, and meets the certification standards of that Committee.

In general, students intending to teach chemistry in secondary schools are advised to register for the program leading to the Bachelor of Science in *Physical Science* (viz.). A student who plans to complete the requirements for the B.S. degree with a major in chemistry and intends simultaneously to acquire certification for secondary school teaching must have the approval of the Chairman of the Department of Chemistry and the Director of Teacher Preparation.

Requirements for the Major in Chemistry

In addition to the general University requirements for the Bachelor of Science degree, the following courses are required for the major in Chemistry.

A. *Study within the area of the major.*

CHE 101, 102 or 103, 104 (Introductory Chemistry or Intensive Introductory Chemistry)
CHE 108 (Quantitative Chemistry Laboratory)
CHE 153 (Solution Chemistry)
CHE 154 (Equilibrium and Thermodynamics)
CHE 155 (Solution Chemistry Laboratory)

*On leave fall semester 1966.

CHE 156 (Transport Properties and Thermodynamics Laboratory)
CHE 201, 202 (Organic Chemistry)
CHE 203, 204 (Organic Chemistry Laboratory)
CHE 255, 256 (Mechanics, Kinetics and Structure)
CHE 257, 258 (Instrumental Analysis and Structure Laboratory)
CHE 305 (Inorganic Chemistry I)

B. *Courses in related areas*

Mathematics 102, 103 (Calculus I, II) and 155, 156 (Calculus III, IV)

Physics 101, 102, 151 (General Physics)

Foreign Language: German 115, if the proficiency requirement is not met in German.

SAMPLE PROGRAM FOR CHEMISTRY MAJOR

YEAR	CHEMISTRY		PHYSICS	MATH	HUM, SOC LANG	TOTAL
I	101	4 credits		102[a] 3 credits	9 credits[b]	16 cr.
	102,8	5 credits		103 3 credits	9 credits	17 cr.
II	153,5	5 credits	101[c] 4 credits	155 3 credits	6 credits	18 cr.
	154,6	5 credits	102 4 credits	156 3 credits	6 credits	18 cr.
III	201,3,255,257	10 credits	151 4 credits [ ][d]		3 credits[e]	17 cr.
	202,4,256,258	10 credits	152[f] 4 credits		3 credits	17 cr.
IV	305[g]		Electives[h, i]			

[a]Mathematics 101 may be required of a student with deficient preparation.

[b]English 101-102 are required and continuation of high school language is recommended.

[c]Physics 101 and Chemistry 103 are urged in the first year for well-prepared students.

[d]Mathematics 156 may be taken here if Mathematics 101 was necessary.

[e]German is recommended here but may conflict with Mathematics 156 (see d).

[f]Physics 152 is strongly recommended but not required.

[g]Chemistry 305 can be taken in the third year (when offered in Spring semester) by a student who has completed Chemistry 202, 204.

[h]Senior electives may be Chemistry 302, 306, 315, 325 or courses in Physics, Biology, Mathematics, etc. Students with B average may take Chemistry 391,2 and/or graduate courses. Senior students, especially those preparing for graduate work, are expected to elect a senior laboratory course.

[i]Second year German is recommended here for students who satisfy language proficiency in German and who did not take German in high school.

Courses in Chemistry

Note: Students requesting that prerequisites or corequisites be waived may, in exceptional circumstances, receive approval following petition to the Chairman of the Department of Chemistry.

CHE 101, 102. Introductory Chemistry

Emphasis is placed on chemical principles, presented in terms of modern theory and in a context of sufficient descriptive subject matter to lend them interpretive value. Principal topics covered are the states of matter, gas laws, atomic theory, chemical equations and stoichiometry, thermodynamics, chemical equilibrium, the EMF series, kinetic theory, reaction kinetics, properties of the elements and the periodic table, atomic structure, chemical bonding and selected topics in descriptive chemistry. Laboratory experiments illustrate the principles presented and provide an introduction to qualitative and quantitative analysis. Three lecture hours and four hours of laboratory and discussion per week during the fall semester; two lecture hours and one recitation hour per week during the spring semester.

Corequisite to 102: CHE 106 or 108, Mathematics 102

101, 4 credits; 102, 3 credits

CHE 103, 104. Intensive Introductory Chemistry

An intensive introductory chemistry course similar to CHE 101, 102 for students meeting the corequisite requirements listed below. Open to those freshmen students who have offered for admission a record indicating exceptional ability and interest in mathematics and the physical sciences. Three lecture hours and four hours of laboratory and discussion per week during the fall semester; two lecture hours and one recitation hour per week during the spring semester.

Corequisites: Physics 101, 102 and Mathematics 102, 103

Corequisite to 104: CHE 106 or 108

103, 4 credits; 104, 3 credits

CHE 106. General Chemistry Laboratory

A continuation of the laboratory work in CHE 101 and 103, primarily for those students who do not plan to take advanced courses in Chemistry. Four hours of laboratory and discussion per week.

Corequisites: CHE 102 or CHE 104

Spring, 1 credit

CHE 108. Quantitative Chemistry Laboratory

Primarily for students who plan to take advanced courses in chemistry. Designed to develop techniques which are essential for precise and accurate chemical analysis. Gravimetric and volumetric analysis and synthesis of inorganic compounds. Six hours of laboratory and discussion per week.

Corequisite: CHE 102 or CHE 104

Spring, 2 credits

CHE 153. Solution Chemistry

Chemical equilibria in ideal systems within a framework of thermodynamic principles; solubility products; acid-base ionization constants; an introduction to reaction kinetics and mechanisms, and to transport phenomena. Three lecture hours per week.

Prerequisite: Grade of C or better in CHE 102 or 104

Corequisites: Mathematics 103 and Physics 101

Fall, 3 credits

CHE 154. Equilibrium and Thermodynamics

The laws of thermodynamics and chemical equilibria for nonideal systems. Three lecture hours per week.

Prerequisite: CHE 153

Corequisite: Mathematics 155 and Physics 102

Spring, 3 Credits

CHE 155. Solution Chemistry Laboratory

Chemical and instrumental analysis applied to solution equilibria and reaction kinetics. Six hours of laboratory and discussion per week.

Prerequisite: Grade of C or better in CHE 108

Corequisite: CHE 153

Fall, 2 credits

CHE 156. Transport Properties and Thermodynamics Laboratory

The measurement of reaction heats, EMF, transport coefficients and activity coefficients. Six hours of laboratory and discussion per week.

Prerequisite: CHE 155

Corequisite: CHE 154

Spring, 2 credits

CHE 201, 202. Organic Chemistry

A systematic discussion of the structure, physical properties, and chemical reactions of the main classes of carbon compounds, based on modern views of chemical bonding, thermodynamics and kinetics. Mechanistic, as well as synthetic aspects of organic reactions are emphasized. Selected topics in the organic chemistry of naturally occurring substances are considered. Three lecture hours per week.

Prerequisites: Grade of C or better in CHE 102 or 104; CHE 106 or 108

Corequisite to CHE 201: CHE 203

Fall and Spring, 3 credits each semester

CHE 203, 204. Organic Chemistry Laboratory

An introduction to the techniques of preparing and purifying organic compounds. The emphasis in the second semester is on the use of modern instrumentation as an aid to organic synthesis and qualitative organic analysis. Eight laboratory hours per week.

Corequisites: CHE 201, 202

Fall and Spring, 2 credits each semester

CHE 255, 256. Mechanics, Kinetics and Structure

Introductory classical, quantum and statistical mechanics with applications to molecular structure, equilibrium and kinetic phenomena. Three lecture hours per week.

Prerequisite: CHE 154

Corequisites: Physics 151 and Mathematics 156

Fall and Spring, 3 credits each semester

CHE 257, 258. Instrumental Analysis and Structure Laboratory

Instrumental techniques and applications of spectroscopy, chromatography, stable and radioactive tracer analysis, polarography, electric and magnetic properties of matter. Six hours of laboratory and discussion per week.

Prerequisite: CHE 156

Corequisites: CHE 201, 202, 203, 204, and 255, 256

Fall and Spring, 2 credits each semester.

CHE 302. Experimental Methods of Organic Chemistry

An introduction to the techniques used in organic chemistry research. Separation, purification and structural elucidation by chemical and instrumental procedures. Laboratory work includes qualitative organic analysis and organic synthesis. Projects of an exploratory nature will be assigned to specially qualified students. Two lecture hours and six laboratory hours per week.

Prerequisite: CHE 202 and 204

Corequisite: CHE 256 and 258

Spring, 4 credits

CHE 305. 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. Three lecture hours per week.

Prerequisites: CHE 255, 257, 202, 204

Corequisites: CHE 256, 258

Fall, 3 credits*

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*May also be given in spring semester if there is sufficient demand.

CHE 306. Inorganic Chemistry II

A continuation of CHE 305. Three lecture hours per week.

Prerequisite: CHE 305

CHE 315. Intermediate Organic Chemistry

An extension of the material introduced in CHE 201, 202. Electronic and stereochemical theory are utilized to discuss selected organic reactions, syntheses, and natural products. Three lecture hours per week.

Prerequisites: CHE 202 and 204

Fall, 3 credits

CHE 325. Intermediate Physical Chemistry

An introduction to the methods and theory currently used to investigate and describe atomic and molecular structure. Topics to be covered include introductory wave mechanics, exact and approximate solutions to the Schroedinger equation, applications to the problem of chemical bonding, and atomic and molecular spectroscopy. Three lecture hours per week.

Prerequisite: CHE 236

Spring, 3 credits

CHE 391, 392. Senior Research

Research to be carried out under the supervision of a staff member of the Department, on a research problem to be selected by the student after consultation with his staff supervisor. The results of this work are to be submitted to the Department in the form of a senior research report. Students who have achieved a cumulative grade point average of 3.00 or higher through their first five semesters and are interested in registering for this course should first apply to a staff member for tentative acceptance as a research student and then file a written petition with the Chairman of the Department no later than the second Monday in May preceding the student's senior year.

Prerequisites: A cumulative grade point average of 3.00 or higher and acceptance as a research student by a member of the departmental staff.

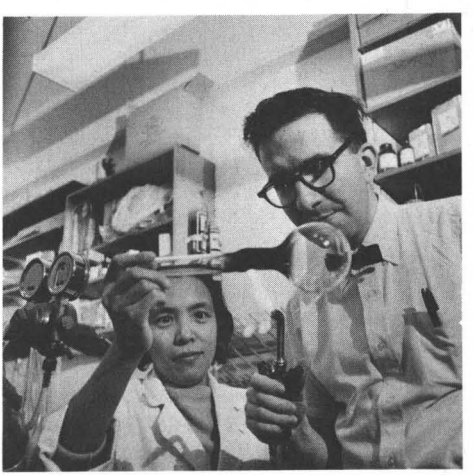
Fall and Spring, 2-4 credits each semester

Graduate Courses

Note: Senior chemistry students having high academic standing may petition the Department for permission to register in the following first year graduate courses.

CHE 501 Organic Chemistry I
CHE 502 Organic Chemistry II
CHE 511 Inorganic Chemistry I
CHE 512 Inorganic Chemistry II
CHE 521 Quantum Chemistry I
CHE 522 Quantum Chemistry II
CHE 523 Chemical Thermodynamics
CHE 526 Chemical Kinetics
CHE 528 Statistical Mechanics
CHE 529 Nuclear Chemistry

(See *Graduate Bulletin* for details.)



DEPARTMENT OF EARTH AND SPACE SCIENCES

Professors: SAMUEL S. GOLDICH (Geology)
O. A. SCHAEFFER (Geochemistry) *Chairman*

Associate Professor: HONG-YEE CHIU (Astrophysics)

Assistant Professors: ROBERT T. DODD, JR., (Mineralogy);
GILBERT N. HANSON (Geology)

The earth and space sciences undergraduate program prepares the student for gainful scientific participation in the explorations of the oceans, the earth, and the universe which are presently being conducted by industry, governmental agencies and academic institutions. These are areas of science in which the enormity of time or space take on an added significance. As a result, there is a fundamental interrelation of the principles involved. For this reason, the areas of oceanography, geology, geophysics, geochemistry, meteorology and astronomy are to be incorporated in a single department. While the undergraduate program is designed primarily to prepare the student for graduate study leading to an advanced degree, it can also serve as a terminal course of instruction in preparation for employment by a private industry, a government agency or an academic institution. Oil and mineral exploration, geochemical, geophysical, or astronomical research, or professional meteorology are several of the many possible areas of employment.

At present, an undergraduate major program is offered in the earth sciences. In subsequent years it is anticipated other areas will be added.

Requirements for the Major in Earth Sciences:

In addition to the general University requirements, the following courses are required for the Major in Earth Sciences:

A. *Study within the area of the Major*

Earth and Space Sciences 101, 102 (Introduction to Earth and Space Sciences)
Earth and Space Sciences 151, 152 (Mineralogy, Petrology)
Stratigraphy and Structural Geology 6 credits
Regional Geology 6 credits

(Summer field courses – Four to six weeks in the summer after the junior year.)

B. *Courses in related areas*

Chemistry 101, 102 or 103, 104 (General Chemistry)
Mathematics 102, 103 (Calculus I, II)
Mathematics 155, 156 (Calculus III, IV)
Physics 101, 102 (General Physics)

Courses in Earth and Space Sciences

ESS 101. Introduction to Earth and Space Sciences I

A general survey course of astronomy. The course is an introductory course for the major in earth and space sciences designed at the same time when combined with ESS 102 to meet the laboratory science elective for the B.A. or B.S. degree and the earth science requirement for students who seek secondary school science teaching certification. Emphasis is placed on the physical and chemical principles and ideas. The subject is introduced in an historical manner and the modern ideas are interpreted on the basis of the present observations. Topics covered are determination of planetary and stellar distances; stellar spectra, masses of stars, structure and energy of the sun and stars, stellar evolution, cosmic rays, and galaxies. No mathematical facility beyond simple algebra is required. The laboratory is devoted to telescopic observation and optical and spectroscopic measurement. Two lecture hours, one recitation hour and one three-hour laboratory per week.

Fall, 4 credits

ESS 102. Introduction to Earth and Space Sciences II

A general survey course of the Earth Sciences can either follow or precede ESS 101. The course is an introductory course for the major in earth and space sciences designed at the same time, when combined with ESS 101, to meet the laboratory science elective for the B.A. or B.S. degree and the earth science requirement for students who seek secondary school science teaching certification. Emphasis is placed on the physical and chemical principles and ideas. The topics covered are the planets, the moon, the earth's interior, the oceans, the atmosphere, rocks and minerals and the land forms. The laboratory consists of telescopic observation of the moon and planets, the physical and chemical properties of rocks and minerals, meterological observation and simple oceanographic observation. Two lecture hours, one recitation hour and one three-hour laboratory per week.

Spring, 4 credits

ESS 151. Mineralogy

The chemistry and physics of minerals, including crystallography (X-ray and optical), mineralogy, crystal chemistry, and the description of various common minerals. The laboratory will include techniques of microscopic observation including use of polarized light, X-ray diffraction, and chemical and physical properties of minerals. Two lecture hours, and two three-hour laboratory sessions per week.

Prerequisites: ESS 102, Chemistry 102 or 104, or permission of the instructor.

Fall, 4 credits

ESS 152. Petrology

The chemistry and physics of mineral assemblages. Rocks are studied in thin section and the various mineral assemblages are studied in reference to chemical principles. Igneous, metamorphic and sedimentary rocks are included. Emphasis is placed on the transitional character of many igneous and metamorphic phenomena. The laboratory is mainly devoted to a microscopic examination of rocks in thin section. Two lecture hours, and two three-hour laboratory sessions per week.

Prerequisite: ESS 151.

Spring, 4 credits

ESS 161, 162. Astronomy I, II

An introduction to astronomy for students with mathematical and physics preparation. The first half is concerned with stellar phenomena, the extent of the universe, cosmology and astrophysics. The second half is concerned with the solar system, planetary mechanics, comets, meteors, and the origin of the solar system.

Prerequisites: Physics 153, Mathematics 156, ESS 101, or permission of instructor.

Fall and Spring, 3 credits each semester

DEPARTMENT OF ECONOMICS

Professors: CHARLES HOFFMANN, ROBERT LEKACHMAN *(Chairman)*

Associate Professors: MARVIN M. KRISTEIN, CHARLES E. STALEY

Assistant Professors: JAMES V. CORNEHLS, ELIYAHU KANOVSKY, WOO SIK KEE, EDWIN F. TERRY, EDWARD VAN ROY, DIETER ZSCHOCK

Requirements for the Major in Economics

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are required for the major in Economics:

A. *Study within the area of the major*

Economics 101, 102 (Economic Principles and Problems)
Economics 211 (Economic Analysis)
Economics 212 (National Income Analysis)
Economics 221 (Economic Statistics)
Fifteen additional credit hours in courses in Economics.

B. *Courses in related areas*

Twelve credit hours in courses in related areas in the Social Sciences approved for the student's program.

Courses in Economics

ECO 101, 102. Economic Principles and Problems

A basic introduction to Economic Analysis on the "macro" and "micro" levels, with an emphasis on economic policy. Among other significant issues, the course emphasizes the fundamental thinking basic to understanding policies dealing with the business fluctuations, anti-trust problems, foreign trade and the farm problem. The first semester emphasizes "macro" economics, the second "micro" economics.

Prerequisite for ECO 102: ECO 101 or permission of instructor.

Staff

Fall and Spring, 3 credits each semester

ECO 201. Money, Banking and Monetary Theory

An introduction to modern monetary institutions and mechanisms, their relationship to the economy, and governmental policies in this area. Monetary theory and its appli-

cation to policy questions will be stressed.

Prerequisite: ECO 101 or permission of instructor.

Mr. Kristein

Fall, 3 credits

ECO 202. Business Fluctuations

The measurement and analysis of prosperity and depression. The statistical evidence for the existence of "cycles" is examined. Theories of "cycles" and fluctuations are historically studied and "tested."

Prerequisite: ECO 201 or permission of instructor.

Spring, 3 credits

ECO 203. Public Finance

An analysis of the economic aspects of budgets, taxation and tax systems in the federal, state and local governmental context. The theory of tax incidence and taxes on property, incomes, consumption, etc., are examined as to nature, administration and economic effects. Intergovernmental fiscal relations are also covered.

Prerequisite: ECO 101, 102 or permission of instructor.

Mr. Kee

Fall, 3 credits

ECO 206. Economics of Industrial and Labor Relations

A study of the evolution of the labor unions; of collective bargaining, with an emphasis on current labor problems, union and nonunion; and of the changing composition of the labor force, wage differentials, the theory of wage determination, labor legislation and unemployment.

Prerequisite: ECO 101 or permission of instructor.

Spring, 3 credits

ECO 210. International Economics

The course covers the theory of international trade, protection, commercial policy customs unions, capital movements, and international finance.

Prerequisite: ECO 101, 102 or permission of instructor.

Mr. Kristein

Spring, 3 credits

ECO 211. Economic Analysis

Economic theory of cost, demand, price and markets. The application of theory to familiar problems is emphasized.

Prerequisites: ECO 101, 102 or permission of instructor.

Mr. Staley

Fall, 3 credits

ECO 212. National Income Analysis

The theory of national income determination, employment, distribution, price levels and growth.

Prerequisite: ECO 101, 102 or permission of instructor.

Spring, 3 credits

ECO 221. Economic Statistics

The purpose of this course in Economic Statistics is to prepare the student to deal with a variety of statistical studies basic to Economics and related Social Sciences. The course will emphasize the collection, presentation, analysis and interpretation of various statistics. The first semester emphasizes collection, presentation, central tendency, measures of significance and correlation. Three hours of lecture and two hours of laboratory work.

Mr. Terry

Fall, 4 credits

ECO 222. Economic Statistics

A continuation of ECO 221, which is a prerequisite.

Mr. Terry

Spring, 4 credits

ECO 225. Economic Accounting

An introduction to some formal accounting statements commonly involved in economic analysis. Topics covered include business balance sheet and profit and loss statements,

national and regional income and product statements, national and regional input-output transaction tables and flow of funds accounting.

Mr. Terry

Spring, 3 credits

ECO 233. Economics of Regulation and Control

An examination of the structure of American industry and the deviations from competition with particular reference to governmental policy in this area. Criteria for the efficient control of prices, production, and the flow of investment funds are analyzed.

Prerequisite: ECO 101, 102 or permission of instructor.

Mr. Van Roy

Fall, 3 credits

ECO 235. 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 throw light on the factors determining changes in factor inputs, institutional arrangements, prices and money, balance of payments and government policy.

Prerequisite: ECO 101, 102 or permission of instructor.

Mr. Hoffmann

Spring, 3 credits

ECO 236. Economic Development of Modern Europe

An investigation of changes in the structure of the European economy over the past four centuries with emphasis on the roles played by public policy, technological evolution, and the transformation to the market system. The relevance of current theories of economic growth to the European experience will be discussed.

Prerequisite: ECO 101, 102 or permission of instructor.

Mr. Van Roy

Fall, 3 credits

ECO 304. Fiscal Policy

The economics of government surplus, deficits, and debt. Fiscal theories and programs to sustain economic stability, high levels of employment and income and economic growth are analyzed with emphasis placed on contemporary policy problems. Fiscal policy is also related to monetary policy.

Prerequisites: ECO 212 or permission of instructor.

Mr. Kee

Spring, 3 credits

ECO 311. History of Economic Thought

A study of the evolution of economic thought with reference to the basic problems of the disciplines: factor allocation, distribution, growth, etc. The major schools are emphasized in the survey.

Prerequisite: ECO 101, 102 or permission of instructor.

Mr. Lekachman

Fall, 3 credits

ECO 321. Econometrics

An introduction to the mathematical approach to the measurement and extrapolation of economic variables and the testing of economic theories. The mathematical formulation of models and data provides an invaluable tool to the solution of macroeconomic problems facing the student and policy-maker.

Prerequisites: ECO 211, 212, 221 or permission of instructor.

Mr. Terry

Fall, 3 credits

ECO 322. Economic Development

A study of the process and problems of economic growth. Models of economic growth are examined and both developed and underdeveloped economics are reviewed with a view to isolating key factors involved in the growth process.

Prerequisites: ECO 211, 212 or permission of instructor.

Mr. Hoffmann

Spring, 3 credits

ECO 342. 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.

Prerequisites: ECO 211, 212 or permission of instructor.

Mr. Hoffmann

Spring, 3 credits

ECO 391, 392. Senior Seminar in Economics

The senior seminar will emphasize an examination of current research in the various areas of specialization in economics. In addition to the areas of the core courses, these may include econometrics, economic statistics, international trade, economic development, public finance, labor economics, economic history, and the history of economic thought. The student will be required to prepare a paper demonstrating his acquaintance with, and command of, basic literature and research techniques.

Prerequisite: Senior standing.

Fall and Spring, 3 credits each semester

DEPARTMENT OF EDUCATION

Professors: LEONARD GARDNER, FRANK R. PETERS (*Acting Chairman and Director of Teacher Preparation*)

Assistant Professors: JAMES E. HIGGINS, THEODORE C. ROTH, ELI SEIFMAN

The Department offers programs in education which fulfill the requirements for New York State provisional certification of secondary school teachers, and advises prospective teachers with regard to the fulfillment of certification requirements.* In addition, the Department is preparing programs in elementary education for prospective elementary school teachers.

Secondary Education Teacher Certification

Students wishing to teach in secondary schools may take Bachelor of Arts or Bachelor of Science degree programs which include New York State requirements for teacher certification. These requirements include at least 18 hours in Education, including Methods and Materials of Teaching, 3 hours; Practice Teaching, 6 hours; History and Philosophy of Education, 6 hours. In addition, students must meet distribution requirements in teaching fields, such as in the sciences and social studies. Departmental advisors and the Director of Teacher Preparation will inform the student of the courses designed to satisfy these requirements in his major field. Programs leading to provisional certification are offered in the following fields: biology, chemistry, English, foreign languages, mathematics, physics and social studies.

Students who are preparing to teach social studies may major in Anthropology, Economics, History, Political Science, or Sociology.

At present, the following courses in Materials and Methods of Instruction are being offered:

Biology 239. Materials and Methods in Teaching Biology.

English 285. Methods of Instruction in Literature and Composition.

Foreign Languages 239. Methods and Materials in the Teaching of Foreign Languages.

*Students preparing to teach are strongly urged to check certification requirements with the Department of Education before the end of their sophomore year, so that they can plan their programs appropriately.

Mathematics 321. Geometric Structures.

Physics 239. Materials and Methods in Teaching Physical Science (for those preparing to teach either physics or chemistry).

Social Science 239. Materials and Methods in Teaching Social Studies.

Elementary Education

Programs for students preparing to teach in elementary schools are being planned.

Courses in Education

EDU 150. Children's Literature

An interpretive and critical study of literature for children in elementary grades.

Mr. Higgins

Fall and Spring, 3 credits

EDU 203. Psychological and Social Foundations of Educational Theory

An examination of theories drawn from psychology, sociology and anthropology as applied to adolescent behavior and the school environment. Writings of such researchers as: Erikson, Goodman, Henry, White, Wolfenstein.

Prerequisite: None.

3 credits

EDU 345-346. History and Philosophy of Education

An investigation of educational theories and institutions designed to help the student integrate his educational experience. The investigation 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. The first semester considers the history of educational institutions in their relations to social aims and to the development of the sciences. The second semester examines the fundamental presuppositions of educational theories. This course is identical with Philosophy 345-346 (History and Philosophy of Education.)

Prerequisite: Senior standing.

Messrs. Gardner, Sternfeld, Watson

Fall and Spring, 3 credits each semester

EDU 350. Student Teaching

Prospective secondary school teachers receive supervised practice in teaching their subjects to secondary school classes, by arrangement with selected Long Island high schools. The student teacher reports to the school to which he is assigned for at least one-half of each school day for the semester. Frequent consultation with the supervising teacher and twice-weekly seminar meetings with a University faculty member help the student to interpret and evaluate his apprenticeship 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.

Prerequisites: Senior standing and approval of Director of Teacher Preparation.

Mr. Seifman and Staff

Fall and Spring, 6 credits

DEPARTMENT OF ENGLISH

Professors: PETER ALEXANDER, ALFRED KAZIN, RICHARD L. LEVIN (*Acting Chairman*), JACK LUDWIG

Associate Professors: ROBERT P. CREED, EDWARD FIESS, HOMER B. GOLDBERG, ROBERT M. JORDAN, *JOSEPH PEQUIGNEY, THOMAS ROGERS, JUDAH L. STAMPFER, JOHN THOMPSON

Assistant Professors: CAROLYN FAULK, HOWARD J. HARVEY, GEORGIANA LORD, RUTH MILLER, SALLIE H. SEARS, PETER SHAW, ALICE S. WILSON

Instructors: KENNETH T. ABRAMS, ROBERT A. ACKERMAN, RICHARD DUNLAVEY, MARCEL EINSTADTER, SIDNEY FESHBACH, CATHERINE GILES, STEPHEN KOCH, JEREMY LARNER, RUTH R. MISHELOFF, AILEEN NAYDER, WILLIAM F. WALSH

Lecturer: PHILIP ROTH

Requirements for the Major in English

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are the requirements for the major in English:

A. *Study within the area of the major*

1. Introductory courses, normally to be taken in the sophomore year.

   English 151 (Interpretation of Poetry).
   One other introductory course numbered 150-199.

2. English 211 (Shakespeare).

3. Nine additional courses in the Department beyond the introductory level, to be chosen in consultation with the student's adviser. The Department expects a student to distribute the courses among a fairly wide range of periods and genres. Students seeking teacher certification must include EGL 283 or 284.

*On leave academic year 1966-67.

B. *Courses in related areas*

1. One year of study in a foreign *literature* in its original language.
2. History 155, 156. (In special cases, a student may substitute American History in one or both semesters.)

C. *Departmental examination*

In his senior year, each student must pass an examination designed to test his ability to analyze literary texts.

A grade of C or better in English 101, 102 is the normal prerequisite to sophomore standing as a major in the Department.

Courses in English

EGL 101, 102. Composition

A first-year course in writing and reading, required of all students in the University. Extensive controlled practice in writing exposition and argument, making use of essays and imaginative literature for analysis of ideas and methods and training in critical reading.

Staff

Fall and Spring, 3 credits each semester

EGL 151. Interpretation of Poetry

Intensive analysis of poems in English of various periods and types and varying complexity.

Staff

Fall and Spring, 3 credits

EGL 161. Interpretation of Fiction

Analysis of stylistic and structural modes employed by various writers of short stories and novels.

Staff

Fall and Spring, 3 credits

EGL 171. Interpretation of 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.

Staff

Fall and Spring, 3 credits

EGL 207. Chaucer

Primary emphasis on a study of *The Canterbury Tales* and *Troilus and Criseyde* in Middle English, with some attention to minor poems and other works.

Mr. Jordan

Fall, 3 credits

EGL 211. Shakespeare

Examination of Shakespeare's achievement through analysis of about fifteen plays selected to represent the major types of drama he wrote.

Messrs. Levin, Stampfer, and Staff

Fall and Spring, 3 credits

[EGL 216. Renaissance Prose]

Study of the major prose writers of the sixteenth and earlier seventeenth centuries, examining their styles as well as the intellectual contents and contexts of their work.

Mr. Pequigney

3 credits

To be offered 1967-68

EGL 225. Poetry of the Early Seventeenth Century

Studies of the poems of Donne, Jonson, Herbert, Herrick, Crashaw, Vaughan, and Marvell, with some attention to the minor poets of the period.

Messrs. Pequigney, Stampfer

Fall, 3 credits

EGL 227. Milton

Study of all Milton's English poetry and selections from his prose works, with major emphasis on *Paradise Lost.*

Mr. Pequigney, Mrs. Wilson

Spring, 3 credits

[EGL 235. Restoration and Eighteenth Century Verse]

Selected lyric, satirical and intellectual poems from 1650 to 1800, with major emphasis on the poetry of Dryden and Pope.

Mr. Goldberg

3 credits

To be offered 1967-68

EGL 236. Restoration and Eighteenth Century Prose

Major works of satirical, intellectual, and occasional prose of the late seventeenth and eighteenth centuries, with emphasis on Swift and Johnson.

Messrs. Goldberg, Rogers

Fall, 3 credits

EGL 237. Eighteenth Century English Novel

Study of form and technique in representative works of Defoe, Richardson, Fielding, Smollett, and Sterne.

Mr. Goldberg

Fall, 3 credits

EGL 247. Nineteenth Century English Novel

Comparative analysis of representative works of Jane Austen, Thackeray, the Brontës, Dickens, George Eliot, and Hardy.

Messrs. Goldberg, Rogers

Spring, 3 credits

EGL 253. Romantic Poetry

Works of Blake, Coleridge, Wordsworth, Byron, Shelley, and Keats.

Mr. Abrams

Spring, 3 credits

EGL 254. Victorian Poetry

Works of Tennyson, Browning, Arnold, Hopkins, and Hardy, with some attention to other poetry of the period.

Messrs. Kazin, Stampfer

Spring, 3 credits

[EGL 256. Victorian Prose]

Readings in Carlyle, Newman, Arnold, Huxley, Mill and Ruskin.

Mr. Rogers

3 credits

To be offered 1967-68

EGL 260. Readings in Modern Literature

Study of late nineteenth and twentieth century works, relating developments in English and American literature to intellectual and aesthetic currents on the Continent.

Miss Sears

Spring, 3 credits

EGL 267. Contemporary British and American Novel

Study of the works of such figures as Joyce, Lawrence, Fitzgerald, Faulkner, Hemingway, and Forster, as well as more recent developments.

Mr. Ludwig

Fall, 3 credits

EGL 271. Representative Figures in American Literature I

Examination of the work of major American writers from the colonial period to the Civil War.

Mr. Fiess

Fall, 3 credits

EGL 272. Representative Figures in American Literature II

Examination of the work of major American writers from the Civil War period to the present. Continuation of EGL 271, but may be taken independently.

Mr. Fiess

Spring, 3 credits

EGL 281. Literary Criticism

Study of the problems and procedures of literary criticism through analysis and application of various approaches to the interpretation and evaluation of literary works.

Messrs. Jordan, Levin and Staff

Fall and Spring, 3 credits

EGL 283. The English Language

A linguistic approach to contemporary English; phonemics, usage, and applied linguistics are stressed.

Mr. Creed and Staff

Fall, 3 credits

EGL 284. History and Structure of the English Language

Beginning with an introduction to Old English phonology, morphology and syntax, the course proceeds to an examination of the changed patterns of the language in the Middle English and Modern English eras; attention will be given to the major dialect divisions of Middle English.

Mr. Creed and Staff

Spring, 3 credits

EGL 285. Methods of Instruction in Literature and Composition

Examination of the intellectual grounds of the teaching of literature and composition in secondary school and exploration of the problems involved in communicating genuine literary values to high school students.

Messers. Goldberg, Rogers, and Staff

Fall and Spring, 3 credits

EGL 290. Writing Workshop

A workshop in the development of writing skills through practice supplemented by readings.

Prerequisite: Consent of instructor.

Mr. Roth

Fall, 3 credits

EGL 295. The Bible as Literature

Study of literary forms and themes in selected readings from the Old and New Testaments.

Mr. Stampfer

Spring, 3 credits

EGL 306. Middle English Literature

Study of major works of prose, poetry, and drama of the fourteenth and fifteenth centuries, exclusive of Chaucer, in Middle English.

Prerequisite: EGL 207 or consent of instructor.

Mr. Jordan

Spring, 3 credits

EGL 313. Tudor and Stuart Drama

Study of representative plays of the major dramatists (excluding Shakespeare) and genres from the beginnings of English secular drama to the closing of the theaters in 1642.

Prerequisite: Senior standing or consent of instructor.

Mr. Levin

Fall, 3 credits

EGL 315. Elizabethan Poetry

Readings in Raleigh, Spenser, Sidney, Daniel, Davies, Marlowe, and Shakespeare.
Prerequisite: Senior standing or consent of instructor.

Messrs. Pequigney, Thompson
Fall, 3 credits

[EGL 333. English Drama, 1660-1780]

Comparative analysis of representative works of the major dramatists from Dryden to Sheridan, with emphasis on the diverse forms of serious drama and the changing conception of comedy.

Prerequisite: EGL 211 or consent of instructor.

Mr. Goldberg
3 credits

To be offered 1967-68.

EGL 344. Romantic Revival I

The French Revolution; its influence on Wordsworth and Coleridge; their development as poets; the relation of Keats and Shelley to the Romantic movements; the criticism associated with the period; its prose.
Prerequisite: Senior standing or consent of instructor.

Mr. Alexander
Fall, 3 credits

EGL 345. Romantic Revival II

The Romantic Movement continued; the prose criticism of the period (Lamb, Hazlitt, etc.) and its development in Victorian criticism; the Victorian poets insofar as they are reacting to the work of their immediate predecessors. May be taken independently of English 344.

Prerequisite: Senior standing or consent of instructor.

Mr. Alexander
Spring, 3 credits

EGL 365. Joyce

The poetry and fiction of James Joyce will be read, including passages from *Finnegans Wake*. Selected works will be carefully analyzed, with *Ulysses* the major emphasis.

Mr. Ludwig
Fall, 3 credits

EGL 366. William Butler Yeats

Readings in the poetry, plays, autobiographies, and letters.

Mr. Ludwig
Spring, 3 credits

EGL 367. Modern British and American Poetry

Study of the achievement of twentieth century poetry in English, concentrating on Yeats, Eliot, Auden, Stevens, Thomas, and Frost.

Messrs. Ludwig, Stampfer
Spring, 3 credits

EGL 371. Major American Authors I

Intensive study of major American writers of the earlier nineteenth century.

Prerequisite: Senior standing or consent of instructor.

Mr. Kazin
Fall, 3 credits

EGL 372. Major American Authors II

Intensive study of major American writers of the later nineteenth and twentieth centuries. May be taken independently of EGL 371.

Prerequisite: Senior standing or consent of instructor.

Mr. Kazin
Spring, 3 credits

EGL 375. Major American Poets

Studies in American poetry from Emerson to Robert Frost.

Prerequisite: EGL 271 or 272, or consent of instructor.

Mr. Kazin
Spring, 3 credits

EGL 381. History of Literary Criticism I

Analytic survey of major texts in the history of European literary theory and criticism from ancient times through the middle ages.

Prerequisites: EGL 281, senior standing, or consent of instructor.

Mr. Jordan and Staff
Fall, 3 credits

EGL 382. History of Literary Criticism II

Analytic survey of major texts in the history of European literary theory and criticism from the early Renaissance to the present. May be taken independently of EGL 381.

Prerequisites: EGL 281, senior standing, or consent of instructor.

Mr. Jordan and Staff
Spring, 3 credits

EGL 384. The History of English Poetry, I

The study of the development of form, theme, and language in English verse from the fourteenth century to the end of the Renaissance.

Prerequisite: Senior standing or consent of instructor.

Mr. Thompson
Fall, 3 credits

EGL 385. The History of English Poetry, II

The study of the development of form, theme, and language in English verse from the end of the Renaissance to the present.

Prerequisite: EGL 384 or consent of instructor.

Mr. Thompson
Spring, 3 credits

EGL 394. Satire and the Satiric Spirit

Critical analysis of satire and the satiric spirit from Aristophanes through Horace, Juvenal, and Persius, to writers such as Chaucer, Rabelais, Ben Jonson, Moliere, Dryden, Swift, Voltaire, Pope, Byron, Stendhal, Flaubert.

Prerequisite: Senior standing or consent of instructor.

Mr. Ludwig
Spring, 3 credits

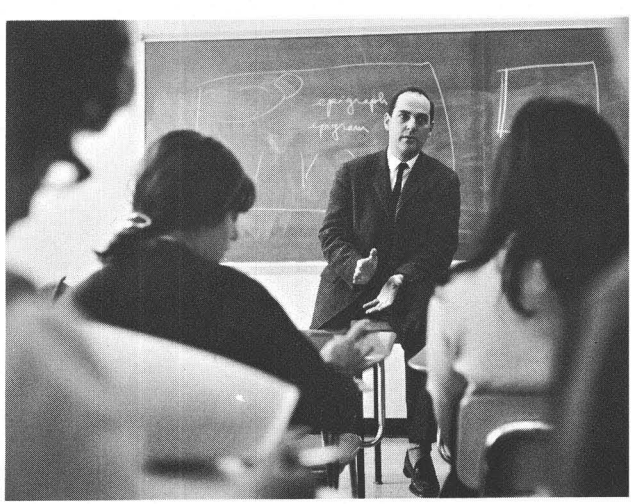
EGL 399. Independent Project

Advanced tutorial culminating in a major essay, permitting the student to apply his acquired disciplines and knowledge in a rigorous and original manner to a restricted topic in English or American literature.

Prerequisites: Senior standing and consent of the Department Chairman.

Staff
Spring, 3 credits

See also listings under World Literature



DEPARTMENT OF FINE ARTS

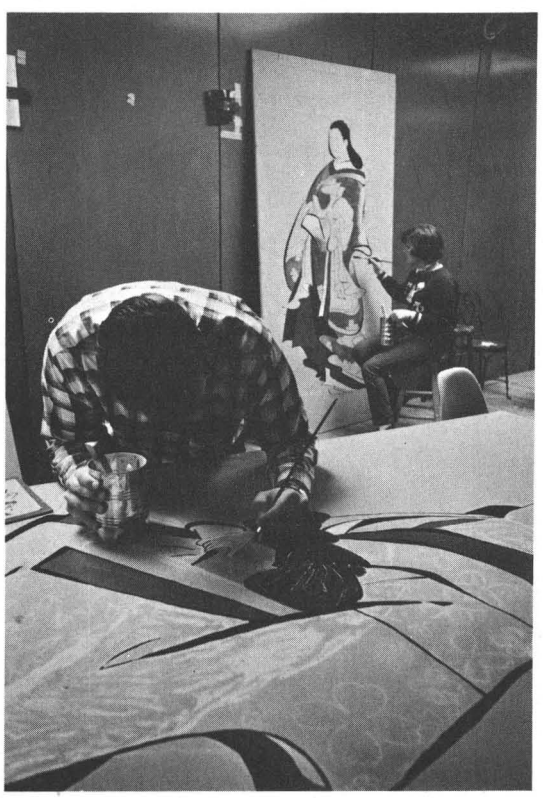
Professor: JOHN NEWFIELD (Drama), *Chairman*

Associate Professors: BERNARD GREENHOUSE (Music), JACQUES GUILMAIN (Art History), ALLAN KAPROW (Art), JOHN LESSARD (Music), PAUL MAKANOWITZKY (Music), ISAAC NEMIROFF (Music)

Assistant Professors: EDWARD A. BONVALOT (Music History), MARTIN CANIN (Music), EDWARD J. COUNTEY, JR. (Art), CHARLES L. HOLT (Drama), MILTON B. HOWARTH (Drama), MARK D. ORTON (Music), ROBERT W. WHITE (Art)

Instructor: TED GORELICK (Art History)

This Department includes the fields of Art, Music, Theater Arts and offers programs leading to the Bachelor of Arts degree in Art, Music, or Drama and Theater.



I. Requirements for the Major in Art

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are required for the major in Art:

A. *Study within the area of the major*

1. Studio Courses (Art 121, 122, 123, 124) — 12 credits
2. Theory and History — 21 credits

B. *Courses in related areas*

Electives in Music and Theater Arts — 6 credits

C. *Departmental Examination*

During the senior year all art majors must pass a departmental examination on certain aspects of the theory and history of art. The faculty will select a set list of books covering these fields.

Courses in Art

ART 120. Fundamentals of Drawing, Composition, and Design

An introductory course intended for non-art majors. Emphasis will be on drawing techniques. 6 hours studio work.

Prerequisite: Permission of instructor.

Mr. Countey

Fall, 3 credits

ART 121. Studio I (Drawing)

A course in drawing, the basis of pictorial art. Intended for art majors. Emphasis will be on life drawing. 6 hours studio work.

Prerequisite: Permission of instructor.

Mr. White

Fall, 3 credits

ART 122. Studio II (Introduction to the Techniques of Sculpture)

A beginning course designed to introduce the student to the techniques and formal principles of sculpture. Studio exercises in the uses of sculptor's tools, and simple problems in three-dimensional design are supplemented by some lectures and recitations on the formal principles of sculpture as a medium. 6 hours studio work.

Prerequisite: ART 121, or permission of instructor.

Mr. White

Spring, 3 credits

ART 123. Studio III (Introduction to the Techniques of Painting)

A beginning course designed to introduce the student to the techniques and formal principles of painting. Studio exercises in various media: watercolor, oil, tempera. Pure color-theory and its relation to the various media. 6 hours studio work.

Prerequisite: ART 121, or permission of instructor.

Mr. Kaprow

Fall, 3 credits

ART 124. Studio IV (Design)

A studio course in the techniques of perspective drawing, isometric projection, multiphase drawings, motion studies, graphs, and analytical drawings, and their application to a selected project. 6 hours studio work.

Prerequisite: ART 121, or permission of instructor.

Mr. Countey

Fall, 3 credits

ART 221. Studio V (Advanced Painting I)

A course designed to develop the student's skills in composition and the applications of color theory. Watercolor and tempera will be used primarily as media in this course. Six hours studio work.

Prerequisite: ART 123, or permission of instructor.

Mr. Kaprow

Fall, 3 credits

ART 222. Studio VI (Modeling, Casting, Direct Plaster Techniques)

A studio course designed to develop the student's technical and compositional skills in the making of sculpture created out of malleable materials, through additive techniques. Portrait and figure modeling in clay, plastilene, and direct plaster. The study and practice of plaster casting techniques, and the study of metal casting techniques. 6 hours studio work.

Prerequisite: ART 122, or permission of instructor.

Mr. White

Fall, 3 credits

ART 223. Studio VII (Graphics I)

A graphics course devoted to the techniques of engraving, etching, aquatint, mezzotint, and dry point, supplemented by lectures and recitations on the history of these techniques. 6 hours studio work.

Prerequisite: ART 121, or permission of instructor.

Mr. Countey

Fall, 3 credits

ART 231. Ancient Art

The history of art in the Ancient World from earliest times through the Roman period.

Prerequisite: None.

Mr. Guilmain

Fall, 3 credits

ART 232. Medieval Art

European art from the Early Christian through the Gothic period.

Prerequisite: ART 231, or permission of instructor.

Mr. Guilmain

Spring, 3 credits

ART 236. Major Artists

A single major artist or architect will be selected (Giotto, Michelangelo, Rembrandt, Rubens, Bernini, Picasso, Brunelleschi or Wright). His development, his works, and his influence on others will be carefully analyzed through lectures and class discussions.

Prerequisite: None.

Staff

Spring, 3 credits

ART 321. Studio VIII (Advanced Painting II)

A course designed to develop the student's skill in oil painting, and introduce him to the wide variety of modern painting media such as plastics and enamels; painting in mixed media. 6 hours studio work.

Prerequisite: ART 221 or permission of instructor.

Mr. Kaprow

Spring, 3 credits

ART 322. Studio IX (Stone and Wood Carving Techniques)

A studio course designed to develop the student's technical and compositional skills in the making of sculpture created in hard materials through subtractive techniques. The study and practice of stone and wood carving. 6 hours studio work.

Prerequisite: ART 122 or permission of instructor.

Mr. White

Spring, 3 credits

ART 323. Studio X (Assemblage)

Composing with more than one medium. The special, formal and aesthetic problems. 6 hours studio work.

Prerequisites: ART 221, 222 or 223, and permission of instructor.

Mr. Kaprow

Spring, 3 credits

ART 324. Studio XI (Graphics II)

A graphics course devoted to the study of the techniques of woodcutting, wood engraving, intaglio color printing, and serigraphy, supplemented by lectures and recitations on Oriental color prints, and 20th century print making. 6 hours studio work.

Prerequisite: ART 123, or permission of instructor.

Mr. Countey

Spring, 3 credits

ART 332. Italian Renaissance Art

Renaissance painting, sculpture, and architecture in Italy.

Prerequisite: ART 232, or permission of instructor.

Mr. Guilmain

Fall, 3 credits

ART 333. Northern Renaissance Art

Renaissance painting, sculpture, and architecture in Northern Europe.

Prerequisite: ART 232, or permission of instructor.

Mr. Gorelick

Fall, 3 credits

ART 334. Baroque and Rococo Art

European art in the age of Baroque and Rococo.

Prerequisites: ART 332 or 333, or permission of instructor.

Mr. Gorelick

Spring, 3 credits

ART 335. 19th Century Art

European art of the 19th century.

Prerequisite: ART 334, or permission of instructor.

Mr. Kaprow

Fall, 3 credits

ART 336. 20th Century Art

European and American art of the 20th century.

Prerequisite: Humanities 113 or 116, or permission of instructor.

Mr. Kaprow

Spring, 3 credits

ART 337. Introduction to the Literature of Art

A selection of writings by artists, critics, art historians and theorists will be analyzed through lectures and class discussions.

Prerequisite: At least three courses in Art History or permission of instructor.

Mr. Guilmain

Fall, 3 credits

ART 338. Senior Seminar in Problems of Art History

Introduction to research methods in art history and theory. Senior art majors will work on individual research projects under the supervision of the instructor.

Prerequisite: ART major with senior standing.

Staff

Spring, 3 credits

II. Requirements for the Major in Music

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are required for the major in Music.

A. *Study within the area of the major*

1. Music Theory (Music 121, 122, 221, 222, 321, 326) 18 credits
2. Music History (Music 237, 240, 323) 9 credits
3. Applied Music 16 credits
   (With permission of the Chairman of the Department the student can take only 8 credit hours in Applied Music and apply the remaining 8 credits to Theory and/or History.)

B. *Study in related areas*

1. Electives in Art and Theater Arts 6 credits

C. *Entrance Requirements*

The entering student who chooses to declare himself a major in music can do so only after having satisfied the Department of his technical ability and previous experience.

D. *Departmental Examinations*

1. Piano Proficiency: Students whose declared major is music must, prior to their junior year, pass a proficiency examination in piano. They will be required to play simple piano pieces (chosen by the Department), and demonstrate a sufficient acquaintance with the keyboard to be able to play theory examples as these occur in the course of study.
2. Departmental Examination: During the senior year all music majors must pass a departmental examination on certain aspects of music selected by the faculty.

E. *Departmental Requirement*

1. All music majors must participate in the University Chorus for two years.

Courses in Music

MUS 101. University-Community Chorus

Study and performance of a repertory from the Middle Ages to the present. Meeting twice weekly. Attendance at rehearsals and performances obligatory. Open to students, faculty, staff, and outsiders.

Prerequisite: Auditions.

Mr. Orton

Fall and Spring, no credit

MUS 102. Instrumental Instruction

Half-hour or one-hour individual lessons each week, with 5-10 hours practice required. Prerequisite: Permission of instructor.

Messrs. Canin (piano), Greenhouse (cello), Makanowitzky (violin)

Fall and Spring, 1 or 2 credits each semester

(Credit is repetitive and may be extended to 14 credit hours over a four-year period, with the permission of the Department Chairman)

MUS 103. Instrumental Ensemble

One or two three-hour weekly sessions devoted to reading and rehearsals of works drawn from the repertory of music for appropriate instruments.

Prerequisite: Permission of instructor.

Staff

Fall and Spring, 1 or 2 credits each semester

MUS 112. University Chorus

Open to all students. Study and performance of a repertory from the Middle Ages to the present. Credit is optional and begins in the second year, with up to two credits allowed. More than three unexcused absences from rehearsals eliminates credit. Meeting three hours per week.

Prerequisite: Auditions.

Mr. Orton

Fall and Spring, no credit or 1 credit per semester

MUS 121. Fundamentals of Music I

Sight reading, sight singing, notation, rhythmic and melodic dictation, intervals, the construction of scales.

Prerequisite: Ability to read music and permission of instructor.

Mr. Lessard

Fall, 3 credits

MUS 122. Fundamentals of Music II

Continuation of MUS 121. The formation of chords on the different degrees of the scale and their functions. Harmonic analysis of music from the Classical through the Romantic periods.

Prerequisite: MUS 121, or permission of instructor.

Mr. Lessard

Spring, 3 credits

MUS 123. Elementary Theory

Note reading in treble and bass clefs. Rhythmic exercises in simple and compound time. Intervals, scales, basic chords and progressions; elements of counterpoint.

Prerequisite: None.

Mr. Nemiroff

Fall and Spring, 3 credits

MUS 154. Music in the Romantic Era

Seven men, all born within ten years, receive particular attention. Berlioz, Mendelssohn, Chopin, Schumann, Liszt, Wagner, and Verdi are seen not only as pivotal composers, but—in several instances—as critics too, contributing eloquently to the aesthetics of their day.

Prerequisite: MUS 123, or permission of instructor.

Mr. Bonvalot

Spring, 3 credits

MUS 221. Harmony I

The traditional use of triads and the seventh chords in all positions. Exercises in four-part harmony with figured and unfigured basses. Elementary keyboard harmony.

Prerequisite: MUS 122, or permission of instructor.

Mr. Lessard

Fall, 3 credits

MUS 222. Harmony II

Harmonization of melodies, modulation, and use of sequences; continuation of keyboard harmony. Introduction to post-classical harmonic procedures.

Prerequisite: MUS 221, or permission of instructor.

Mr. Lessard

Spring, 3 credits

MUS 233. Introduction to Opera

This course will seek to examine single works from the most significant operatic composers and will attempt to define the changing relationships between words and music, between voice and orchestra, and between one concept of drama and another. Representative works from Monteverdi to Stravinsky will be heard and sections of them will be analyzed as carefully as time permits. General operatic conventions, as well as each composer's individual realization of them, will be discussed.

Prerequisites: Ability to read music and permission of instructor.

Mr. Bonvalot

Spring, 3 credits

MUS 235. Counterpoint I

Construction of melodic lines. The study of the principles of counterpoint through written exercises in two or three parts, all species.

Prerequisite: MUS 222, or permission of instructor.

Mr. Lessard

Fall, 3 credits

MUS 236. Counterpoint II

Written exercises in four parts, all species and combinations of species. Extended application of contrapuntal principles.

Prerequisite: MUS 235.

Mr. Lessard

Spring, 3 credits

MUS 237. The Music of Europe Before 1600

From the monophonic arts of the Early Middle Ages to the polyphonic ones of the Late Renaissance.

Prerequisite: MUS 122, or permission of instructor.

Mr. Bonvalot

Fall, 3 credits

MUS 238. Contemporary Music

The music of Schoenberg, Weber, Berg, Stravinsky, Varese will be analyzed. Emphasis will be placed on the 20th century as part of the unbroken historical continuum including changing concepts and practices, with a pertinent consideration of "Dissonance", and the rapprochement of "Jazz" and "Serious Music".

Prerequisites: Ability to read music and permission of instructor.

Mr. Nemiroff

Spring, 3 credits

MUS 240. The Music of Europe from 1600 to 1830

The dates of Peri's *Euridice* and Schumann's *Opus 1* establish the limits of a study that embraces the Baroque and Classical eras.

Prerequisite: MUS 237, or permission of instructor.

Mr. Bonvalot

Spring, 3 credits

MUS 321. Form and Analysis

Principles of musical construction. The components of Harmony, Counterpoint, Rhythm, and thematic development as integral forces in the growth of a form. The changing concepts in the use of Tonality and the resultant changing forms. The problem of continuity. Analysis of pertinent literature.

Prerequisite: MUS 222, or permission of ininstructor.

Mr. Nemiroff

Fall, 3 credits

MUS 322. Orchestration

The instruments of the classical orchestra. Their ranges and transpositions, and technical possibilities. Introduction to orchestration of dynamics through doublings and

mixtures of various timbres. Arrangement of simple piano pieces for small combinations.

Prerequisite: MUS 236, or permission of instructor.

Mr. Nemiroff

Spring, 3 credits

MUS 323. Music After 1830

The combination in the nineteenth century of tradition and experiment will serve not only to extend the musical perspectives of the past but also to introduce, as the second aim of the course, those of the present day.

Prerequisite: MUS 240, or permission of instructor.

Mr. Bonvalot

Fall, 3 credits

MUS 325. Tonal Counterpoint

This course is a study of the art of combining voices under the conditions of Tonal Harmony as observed in the works of Bach through the composers of the Romantic period. It includes the analysis of pertinent literature and the writing of original exercises demonstrating the various principles and elements.

Prerequisite: MUS 222, or permission of instructor.

Mr. Nemiroff

Fall, 3 credits

MUS 328. Composition

The application of the elements of harmony, rhythm, and melody to motivic structure and development; composition in small forms.

Prerequisites: MUS 325 or equivalent and permission of instructor.

Mr. Nemiroff

Spring, 3 credits

MUS 330. Conducting

Basic baton technique and the analysis and preparation of instrumental and vocal scores for performance.

Prerequisites: MUS 325 or equivalent and permission of instructor.

Spring, 3 credits

MUS 331. Advanced Harmony I

Exercises with modulations to distant keys, sequences, and canons.

Prerequisites: MUS 222 and permission of instructor.

Mr. Lessard

Fall, 3 credits

MUS 332. Advanced Harmony II

Extended modulating exercises, alterations, and ornaments.

Prerequisite: MUS 331.

Spring, 3 credits

III. Requirements for the Major in Drama and Theater

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are required for the major in Drama and Theater.

A. *Study within the area of the major*

1. Theory (Theater 131, 132, 231, 331) — 12 credits
2. History — 12 credits
3. Techniques (Theater 232, 236) — 6 credits

B. *Courses in related areas*

1. Electives in Music and Art — 6 credits
2. Electives in English and/or foreign dramatic literature including a three-credit course in Shakespeare — 6 credits

C. *Comprehensive Examination*

During the senior year all drama and theater majors must pass a departmental examination on certain aspects of the theory and history of drama and theater. The faculty will select a set list of books covering these fields.

D. *Departmental Requirements*

All Drama and Theater majors are required to participate in at least two University Theater productions in at least two different capacities.

Courses in Theater

THR 131. The Nature of Drama

The fundamentals of dramaturgy: The elements of drama, dramatic composition, the elements of plot, characterization, dramatic language, and the relation of drama and audience.

Prerequisite: None.

Mr. Holt

Fall, 3 credits

THR 132. Drama on Stage

A continuation of THR 131. General dramaturgical analyses derived from specific examples of significant drama. A reading of great plays from world drama in connection with available records of theatrical productions.

Prerequisite: THR 131, or permission of instructor.

Mr. Holt

Spring, 3 credits

THR 133. Voice and Diction

An introductory course devoted to those elements of voice production and "diction" essential to an understanding of the crafts of acting and the oral interpretation of literature. The course incorporates pertinent descriptive linguistic data in the approach to American "sounds".

Prerequisite: None.

Mr. Holt

Fall, 3 credits

THR 231. Theory and Methods of Acting

An introductory study of the psychology of acting. Approaches and practices in characterization: Sensibility, observation, the fundamentals of stage speech and movement, imagination, pantomime, and improvisation.

Prerequisite: THR 132, or permission of instructor.

Messrs. Holt, Newfield

Fall and Spring, 3 credits each semester

THR 232. The Fundamentals of Technical Theater

A lecture-laboratory course in the planning, construction, and handling of stage scenery and properties. A survey of the modern methods of lighting various types of theatrical productions.

Prerequisite: THR 132, or permission of instructor.

Mr. Howarth

Fall and Spring, 3 credits each semester

THR 233. World Drama I

A survey of the development of drama from the Classical through the Renaissance periods. Parallel developments in the drama of the Eastern civilizations are also taken into consideration.

Prerequisite: THR 132, or permission of instructor.

Mr. Newfield

Fall, 3 credits

THR 234. World Drama II

A survey of the development of world drama from the 17th through the 19th centuries. (A continuation of THR 233.)

Prerequisite: THR 233, or permission of instructor.

Mr. Newfield

Spring, 3 credits

THR 236. Stage Costume and Makeup

An introduction to the history and aesthetics of stage costumes and makeup. The fundamentals of costume design and the basic techniques of makeup.

Prerequisite: THR 231, or permission of instructor.

Mr. Howarth

Spring, 3 credits

THR 330. Theory and Methods of Directing

Both a historical and technical approach to the function of the director in the production of a play. The course includes practical considerations of play selection, the synthesizing of the several elements of a play in

performance, planning settings, properties, stage movement, and the interpretative requisites of dramatic language for the actor.

Prerequisites: THR 231 and 232, or 236.

Mr. Newfield

Spring, 3 credits

THR 331. Stage Design

Perspective and mechanical drawing for the stage. Principles of designing for the theater, including color composition. These techniques are related to the aesthetics both of dramatic composition and the flexibility of modern staging.

Prerequisite: THR 232, or permission of instructor.

Mr. Howarth

Fall, 3 credits

THR 333. The History of Theater I

A historical survey of theater architecture, staging methods, scenic design, and styles of theatrical production from the Classical through the Baroque and Rococo periods with special emphasis on the social, religious, and cultural backgrounds.

Prerequisite: THR 233 or permission of instructor.

Mr. Newfield

Fall, 3 credits

THR 334. The History of Theater II

A historical survey of theater architecture, staging methods, scenic design, and styles of theatrical production in the 19th and 20th centuries with special emphasis on the social, religious, and cultural backgrounds.

Prerequisite: THR 333 or permission of instructor.

Mr. Newfield

Spring, 3 credits

THR 335. Styles of Acting

Intensive theory and practice in historical and in non-realistic modern drama.

Prerequisite: THR 231 or permission of instructor.

Fall 3 credits

THR 336. Projects in Stage Design

Practice in stage design; analysis and expression of the play in scenic terms. Individual work.

Prerequisite: THR 331 and permission of instructor.

Mr. Howarth

Spring, 3 credits

DEPARTMENT OF GERMANIC AND SLAVIC LANGUAGES AND LITERATURES

Professor: SEYMOUR L. FLAXMAN (*Chairman and Director of Language Laboratories*)

Assistant Professors: RUSSELL E. BROWN, ANTHONY R. HIPPISLEY, FERDINAND A. RUPLIN, ERNESTINE SCHLANT

Instructors: IRMGARD FEIX, DANIEL C. O'NEIL, BARRY J. RUBIN, JOHN R. RUSSELL, ROBERT D. SLOAN, JR.

Requirements for the Major in Germanic and Slavic Languages and Literatures

In addition to the general requirements for the Bachelor of Arts degree, the following courses are required for the major in Germanic and Slavic Languages and Literatures:

A. *Study within the area of the major*

1. 18 semester hours in German or Russian in courses numbered 300 or above.
2. All students who major in German or Russian will be required to achieve proficiency in a second foreign language.

B. *Courses in related areas*

18 semester hours in related courses with the approval of the departmental adviser.

C. *Teaching certification*

Students who wish to prepare for certification as secondary school teachers must take the courses in education required for certification in addition to Sections A and B. They will also be required to earn 6 credits in a conversation and composition course in the language they intend to teach. The 3 credits of Methods and Materials in the Teaching of Foreign Languages and the 12 credits of a second foreign language may, at the discretion of the Department, be counted toward the fulfillment of the related field requirements.

Placement in Language Courses for Incoming Freshmen

Students continuing the study of a foreign language started in high school will be placed in the appropriate college course by a placement examination; however, after two years of high school preparation, they will receive no graduation credit for the first course (111) in the same language, and after three years of high school preparation they will receive no credit for the first two courses (111, 112) in the same language.

Courses in German

GER 111, 112. Elementary German

An introduction to spoken and written German, stressing pronunciation, speaking, comprehension, reading, and writing. Selected texts will be read. Practice in the language laboratory supplements class work.

Prerequisite: None.

Mr. Ruplin and Staff

Fall and Spring, 3 credits each semester

GER 115, 116. Scientific German and Technical Translation

This course is designed to teach the student to read and translate German scientific prose of moderate difficulty. Practice in translating from German into English and in transferring ideas into the appropriate technical terminology. This course is not intended to prepare the student for the proficiency requirement or the major.

Mr. O'Neil

Fall and Spring, 3 credits each semester

GER 211, 212. Intermediate German

The reading and interpretation of German texts, with a review of German grammar, composition, and conversation. The student gains an acquaintance with the various literary genres through examples drawn from representative German authors. Work in the language laboratory will further develop audiolingual skills.

Prerequisites: GER 111, 112, or equivalent.

Mr. O'Neil and Staff

Fall and Spring, 3 credits each semester

GER 221, 222. German Conversation and Composition

This course consists of the active use of spoken and written German. At least one hour per week of work in the language laboratory is required.

Prerequisites: GER 212 or language "proficiency", or equivalent, and permission of instructor.

Mrs. Schlant

Fall and Spring, 3 credits each semester

GER 321. Advanced German Conversation and Composition

A course designed to develop mastery of spoken German. Students will learn to express themselves idiomatically and fluently. At least two hours of weekly laboratory practice will be required.

Prerequisites: GER 221, 222 or junior and senior standing and permission of instructor.

Mrs. Schlant

Fall, 3 credits

GER 322. Advanced German Conversation and Composition

A course designed to acquaint students with the subtleties of German grammar and style. Extensive practice in written German.

Prerequisites: GER 221, 222 or junior or senior standing and permission of instructor.

Mrs. Schlant

Spring, 3 credits

GER 331, 332. Major Writers in German

Reading and interpretation of selected works by great German writers from the Middle Ages to the present day. These works are treated in the context of the history of German literature, so that the student is prepared for further literary study. This course is conducted partly in German.

Prerequisites: GER 211, 212, or equivalent.

Mr. Brown

Fall and Spring, 3 credits each semester

[GER 333, 334. Lessing and the Enlightenment]

Reading and interpretation of the most important dramatic and critical works by Lessing. These will be studied in connection with the development of the Aufklärung, so that attention will also be given to certain works of Schiller, Goethe, and other German writers of the Eighteenth Century.

Prerequisite: GER 333 is a prerequisite for GER 334.

Staff

Fall and Spring, 3 credits each semester

To be offered 1968-69.

GER 335, 336. Goethe

Reading and interpretation of the most important works by Goethe, including the poems, plays, and novels. These will be studied against the background of Goethe's life and times.

Prerequisites: GER 331, 332, or equivalent.

Fall and Spring, 3 credits each semester

[GER 341, 342. Germany Poetry since Holderlin]

A critical reading and analysis of the major German poets from Hölderlin to the present time, including a discussion of the significant schools and movements as represented in the work of such poets as Uhland, von Eichendorff, Rückert, Heine, Mörike, Meyer, von Liliencron, Spitteler, George, and Rilke.

Prerequisites: GER 331, 332, or equivalent.

Fall and Spring, 3 credits each semester

To be offered 1967-68.

GER 345, 346. The German Drama from Kleist to Brecht

Critical reading and analysis of the great German dramas from the beginning of the nineteenth century to the present, with attention to the development of such literary movements as Realism, Naturalism, and Expressionism.

Prerequisites: GER 331, 332, or equivalent.

Mr. Flaxman

Fall and Spring, 3 credits each semester

[GER 347, 348. The German Novel from Fontane to Hesse]

A critical reading and analysis of the most important novels from the end of the Nineteenth Century to the end of World War II. Special attention will be given to the development of the modern German novel and to those literary movements that affect this *genre.*

Prerequisite: German 347 is a prerequisite for German 348.

Mr. Flaxman

Fall and Spring, 3 credits each semester

To be offered 1968-69.

[GER 351, 352. Schiller]

Reading and interpretation of the most important works by Schiller, including the poems, plays, and essays. These will be studied against the background of Schiller's life and times.

Prerequisites: German 331, 332, or equivalent.

Fall and Spring, 3 credits each semester

To be offered 1967-68.

Courses in Russian

RUS 111, 112. Elementary Russian

An introduction to spoken and written Russian, stressing pronunciation, speaking, comprehension, reading, and writing. Reading of selected texts will be included. Practice in the language laboratory supplements class work.

Prerequisite: None.

Mr. Rubin

Fall and Spring, 3 credits each semester

RUS 211, 212. Intermediate Russian

An intermediate course in the reading and interpretation of Russian texts, including a review of Russian grammar, composition, and conversation. The student gains an acquaintance with the various literary genres through examples drawn from representative Russian authors. Work in the language laboratory will further develop audiolingual skills.

Prerequisite: RUS 111, 112, or equivalent.

Mr. Rubin

Fall and Spring, 3 credits each semester

RUS 221, 222. Russian Conversation and Composition

A course in the active use of spoken and written Russian. At least one additional hour per week of work in the language laboratory is required. May be taken concurrently with or following RUS 211, 212.

Prerequisites: RUS 111, 112, or equivalent.

Mr. Rubin

Fall and Spring, 3 credits each semester

RUS 331, 332. Major Writers in Russian

Reading and interpretation of selected works by great Russian writers. These works are treated in the context of Russian literature in the nineteenth century, so that the student is prepared for further literary study. This course is conducted partly in Russian.

Prerequisites: RUS 211, 212, or equivalent.

Mr. Rubin

Fall and Spring, 3 credits each semester

RUS 335. The Russian Short Story

Reading of selected short stories from Pushkin to the present. While the emphasis will be on literary values, linguistic problems will also be considered. This course is conducted partly in Russian.

Prerequisites: RUS 331, 332. or equivalent.

Fall, 3 credits

RUS 336. Pushkin

The reading and analysis of selected works by Pushkin, with emphasis on his poetry. This course is conducted partly in Russian.

Prerequisites: RUS 331, 332, or equivalent.

Spring, 3 credits

RUS 381. Nineteenth Century Russian Literature

Study of selected topics in Russian literature of the Nineteenth Century.

Prerequisites: RUS 331, 332 and one additional course in Russian literature.

Mr. Rubin

Fall, 3 credits

RUS 382. Twentieth Century Russian Literature

Study of selected topics in Russian literature of the Twentieth Century.

Prerequisites: RUS 331, 332 and one additional course in Russian literature.

Mr. Rubin

Spring, 3 credits

Other Courses

Foreign Languages 239. 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.

Prerequisite: Junior standing.

Mr. Flaxman

Fall, 3 credits

Linguistics 301. Introduction to Linguistics

A course encompassing the theory of language from Panini to the present. Some time will be devoted to comparative and historical linguistics, but the emphasis will be placed on descriptive linguistics and applied linguistics in the classroom. The course will include practical descriptive work in the language laboratory.

Prerequisites: Junior or senior standing as a major in English or a foreign language.

Mr. Ruplin

Spring, 3 credits

[Comparative Literature 348. The Theory of Comparative Literature]

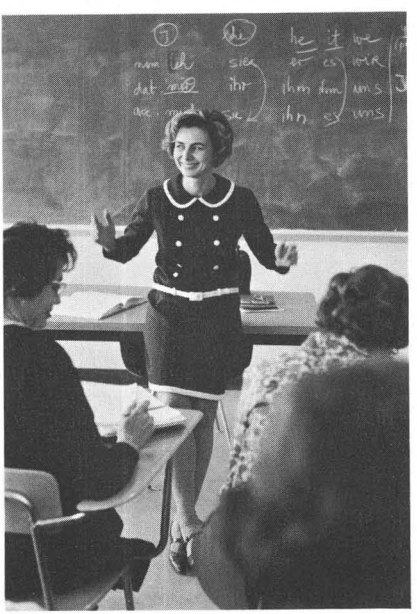
The Theory of Comparative Literature will view the field of comparative literature from various aspects in an attempt to give the student an understanding of what comparative literature study means and what it involves. This will include an examination of the leading theories of comparative literature.

Prerequisites: The completion of at least two full courses in English literature, the third year of a course in a foreign language, or its equivalent, and senior standing.

Spring, 3 credits

To be offered 1967-68.

See also listings under World Literature



DEPARTMENT OF HISTORY

Professors: GUILLERMO CÉSPEDES, JACKSON TURNER MAIN, STANLEY R. ROSS (*Chairman*), BERNARD SEMMEL, SERGIO BUARQUE DE HOLLANDA

Associate Professors: WERNER T. ANGRESS, HUGH G. CLELAND (*Deputy Chairman*), PHILIP J. STAUDENRAUS, DAVID F. TRASK, RUBEN E. WELTSCH (*Adjunct*)

Assistant Professors: PER A. ÅLIN, KARL S. BOTTIGHEIMER, ROBERT H. G. LEE, JOHN W. PRATT, JOEL T. ROSENTHAL, ALLAN K. WILDMAN

Instructor: KARL W. DEMUTH

Requirements for the Major in History

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are required for the major in History:

A. *Study within the area of the major*

Completion of History 101, 102 and 24 additional credit hours of history, including the following:

1. A one-year course in American History, to be taken when possible in the sophomore year.
2. A one semester senior departmental seminar, either History 391 or 392 depending upon the student's interest.
3. Advanced courses, chosen in consultation with the adviser. It is recommended that all majors include some course work outside of the American and European fields.

B. *Courses in related areas*

Completion of 18 credit hours of courses outside the department, selected with the approval of the adviser and related to the student's field of interest in History. They will generally be in the social sciences and/or humanities.

Courses in History

Please Note: History 101 and 102 are open to all undergraduates; courses numbered from 150-199 are open to Sophomores and above; courses numbered from 200-299 are open to Juniors and above: courses numbered from 300-399 are open to Seniors only.

HIS 101. The Rise of Western Civilization

A study of western society and ideas, emphasizing the development of major political, social and economic institutions, from Ancient Greece to the beginning of the French Revolution.

Staff

Fall and Spring, 3 credits

HIS 102. The Civilization of Modern Europe

A study of European ideas and institutions during the nineteenth and twentieth centuries: the French Revolution and Napoleon; the growth of industrialism and of democracy; the Marxist challenge and the Russian Revolution; the great world wars and the waning of European hegemony.

Staff

Fall and Spring, 3 credits

HIS 151. American History to 1877

The United States from the Age of Discovery to the end of the Reconstruction period, with discussions of such subjects as the transplantation of European culture to America, the rise of American nationalism, the democratization of American society, the clash between the industrial North and the planting South, and the triumph of industrialism.

Messrs. Cleland, Pratt, Staudenraus

Fall, 3 credits

HIS 152. United States Since 1877

The history of the United States from the end of Reconstruction to the present day, with discussion of the growth of industrialism and its impact upon economic, social, cultural, and political life; the emergence of America as a world power; and American responses to the continuing crisis of contemporary civilization.

Messrs. Cleland, Pratt, Staudenraus

Spring, 3 credits

HIS 153. Latin America to 1825

The Spanish and Portuguese colonies in the New World, with emphasis on the European background, exploration, settlement, institutions and the struggle for independence.

Staff

Fall, 3 credits

HIS 154. Latin America Since 1825

The evolution of the Latin American nations since independence, with emphasis on political, economic and social problems.

Staff

Spring, 3 credits

HIS 155. England from 1066 to 1688

The first half of a survey course in English History. 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.

Mr. Bottigheimer

Fall, 3 credits

HIS 156. England Since 1688

A survey of 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.

Mr. Semmel

Spring, 3 credits

HIS 157. Far Eastern Civilization

Chronologically, the course surveys the origin and development of Far Eastern civilization from its beginning to the mid-nineteenth century. Its emphasis will be on the intellectual, artistic, and institutional foundations of the traditional societies of China, Japan, and Korea.

Mr. Lee

Fall, 3 credits

HIS 158. The Far East in Transition

A survey of modern Far Eastern history, this course will concentrate on the social, political and economic developments in the Far East during the last hundred years. Special attention will be given to the relationships between the United States and the Far Eastern countries.

Mr. Lee

Spring, 3 credits

HIS 201. Greek History

The origin, maturation and spread of classical Greek Civilization from its pre-historic beginnings down to the Hellenistic Age.

Mr. Ålin

Fall, 3 credits

HIS 202. Roman History to Constantine

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.

Mr. Ålin

Spring, 3 credits

HIS 203. Medieval History, 300-1100

European History is surveyed from the decline of Rome up to the Renaissance of the 12th Century. Special attention is paid to the Carolingian Empire, feudalism, the early Church and monasticism, and the Investiture struggle.

Mr. Rosenthal

Fall, 3 credits

HIS 204. The High Middle Ages, 1100-1400

The High Middle Ages: The expansion of Europe (particularly the Crusades), the redevelopment of an urban civilization, and the origins of national states, secularism, and individualism are among the topics considered.

Mr. Rosenthal

Spring, 3 credits

HIS 205. Early Modern Europe

The course surveys the "waning of the Middle Ages," the Renaissance and Reformation, the emergence of the institutions of the modern state, the political organization of Europe, the secularization of attitudes, and the influence of early modern science.

Mr. Weltsch

Spring, 3 credits

HIS 207. 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.

Mr. Angress

Fall, 3 credits

HIS 208. Europe 1914—present

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.

Mr. Angress

Spring, 3 credits

[HIS 211. American Colonial Society]

The discovery and exploration of the New World, English overseas expansion and settlement in North America, problems of trade and imperial control (1660-1714), and the evolution of American provincial society to the Revolution.

Mr. Pratt

Fall, 3 credits

To be offered 1967-68.

HIS 213. Age of the American Revolution

The course surveys the old British Empire at the close of the French Wars; imperial reorganization and colonial resistance; the War of Independence; and the trials of the new nation and the framing of the Constitution.

Mr. Main

Fall, 3 credits

HIS 214. The Early National Era

Political, economic, social and cultural developments from the American Revolution to the rise of Jackson.

Mr. Main

Spring, 3 credits

[HIS 215. The Age of Jackson]

A study of the era of Andrew Jackson, which deals with the democratization of American society, the rise of a national economy, the impact of sectionalism and manifest destiny.

Mr. Staudenraus

Fall, 3 credits

To be offered 1967-68.

[HIS 216. 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.

Mr. Staudenraus

Spring, 3 credits

To be offered 1967-68.

HIS 217. Recent U.S. History, 1877-1929

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. Emphasis will be placed on the relation of the United States to the world economy and on the roots of the Great Depression.

Mr. Cleland

Fall, 3 credits

HIS 218. Recent U.S. History, 1929-1962

The Great Depression and the impact of Keynsian thought, the New Deal, the rise of industrial unionism, World War II and its aftermath, the Cold War, and technological and social change are among the subjects discussed.

Mr. Cleland

Spring, 3 credits

HIS 223. Latin America and the Outside World

An analysis of the role of the Latin American nations in world affairs during the 19th and 20th Centuries is undertaken, with emphasis on intellectual, economic, and diplomatic relations with the United States and Europe.

Mr. Ross

Spring, 3 credits

[HIS 224. Modern Mexico]

The social, economic and political history of Mexico from 1876 to the present, with emphasis on the background, development and aftermath of the Revolution of 1910.

Mr. Ross

Spring, 3 credits

To be offered 1967-68.

HIS 225. Social History of Colonial Spanish America

A study on social structure, typologies, stratification and dynamics of the Spanish Colonies in the New World during the XVIth-XVIIIth Centuries, from the Conquistadores to the forerunners of Independence. Special emphasis will be given to inter-racial relations and social position of Indians, *mestizos* and *castas*.

Prerequisite: Junior standing.

Mr. Céspedes

Fall, 3 credits

HIS 233. Early Modern England: Change and Reformation, 1509-1603

An examination of the development of English society from the reign of Henry VIII to

the death of Elizabeth. Attention will be focused upon the decline of medieval institutions, the course of the Reformation and its impact upon the political, economic and intellectual life of the society.

Mr. Bottigheimer

Fall, 3 credits

HIS 234. Early Modern England: Revolution and War, 1603-1714

An enquiry into the source, nature, and outcome of the English Revolution, conceived as a single, systematic disorder causing intermittent crises throughout the seventeenth century. Particular topics will include the Parliamentary struggles of the 1620's, the civil war of the 40's and the re-establishment of stability in 1688.

Mr. Bottigheimer

Spring, 3 credits

HIS 236. England, 1782-1867: Industrialism, Reform, and the Advent of Democracy

An examination of English political, social, economic, and intellectual development from the time of the younger Pitt and the early years of industrialism to the coming of democracy and the emergence of the *Pax Britannica;* the wars of the French Revolution; the struggles for political and economic reform; Romanticism and Philosophical Radicalism; Free Trade and the Workshop of the World.

Mr. Semmel

Fall, 3 credits

HIS 237. Modern Britain, 1867 to the present: England in the Age of Democracy

An analysis of English society from the era of Gladstone and Disraeli to that of Wilson and Heath; the continuance of reform; the rise of socialism and the Labour party; imperialism; the world wars against Germany; the welfare state; the decline of Britain's international, economic, and political position.

Mr. Semmel

Spring, 3 credits

HIS 241. 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 problems of its relations with the West.

Mr. Wildman

Fall, 3 credits

HIS 242. Soviet Russia

The ideological and social background of the Russian Revolution and the evolution of Soviet rule, the problems of industrialization, the relations with the capitalist West and totalitarian control over society are the subjects of analysis.

Mr. Wildman

Spring, 3 credits

[HIS 251. The Expansion of Europe 1415-1815]

A study of the expansion of Europe from the age of the great discoveries until the Congress of Vienna, including a survey of the diffusion of European civilization, the formation of empires and the rivalries among the colonial powers, and the processes of empire building during the age of mercantilism.

3 credits

To be offered 1967-68.

HIS 271. American Constitutional Origins

A study in the law, institutions, and customs of the American constitutional system. The course will examine the English and colonial foundations of American constitutionalism, formation of the Federal Constitution, the instituting of new government, and the rise of political democracy.

Mr. Pratt

Fall, 3 credits

HIS 272. American Constitutional Development

The development of the federal constitutional system with emphasis on the national

sovereignty-states rights controversy to 1876, the effects of industrial change, the enlargement of the Presidency, and the impact of crisis government on the American Constitution in the twentieth century.

Mr. Pratt

Spring, 3 credits

HIS 273. Social & Intellectual History of the United States to 1865

A study of the development of American institutions and thought in the years before the Civil War.

Mr. Staudenraus

Fall, 3 credits

HIS 274. Social & Intellectual History of the United States Since 1865

A study of the development of American institutions and thought in the years since the Civil War.

Mr. Staudenraus

Spring, 3 credits

HIS 275. History of U. S. Foreign Relations, 1774-1900

The evaluation of American foreign policy and diplomacy from 1774 to 1900 in terms of: acquisition and confirmation of independence; geographical expansion and economic growth; achievement of great power capabilities and imperialistic consequences.

Mr. Trask

Fall, 3 credits

HIS 276. History of U. S. Foreign Relations, 1900 to the present

The evaluation of American foreign policy and diplomacy from 1900 to the present in terms of: the Imperial interlude; the cycle of violance associated with two World Wars; post World War II development, especially the Russo-American confrontation and social revolution in the non-Western world.

Mr. Trask

Spring, 3 credits

[HIS 281. The Ancièn Régime in France, 1483-1763]

A study of the rise and decline of the French absolute monarchy and of its effort to create a unified France. Special attention will be given to the underlying social, economic and cultural forces which affected this effort.

Mr. Demuth

Fall, 3 credits

To be given 1967-68.

[HIS 282. The French Revolution and Napoleon, 1763-1815]

A broad study of the origins, issues, and impact of the great French Revolution of 1789 both as a uniquely French and a European event with special attention to the problems of its historical interpretation.

Mr. Demuth

Spring, 3 credits

To be given 1967-68.

HIS 284. History of Spain

A survey course on the history and civilization of Imperial and Modern Spain (ca. 1479-1963), with an introduction to the formative period of the nationality from Prehistory to the end of the Middle Ages. Special attention shall be paid to the XVIth-XVIIIth Centuries foreign and colonial policies, and economic, social and cultural aspects.

Mr. Céspedes

Fall, 3 credits

HIS 285. Germany, 1806 to 1890

The course will examine the development of Germany from the Napoleonic period, through unification and the founding of the Empire, to Bismarck's dismissal. Although the emphasis will be on political and social aspects of this period, economic and cultural trends will be included in the investigation.

Mr. Angress

Fall, 3 credits

HIS 286. Germany, 1890 to the present

The course will examine the development of Germany from Bismarck's dismissal, through the Wilhelmian period, the First World War, the Weimar Republic and the Third Reich to and beyond the Second World War.

Although the emphasis will be on political and social aspects of this period, economic and cultural trends will be included in the investigation.

Mr. Angress

Spring, 3 credits

HIS 391. Senior Seminar in United States History

Introduction to historical methods and problems in history; emphasis on discussion, oral and written reports, and a critical final paper.

Mr. Pratt

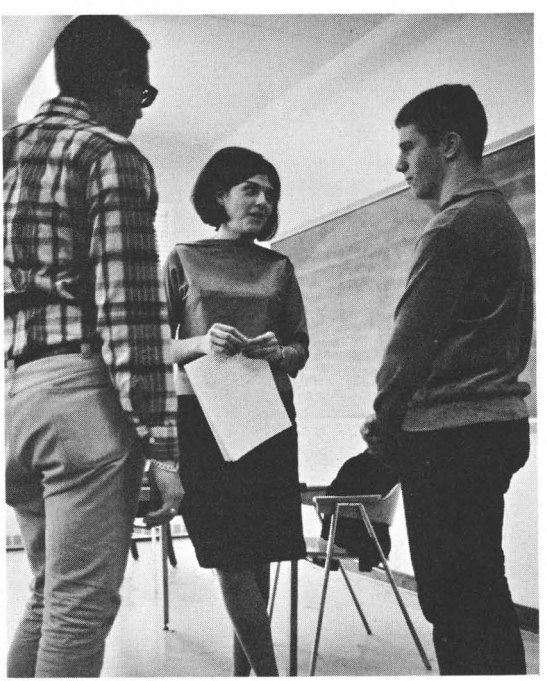
Fall, 3 credits

HIS 392. Senior Seminar in European History

Introduction to historical methods and problems in history; emphasis on discussion, oral and written reports, and a critical final paper.

Mr. Rosenthal

Fall, 3 credits



INTERDEPARTMENTAL COURSES IN THE HUMANITIES

HUM 103. The Classical Tradition

A study of major texts beginning with Homer, Sophocles, Herodotus or Thucydides, Ovid, Petrarch, Cervantes, and Shakespeare.

Staff

3 credits

HUM 104. The Judaeo-Christian Tradition

A study of major texts from the Bible through the medieval period ending with Shakespeare. Focus will be on the Bible, St. Augustine, and Dante.

Staff

3 credits

HUM 105. The Comic and Satiric Traditions

A course differentiating the aims of comedy and satire starting with an evaluation of comedy and satire in the twentieth century and then following a chronological line of the comic and satiric writers from Aristophanes to Günter Grass.

Staff

3 credits

HUM 106. The Age of Enlightenment

A review of the phenomenon of the European Enlightenment, including an analysis of the forces in thought and literature that created the Age of Reason. Readings will include the works of such writers as Molière, Racine, Voltaire, Diderot, Leibniz, Lessing, Montesquieu, Goethe, and Richardson.

Staff

3 credits

HUM 113. The Classical Tradition in Western Art

An analysis of the classical tradition in Western Art from the time of its birth in Greece through its survival and development in later antiquity, the Middle Ages, the Renaissance, and modern times, to its present aspects in "purist" art.

Staff

3 credits

HUM 114. Music in Western Civilization

Examines the musical heritage of Europe and America in terms of its development from antiquity to the present day. A survey of medieval and Renaissance forms will introduce a closer study of the period after 1600. Emphasis will fall on major composers and specific works.

Staff

3 credits

HUM 115. The Forms and Traditions of Modern Theater

A course designed to introduce the general student to the nature of drama and theater in the modern world, to the basic elements of theater arts, and to important contemporary and modern drama examined in the full dimensions of projected productions. Each student, during the semester, is expected to see and evaluate a professional Broadway (or off-Broadway) play in performance.

Staff

3 credits

HUM 116. The Expressionist Tradition in Art

A careful exploration of expressionism, in the strictest sense a development in Northern European Art of the period ca. 1800-1919, will be followed by an examination of similar manifestations in the art of the more distant past. While the common denominators in terms of world view attitudes, and styles of the works considered will be carefully examined, care will be taken to acknowledge their individual differences.

Staff

3 credits

HUM 121. Ancient and Medieval Philosophic Classics

Readings and discussions of major philosophic texts of ancient and medieval philosophers such as: Plato, Aristotle, Cicero, Marcus Aurelius, Plotinus, Lucretius, St. Augustine, St. Thomas.

Staff

3 credits

HUM 122. Modern Philosophic Classics

Readings and discussions of major philosophic texts of Renaissance and post-Renaissance philosophers such as: Machiavelli, Bacon, Hobbes, Descartes, Pascal, Spinoza, Locke, Hume, Diderot, Rousseau, and Kant.

Staff

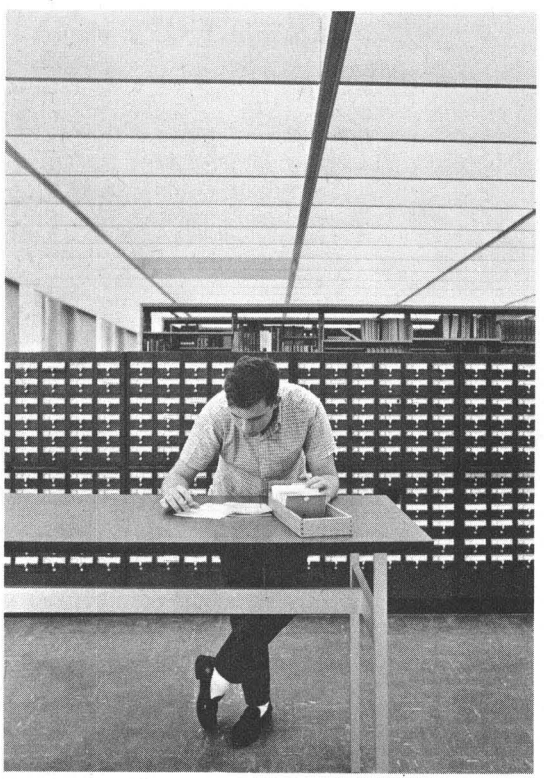
3 credits

HUM 123. Philosophic Classics: Major Issues

The focus is upon certain recurrent philosophic issues emerging from man's social, intellectual, religious and artistic experience in the traditions of Western civilization.

Staff

3 credits



DEPARTMENT OF MATHEMATICS

Professors: WILLIAM G. LISTER (*Acting Chairman*), PETER SZÜSZ

Associate Professors: WILLIAM D. BARCUS, WILLIAM C. FOX, SAUL KRAVETZ, DONALD WEHN, EUGENE ZAUSTINSKY

Assistant Professors: HAROLD BELL, JOHN FRAMPTON, PAUL G. KUMPEL, JR., Y. Y. OH, HENRY TRAMER

Instructors: RONALD HIRSHON, FRANCIS MCGOWAN, LOUIS PIGNO, JOSEPH SEIF, CHRISTOPHER WASIUTYNSKI

The undergraduate program in mathematics is designed to prepare the student for graduate study in the mathematical sciences, for secondary school teaching, or for certain positions in industry. The required courses provide a common core of instruction in the principal branches of mathematics, while the elective courses allow the student to improve his preparation for more specialized objectives.

Prospective graduate students are advised to elect Mathematics 302 and 331, and to meet the University language requirement in French, German, or Russian. Many graduate schools require two of these three languages.

Prospective secondary school teachers of mathematics must elect Mathematics 321 and are advised to elect Mathematics 331.

The standard one-year sequences creditable toward the Bachelor of Arts or Bachelor of Science requirements are: 111, 112; 101, 102; 101, 112. A student who receives credit for 102 without previously completing 101 is considered to have completed a year sequence for the purposes of this requirement.

Requirements for the Major in Mathematics

In addition to the general University requirements for the Bachelor of Science degree, the following courses are required for the major in mathematics:

Mathematics 102, 103, 155, 156, 201, 202, 232, 301
Mathematics 312 or *Mathematics* 323
Physics 101, 102, or 161, 162
Nine additional credit hours in mathematics courses numbered above 200.

Courses in Mathematics

MAT 101. Elementary Functions

Relations, graphs, functions, Algebraic operations on functions. Analysis of rational, trigonometric and exponential functions. An entering student whose program requires courses in the sequence 102, 103, 155, 156 may, with his advisor's approval, elect this course as a preliminary if his preparation for MAT 102 is inadequate.

Fall, 3 credits

MAT 102. Calculus I

The derivative and integral; fundamental properties, interpretations and computations for elementary functions.

Fall and Spring, 3 credits

MAT 103. Calculus II

Selected applications of the derivative and integral. Computational methods in integration. First order differential equations. Taylor's formula.

Prerequisite: MAT 102.

Fall and Spring, 3 credits

MAT 111. Introduction to Mathematical Science I

Selected topics from logic, probability, elementary functions and analytic geometry. MAT 111, 112 is the year sequence designed for students who are not considering a major field with special requirements in mathematics.

Fall, 3 credits

MAT 112. Introduction to Mathematical Science II

An introduction to the calculus. Differentiation and integration with geometric applications.

Prerequisite: MAT 101 or 111.

Spring, 3 credits

MAT 155. Calculus III

Vector geometry in space. Vector-valued functions on n-space. Elements of the linear algebra of real vector spaces. Introduction to vector calculus.

Prerequisite: MAT 103.

Fall and Spring, 3 credits

MAT 156. Calculus IV

Vector calculus; the differential, Jacobian, directional derivatives, local properties of implicitly defined relations. Multiple integrals; basic properties and applications.

Prerequisite: MAT 155.

Fall and Spring, 3 credits

MAT 201, 202. Advanced Calculus

Elementary point set topology, the topology of metric spaces. Limits, continuity, mean value theorems. The operations of differentiation and integration and their interchange with limits. The implicit function theorem. Surfaces, with an introduction to manifolds. Differential forms. Stokes' theorem. Change of variable in an integral.

Prerequisite: MAT 156.

Fall and Spring, 3 credits each semester

MAT 203. Topics in Calculus I

Ordinary and partial differential equations; Bassel functions, Legendre polynomials and general orthogonal systems of functions. Fourier and Laplace transforms.

Prerequisite: MAT 156.

Fall, 3 credits

MAT 204. Topics in Calculus II

Functions of a complex variable: contour integration, conformal mapping and applications.

Prerequisite: MAT 156. May not be taken for credit in addition to Mathematics 301.

Spring, 3 credits

MAT 205. Probability and Statistics

Sample spaces and distribution functions. The binomial, Poisson, and normal distribu-

tions. Limit theorems. Linear bivariate analysis. Selected tests and estimates.

Prerequisite: MAT 156.

Fall and Spring, 3 credits

MAT 232. Algebra I

The construction of the domain of integers and the rational, real and complex number systems, leading to a consideration of the abstract algebraic structures represented by these systems. Groups and rings together with their homomorphisms and quotient structures, integral domains, particularly unique factorization domains and principal ideal domains, fields and polynomial domains.

Prerequisite: MAT 155.

Fall, 3 credits

MAT 233. Number Theory

Congruences, quadratic residues, quadratic forms, continued fractions, Dophantine equations, number-theoretical functions, and properties of the prime numbers.

Prerequisite: MAT 155.

Fall, 3 credits

MAT 234. Linear Algebra

Vector spaces over fields; linear transformations, the orthogonal and unitary groups, canonical forms for matrices, the spectral theorem, multilinear algebra.

Prerequisite: MAT 232.

Spring, 3 credits

MAT 301. Introduction to Complex Analysis

Holomorphic functions; the Cauchy-Riemann equations, Cauchy's theorem, Taylor series, maximum modulus theorem. Meromorphic functions; Laurent series, the Cauchy residue thereom.

Prerequisite: MAT 202.

Fall, 3 credits

MAT 302. Introduction to Real Analysis

Lebesgue and Lebesgue-Stieltjes measures and integrals and their fundamental properties. Comparison with Riemann integration. Basic properties of L_2.

Prerequisite: MAT 202.

Spring, 3 credits

MAT 312. Introduction to Topology

Basic topological properties; convergence, continuity, compactness, connectedness. Construction of spaces, metrics, local properties, and topics selected from homotopy, covering spaces, simplicial homology.

Prerequisites: MAT 202 and 232.

Fall, 3 credits

MAT 321. Geometric Structures

Formal geometries, their relationship and interpretations; projective, affine, Euclidean and non-Euclidean geometrics. Required of candidates for secondary certification in mathematics.

Prerequisite: MAT 232.

Spring, 3 credits

MAT 323. Introduction to Differential Geometry

Local theory of curves and surfaces in Euclidean space; fundamental forms, curvature, geodesics. Introduction to global differential geometry.

Prerequisite: MAT 202.

Fall, 3 credits

MAT 331. Algebra II

Elementary group theory; composition series, the Sylow theorems, the fundamental theorem of Abelian groups. Field extensions; the splitting field of a polynomial, the fundamental theorem of Galois theory.

Prerequisite: MAT 232.

Fall, 3 credits

MAT 341, 342. Independent Study in Special Topics

A reading course for upperclass students of exceptional ability. The topic is chosen by the student with the advice of a supervising member of the faculty, who will suggest appropriate sources. Weekly conferences are devoted to discussion of the material.

Prerequisite: Permission of the instructor.

Fall and Spring, 3 credits each semester

Graduate Courses

(For details see the *Graduate Bulletin*)

Real Analysis I, II
Complex Analysis
Algebraic Systems I, II
Algebraic Topology I, II
Differential Geometry
Riemannian Geometry
Lie Groups and Lie Algebras
Independent Study

DEPARTMENT OF PHILOSOPHY

Professors: SIDNEY GELBER *(Chairman)*, ROBERT STERNFELD, *HAROLD ZYSKIND

Associate Professor: WALTER WATSON

Assistant Professors: GEOFFREY A. BROGAN, PAUL W. COLLINS, SIDNEY GENDIN

Instructors: DONALD F. GOODMAN, DORIS E. YOCUM

Requirements for the Major in Philosiphy

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are required for the major in Philosophy:

A. *Study within the area of the major*

Two (2) semesters from any of the following courses:
Philosophy 151 (Ethics)
Philosophy 161 or 162 (Logic or Symbolic Logic)
Philosophy 211 (Problems of Esthetics)
Philosophy 237 (Theory of Knowledge)

Two (2) semesters of the following courses:
Philosophy 201 (Major Thinkers: Ancient and Medieval)
Philosophy 202 (Major Thinkers: Modern)

Two (2) semesters from the following:
Philosophy 391, 392 (Advanced Seminar)
Philosophy 393, 394 (Analysis of Philosophic Texts)

In addition: (a) Two (2) semesters from among any 200 courses, with the exception of Philosophy 201, 202, 211 and 237, and (b) two (2) semesters from among any 300 courses, with the exception of Philosophy 345, 346, 391, 392, 393 and 394.

B. *Courses in related areas*

Approved electives outside Philosophy (three semesters)

*On leave academic year 1966-67.

Courses in Philosophy

PHI 151. Ethics

Designed to acquaint the student with the tradition of ethical inquiry and to provide him with some of the intellectual instrumentalities needed to make valid practical judgments. Representative classical and modern works, such as those of Spinoza, Kant, William James, and Sartre, are studied to make clear the character of ethical problems and the principles and methods available for their solution.

Mr. Watson, Miss Yocum

Fall, 3 credits

PHI 161. Logic

The first course in logic concentrates on the subject-matter of logic in the strict sense, i.e., names, prepositions, and inferences, as these are treated by various logicians and used in various areas of knowledge.

Mr. Gendin

Fall, 3 credits

PHI 162. Symbolic Logic

This course covers topics such as: proof and rules of inference of propositional calculus, predicate logic at first order along with related concepts of normal forms, quantification, etc., metalogical concepts of consistency, completeness, decidability of a logical system, etc.

Prerequisite: PHI 161.

Mr. Gendin

Spring, 3 credits

PHI 201. Major Thinkers in the History of Philosophy: Ancient and Medieval

Study of the writings of major thinkers from Plato and Aristotle to such thinkers as Lucretius, Cicero, Augustine, and Aquinas on problems of metaphysics and epistemology. Related problems in other areas are treated when these are an extension or part of the central metaphysical issues.

Prerequisite: Two semesters in Humanities.

Mr. Goodman

Fall, 3 credits

PHI 202. Major Thinkers in the History of Philosophy: Modern

Study of the writings of the major thinkers from Descartes to Kant on the problems of metaphysics and epistemology.

Prerequisite: Two semesters in Humanities.

Messrs. Brogan, Sternfeld

Spring, 3 credits

[PHI 211. Problems of Esthetics]

An introduction to esthetics, examining the range of its problems treated by recent and contemporary authors such as Freud, Clive Bell, Dewey, Santayana and Sartre.

Prerequisite: Two semesters in Humanities.

Mr. Zyskind

Fall, 3 credits

To be offered 1967-68.

PHI 213. Philosophy of Art

Comparative study of various philosophies of art, with emphasis on their application to literature. Such authors are read as Plato, Kant and Croce.

Prerequisite: Two semesters in Humanities.

Messrs. Goodman, Zyskind

Fall, 3 credits

PHI 214. Philosophy of Literary Form

Study of the philosophic bases of such literary concepts as tragedy and comedy and of their relevance to practical experience and history. Such authors are read as Aristotle, Hume, Kant, Nietzsche, Bergson, and Unamuno.

Prerequisite: Two semesters in Humanities.

Mr. Zyskind

Spring, 3 credits

PHI 215, 216. Political Philosophy

An inquiry into the function of philosophic 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: Two semesters in Humanities.

Mr. Gelber

Fall and Spring, 3 credits each semester

PHI 220. Philosophy of History

A critical examination of theories of 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 philosophic writings of such figures as Hegel, Nietzsche, Berdyaev, Collingwood and Randall.

Prerequisites: Two semesters of Humanities and one semester of History.

Messrs. Gelbert, Zyskind

Spring, 3 credits

PHI 228. Philosophy of Religion

An inquiry into the function of philosophic 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: Two semesters in Humanities.

Mr. Goodman

Spring, 3 credits

PHI 235. Philosophy of Science

An inquiry into the function of philosophic principles in the natural sciences, with the focus on concepts such as space, time, causality and life as they are treated in important philosophic and scientific works.

Prerequisite: One year of Natural Science.

Mr. Collins

Spring, 3 credits

PHI 237. Theories of Knowledge

This course consists of a study of a variety of conceptions of the structure of knowledge, the roles of the knower, the various kinds and status of objects known as found in classical and contemporary epistemologies.

Prerequisite: PHI 161.

Mr. Sternfeld

Fall, 3 credits

[PHI 241. Philosophy of Rhetoric]

The nature and role of philosophic principles in determining various theories of rhetoric and propaganda are studied, with attention to the relation of rhetoric to political strategy, psychological manipulation, and literary devices. Such authors are read as Plato, Aristotle, Francis Bacon, Cicero, Machiavelli, and I. A. Richards.

Prerequisite: Two semesters in Humanities.

Mr. Zyskind

Fall, 3 credits

To be offered 1967-68.

PHI 301. Metaphysics

An inquiry into the first principles of all science, art, and action as these are treated in representative classical and modern authors.

Prerequisite: One semester of Philosophy.

Miss Yocum

Fall, 3 credits

[PHI 309. Logical Theory]

This course concentrates on contemporary treatments of logical problems including concepts in the philosophy of science such as truth and proof, and further treats problems in the philosophy of mathematics as these have become merged with those of logic in contemporary philosophies.

Prerequisite: PHI 161.

Mr. Sternfeld

Spring, 3 credits

To be offered 1967-68.

[PHI 310. Contemporary Philosophies of Experience]

This course is a study of recent philosophies which have made important contributions to the study of the concept of experience. Works from such thinkers as Dewey, Bradley, Husserl, James, Whitehead, Bergson, Sartre, Santayana, Heidegger, will be used.

Prerequisite: One semester of Philosophy.

Mr. Sternfeld

Fall, 3 credits

To be offered 1967-68.

PHI 311. Contemporary Philosophies of Language

This course examines the modern attempt to treat all basic problems in terms of language. Readings are from authors such as Ludwig Wittgenstein, J. L. Austin, Martin Heidegger, Richard McKeon, and Rudolph Carnap.

Prerequisite: One semester of Philosophy.

Messrs. Sternfeld, Watson

Spring, 3 credits

PHI 312. Contemporary Value Theory

Examination of the nature and status of value judgments, emphasizing problems of verification. Articles in contemporary literature by Frankenna, Lewis, Browning, Dewey, Hempel, Nagel, Scheffler, White, etc.

Prerequisite: PHI 151 or 237.

Miss Yocum

Spring, 3 credits

PHI 313. Existentialism

Study of the origins and relevance of contemporary existentialist writers. The implication for modern thought of Kierkegaard, Nietzsche and Husserl will be examined Additional readings are from Buber, Camus, Heidegger, Jaspèrs and Sartre.

Prerequisite: One semester of Philosophy.

Messrs. Brogan, Goodman

Fall, 3 credits

PHI 315. American Philosophy

An evaluation of the major contributions in American philosophic thought as reflected in the works of such figures as William James, Josiah Royce, C. S. Peirce, George Santayana, G. H. Mead, Alfred N. Whitehead and John Dewey.

Prerequisite: One semester of Philosophy.

Mr. Gelber

Spring, 3 credits

PHI 345, 346. History and Philosophy of Education

An inquiry into the function of philosophic 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. This course is identical with Education 345, 346 (History and Philosophy of Education.)

Prerequisite: Senior standing.

Messrs. Brogan, Gardner, Goodman, Sternfeld, Watson, Zyskind

Fall and Spring, 3 credits each semester

PHI 391, 392. Advanced Seminar

This course acquaints majors in philosophy with the broad perspectives of philosophy, and they are given a major responsibility for contributing material and subject-matter for discussion. Emphasis is on independent examinations of broad scope covering a wide range of writings unified by a single theme or problem.

Prerequisite: Two courses in Philosophy.

Staff

Fall and Spring, 3 credits each semester

PHI 393, 394. Analysis of Philosophic Texts

Detailed analysis of a major text in philosophy. The course is designed to acquaint philosophy majors with the fundamental discipline of philosophy as a carefully wrought discursive argument which formulates, investigates, and resolves fundamental problems.

Prerequisite: Two courses in Philosophy.

Staff

Fall and Spring, 3 credits each semester

PHI 399. Reading and Research Philosophy

Individually supervised reading and research for senior Philosophy majors. The student prepares a program of work in consultation with the instructor, meets with the instructor at regular intervals throughout the semester, and presents evidence of his accomplishment at the end of the semester. Approval of the instructor must be secured before registering.

Prerequisites: Philosophy major of senior standing and permission of Department.

Staff

Fall and Spring, 1-3 credits each semester

PHYSICAL EDUCATION

Assistant Professors: B. Edson Decker, A. Henry von Mechow (*Acting Director*), Mildred A. Wehrly, John Ramsey

Instructors: Barbara A. Hall, Robert B. Snider

Physical Education Requirement

Two semesters of Physical Education are required for graduation. This requirement may be met by the satisfactory completion of two semester courses in Physical Education, participation in intercollegiate or intramural sports, or by a combination of these three and is to be completed *after* the Freshman year. No credits or grades will be given for Physical Education courses.

Each student must earn a minimum of one hundred points which may be acquired as follows:

A. *Instructional Classes:*
50 points will be awarded for the satisfactory completion of each semester of an instructional class. Course participation will be graded on pass or fail.

B. *Intercollegiate Sports:*
25 to 50 points will be awarded for participation in an intercollegiate sport.

C. *Intramural Sports:*
10 points will be awarded *normally* for satisfactory participation in an intramural sport season.

Students may take courses in Physical Education beyond the two semester requirement without credit.

Courses in Physical Education

Physical Education courses for men are indicated as PEM; courses for women are PEW; those courses that are co-educational are PEC.

PEM 100, 101. Individual and Team Sports

Fall (PEM 100) and spring (PEM 101) courses designed to acquaint students with rules, practice techniques, skills, visual aids and game activity in various individual and team sports. Men's sections for each semester will consist of two sports as scheduled by the Physical Education Office according to the availability of staff and facilities.

Selections will be made from among the following activities:
Touch football, soccer, basketball, volleyball, softball, baseball, wrestling, track, squash, handball, badminton, tennis, gymnastics, golf, physical-conditioning.

Staff

Fall and Spring

PEW 100, 101. Individual Sports

Fall (PEW 100) and spring (PEW 101) courses designed to acquaint students with rules, practice techniques, skills, visual aids and officiating of various individual sports. The fall sports for women (PEW 100) include golf, badminton, and squash. The spring sports (PEW 101) include badminton, tennis and archery.

Misses Hall, Wehrly

Fall and Spring

PEW 102, 103. Team Sports

Fall (PEW 102) and spring (PEW 103) courses designed to acquaint students with rules, practice techniques, skills, visual aids and officiating of various team sports. The fall sports for women (PEW 102) include field hockey, volleyball and basketball. The spring sports (PEW 103) include basketfall, fencing and softball.

Fall and Spring

PEC 111. Recreational Sports

A course designed for students interested in recreational activities and meeting for a double period (2½ hrs.) once a week. Sports included are skiing, bowling and golf. A special fee of $25.00 is necessary for enrollment in this course.

Mr. Ramsey, Miss Wehrly

Spring

PEM 120; PEW 120. Basic Swimming

Separate courses for men and women designed to equip students at the non-swimmer and beginner levels with basic swimming skills and knowledge.

Mr. von Mechow; Miss Hall, Miss Wehrly

Fall and Spring

PEM 121; PEW 121. Intermediate Swimming

Separate courses for men and women designed to equip the novice swimmer with more advanced strokes and water skills.

Mr. von Mechow; Miss Wehrly

Fall and Spring

PEC 122. Advanced Swimming and Life Saving

A course designed to equip the individual with advanced strokes, life saving and water safety skills. A prerequisite is demonstration of a skill level necessary for participation in this course.

Miss Hall

Fall and Spring

PEC 123. Water Safety Instructor

This course is designed to help the student meet the requirements for certification as a Red Cross Safety Instructor.

Prerequisite: PEC 122 or equivalent.

Mr. von Mechow

Spring

PEW 124. Synchronized Swimming

A fundamental course designed to acquaint students with various synchronized swim-

ming stunts, natography and the organization of water ballet.

Prerequisite: Demonstration of skills with approval of instructor.

Miss Hall

Spring

PEW 130. Basic Modern Dance

A study of the fundamentals of modern dance, including an analysis of movement, conditioning techniques and simple compositional forms.

Staff

Fall

PEW 131. Advanced Modern Dance

A study in modern dance composition with intensive experimentation in individual and group choreography.

Staff

Spring

PEW 132. Movement Fundamentals

A basic course designed to orient students with all phases of movement. Course will include the role of exercise, weight control, balance, relaxation, locomotor skills, rhythmic skills, play skills and work skills.

Staff

Fall

PEW 133. Folk and Social Dance

A basic course in dance divided into two phases, folk and social dance. Course will include traditional American and European folk dances and the fundamentals of ballroom dancing.

Staff

Spring

PEW 140. Basic Gymnastics

A basic course covering the four olympic pieces: free exercise, un-even parallels, horse and balance beam.

Staff

Fall

PEW 141. Advanced Gymnastics

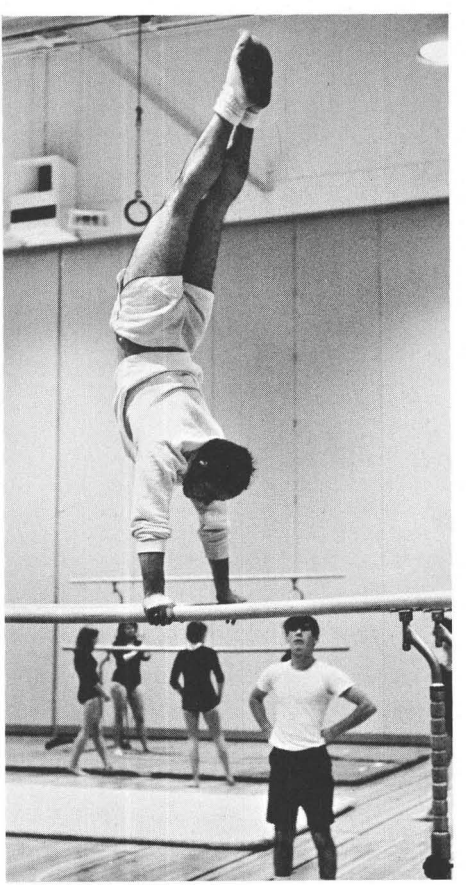
An advanced course covering the four olympic pieces, including adaptation of techniques in compositional performances.

Staff

Spring

Points for Intercollegiate Sports

Baseball	25
Basketball	50
Bowling	25
Crew: Fall, Spring	25, 50
Cross-Country	25
Golf	25
Indoor Track	25
Soccer	25
Squash	50
Swimming	50
Tennis	25
Track and Field	25
Wrestling	50



INTERDEPARTMENTAL PROGRAM IN THE PHYSICAL SCIENCES

The program leading to the Bachelor of Science in Physical Science is a joint undertaking of the Departments of Chemistry and Physics. It is designed primarily as proper preparation for a student intending to teach either chemistry or physics at the high school level. With the permission of the supervising committee, however, a student preparing for advanced work in certain other fields (e.g., medicine, patent law, technical administration, etc.) might also elect this program. The aim of the program is to provide a broader than usual, yet nonetheless substantial, introduction to the content, methods, and current directions of development of the physical sciences.

Requirements for the Major in Physical Science

In addition to the general University requirements for the Bachelor of Science degree, the following courses are required for the major in Physical Science:

Physics 101, 102 and *Physics* 151, 152

Chemistry 101, 102 and *Chemistry* 151, 152

Mathematics 102, 103 and *Mathematics* 155, 156

A grade of C or above in each of these courses is required unless the requirement is waived by the supervising committee.

Physics 351, 352, or an equivalent course in modern physics or chemistry approved by the committee.

One additional year of physics or chemistry.

Certification Requirements

The following are New York State requirements for certification to teach a science at the secondary level:

Two years in the certified subject.

One year each in mathematics, biology, chemistry, physics, and earth science.

Eight hours in the theory and practice of education.

Eight hours in teaching methods and practice teaching.

To satisfy these requirements for certification in both chemistry and physics, a student must take the following courses in addition to the University requirements and major requirements:

Biology 101, 102 or an eight-hour biology equivalent acceptable to the committee

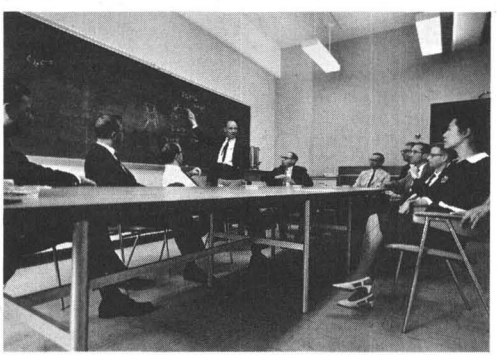
Earth and Space Sciences 101, 102 (Introduction to Earth and Space Sciences)

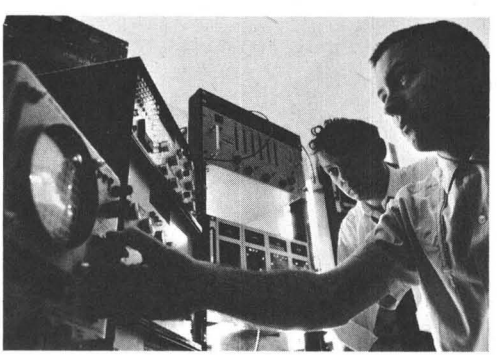
Education 201 (Human Development and Behavior)

Education 345, 346 (History and Philosophy of Education)

Chemistry/Physics 239 (Materials and Methods in Teaching Physical Science)

Education 350 (Practice Teaching)





DEPARTMENT OF PHYSICS

Professors: NANDOR L. BALAZS, MAX DRESDEN*, LEONARD EISENBUD, ARNOLD M. FEINGOLD, DAVID FOX, MAURICE GOLDHABER (Adjunct Professor), EDWARD D. LAMBE, BENJAMIN W. LEE**, LINWOOD L. LEE, JR.***, HERBERT R. MUETHER, T. ALEXANDER POND (*Chairman*), JOHN S. TOLL, CHEN NING YANG† (Einstein Professor)

Associate Professors: ROBERT L. DEZAFRA, PETER B. KAHN, JULIET LEE-FRANZINI, RICHARD A. MOULD, HENRY B. SILSBEE, CLIFFORD E. SWARTZ

Curator of the Physical Laboraory: KARL EKLUND‡

Assistant Professors: DAVID B. FOSSAN, RUDOLPH C. HWA**, YI-HAN KAO

The undergraduate major in physics is designed to serve either as preparation for graduate study in physics, or as a terminal program in preparation for employment in industry or research. While it is substantial preparation for teaching in physics at the secondary level, the more usual route to such certification is the specialty in physics of the Program in Physical Science.

A student intending to qualify for the Bachelor of Science in Physics should complete *Physics* 101, 102, 151, 152, and *Mathematics* 102, 103, 155, 156 by the end of his second year. These constitute necessary preparation for the more intensive and formal required courses of the upperclass major. The latter courses extend his mathematical and experimental competences, and lead serially through classical physics to a senior year in modern physics. Additional elective courses allow further substantial accomplishment in theoretical and experimental physics. Able students with extraordinary preparation may accelerate this program sufficiently to allow inclusion of courses from the Department's graduate offerings in the senior year.

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*Executive Officer, Institute for Theoretical Physics
**Member, Institute for Theoretical Physics
***Director, Nuclear Structure Laboratory
†Director, Institute for Theoretical Physics
‡Associate Director, Nuclear Structure Laboratory

Requirements for the Major in Physics

In addition to the general University requirements for graduation, the following courses are required for the major in Physics:

Physics 101, 102 and 151, 152 (*General Physics*) *
One year of Chemistry (*commonly, General Chemistry*)
Mathematics 102, 103 and 155, 156 (*Calculus*)
Physics 201, 202 (*Electromagnetic Theory*)
Physics 211 (*Thermodynamics, Kinetic Theory and Statistical Mechanics*)
Physics 212 (*Mechanics*)
Physics 235, 236 (*Junior Laboratory*)
Physics 341, 342 (*Modern Physics*)
Mathematics 203, 204 (*Topics in Calculus*)
Foreign Language: The proficiency requirement must be met in French, German, or Russian.

Courses in Physics

PHY 101, 102. General Physics I and II

This course presents a number of the concepts, laws and models of physics in the context of the current use of these ideas. The wide range of utility and insight afforded by a small set of concepts is heavily stressed. The problems are chosen to provide experience in physical reasoning, requiring relatively limited mathematical skill. Basic theories, including the kinematics and dynamics of point particles, the interaction of charges and currents in vacuum, special relativity, and an introduction to quantum phenomena and concepts, are covered. The laboratory program introduces the student to elementary experimental techniques, and provides an opportunity for the observation of the phenomena on which the theory is built. Two lecture hours, one recitation hour, and one three-hour laboratory per week.

Corequisite: Mathematics 102, 103.

Fall and Spring, 4 credits each semester

PHY 151. General Physics III

A further development of the work of PHY 101, 102, particularly extending the physical ideas from one and two particle systems to many particle systems. Topics include rigid body calculations, probability and distribution functions, wave phenomena and electromagnetic radiation. Two lecture hours, one recitation hour, and one three-hour laboratory per week.

Prerequisite: Grade of C or better in PHY 101, 102.

Corequisite: Mathematics 155.

Fall, 4 credits

*In special circumstances students who have taken Physics 161, 162 instead of Physics 101, 102 and 151, 152, will be allowed to work for the Bachelor of Science in Physics. Permission of the Chairman of the Department of Physics is necessary before entering the junior year, and evidence of special proficiency may be required.

PHY 152. General Physics IV A

A further investigation of the quantum domain, including spectra and their classification, duality and uncertainty, superposition, probability amplitude, and special instances of quantum behavior. Two lecture hours, one recitation hour, and one three-hour laboratory per week.

Prerequisite: PHY 151.

Corequisite: Mathematics 156.

Spring, 4 credits

PHY 153. General Physics IV B

A further investigation of the quantum domain, including spectra and their classification, duality and uncertainty, superposition, probability amplitude, and special instances of quantum behavior. Two lecture hours and one recitation hour per week.

Prerequisites: PHY 151 and approval of the Chairman of the Department of Physics and the student's major department.

Corequisite: Mathematics 156.

Spring, 3 credits

PHY 161, 162. Introductory Physics

A survey of general physics designed primarily for students in the College of Arts and Sciences whose subsequent studies will not require extensive use or further development of physical principles. Emphasis is placed on classical dynamics, electricity and magnetism, and on modern developments in atomic structure. The laboratory is devoted to exhibition of phenomena closely related to important physical concepts. The mathematical development is not as intensive as is that of PHY 101, 102, 151, 152. Two hours of lecture, one recitation hour, and one three-hour laboratory per week.

Fall and Spring, 4 credits each semester

PHY 201, 202. Electromagnetic Theory

Primarily for majors in physics. The unification of the elementary forms of the various electromagnetic equations into Maxwell's equations is reviewed, and the theory is then applied to the following topics: static electric and magnetic fields, interaction of the fields with bulk matter, circuit theory, fields in resonant cavities, optics, and interaction of charged particles with electromagnetic fields. The special theory of relativity is also discussed. Three class hours per week.

Prerequisites PHY 151, 152 and Mathematics 155, 156, each with a grade of C or better or permission of the Chairman, Department of Physics.

Corequisite: Mathematics 203, 204.

Fall and Spring, 3 credits each semester

PHY 211. Thermodynamics, Kinetic Theory, and Statistical Mechanics

Designed primarily for majors in physics, 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. Three class hours per week.

Prerequisites: PHY 151, 152 and Mathematics 155, 156, each with a grade of C or better, or permission of the Chairman, Department of Physics.

Corequisite: Mathematics 203.

Fall, 3 credits

PHY 212. Mechanics

Primarily for majors in physics. 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.

Prerequisite: PHY 211, or permission of the Chairman.

Corequisite: Mathematics 204.

Spring, 3 credits

PHY 235, 236. Junior Laboratory

Primarily for majors in physics. The main emphasis is on electrical measurements, electronics and optics, supplementing the material presented in PHY 201, 202. Two three-hour laboratories per week.

Prerequisite: Junior standing.

Corequisite: PHY 201, 202.

Fall and Spring, 3 credits each semester

PHY 239. Materials and Methods in Teaching Physical Science

Designed for prospective secondary school teachers of physics and chemistry, the course emphasizes methods and materials appropriate to the teaching of a physical science at the high school level, and stresses recent curricular developments. Three class hours per week. This course is identical with Chemistry 239.

Prerequisite: PHY 161, 162 or equivalent, Chemistry 101, 102, Mathematics 151, 152 or equivalent, and concurrent study of an intermediate course in either chemistry or physics.

Spring, 3 credits

PHY 241, 242. Electricity and Magnetism

Designed primarily for students in the physical science program, this course treats the basic phenomena and concepts in electricity and magnetism, leading to the formulation of Maxwell's equations. The course emphasizes applications to electric circuits, motors, instruments, generators, and electronics. Some work in physical optics is included. Three lecture hours and one three-hour laboratory per week.

Prerequisites: PHY 161, 162 or PHY 151, 152, and Mathematics 155, 156; or permission of the Chairman, Department of Physics.

Fall and Spring, 4 credits each semester

PHY 341, 342. Quantum Mechanics and Modern Physics

Designed primarily for majors in physics, this course covers topics in atomic and molecular structure, solid state physics, nuclear physics, and elementary-particle physics. The phenomena requiring quantum theoretical descriptions are studied, leading to an introduction to quantum mechanics, which is then used as a tool for the investigation of other topics. Three class hours per week.

Prerequisites: PHY 201, 202, 211 and 212, and Mathematics 203, 204.

Fall and Spring, 3 credits each semester

PHY 343, 344. Methods of Mathematical Physics

This course, designed primarily for majors in physics, 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. Three class hours per week.

Prerequisites: PHY 201, 202, 211 and 212, and Mathematics 203, 204, or permission of the Chairman of the Department of Physics.

Fall and Spring, 3 credits each semester

PHY 345, 346. Senior Laboratory

Primarily for majors in physics. A number of the historic experiments studied in PHY 341, 342 are duplicated, but with the aid of modern instrumentation. During the second term more lengthy projects are explored in depth, with emphasis on development of experimental skills and on professionally acceptable description and analysis of results. Typical projects involve work in atomic and nuclear spectroscopy, the photoelectric effect, beta-ray spectroscopy, magnetic resonance, solid state phenomena, and similar topics. In the second term, students may be called upon to formulate plans for their own experiments, based on readings in journals and reference works. Two three-hour

laboratory sessions per week.

Prerequisite: PHY 235, 236 or permission of the Chairman.

Corequisite: PHY 341, 342.

Fall and Spring, 3 credits each semester

PHY 351, 352. Modern Physics

Primarily for students in the physical science program. A survey of recent developments in physics, including introductions to theories of relativity and of quantum mechanics and consideration of the structure and properties of atomic, molecular, and nuclear systems. Other modern developments, such as the nature of solids, low temperature physics, and plasma physics, will be discussed briefly. Three lecture-recitation hours.

Prerequisite: PHY 241, 242.

Fall and Spring, 4 credits each semester

PHY 391, 392. Research

With the approval of the faculty, a major in the Department 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.

Prerequisite: Permission of the Chairman of the Department of Physics.

Fall and Spring, 2 credits each semester

PHY 393, 394. Tutorial in Advanced Topics

For upperclass 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.

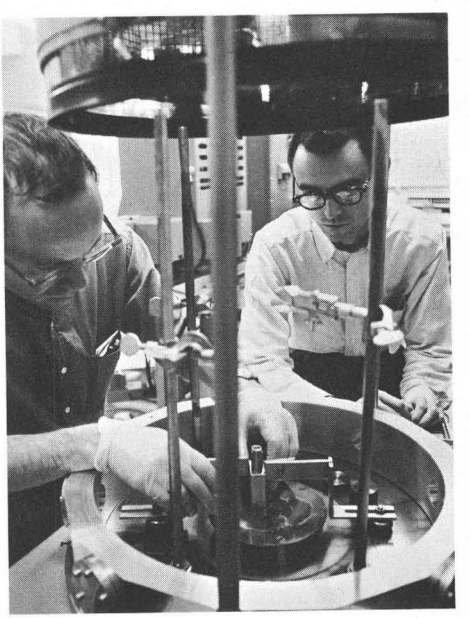
Prerequisite: Permission of the Chairman of the Department of Physics.

Fall and Spring, 2 credits each semester

Graduate Courses

(For details see the *Graduate Bulletin*)

Analytical Mechanics
Electrodynamics
Quantum Mechanics
Statistical Physics
Nuclear Physics
Special Research Projects
Special Study
Solid State Physics
Solid State Theory
Theoretical Nuclear Physics
Advanced Quantum Mechanics
Elementary Particles
Quantum Field Theory
Relativity
Special Topics in Theoretical Physics
Special Topics in Nuclear Physics
Special Topics in Solid State Physics
Thesis Research



DEPARTMENT OF POLITICAL SCIENCE

Professors: MARTIN B. TRAVIS (*Chairman*), JAY C. WILLIAMS, JR.

Associate Professors: HOWARD A. SCARROW, ASHLEY L. SCHIFF, SANFORD A. LAKOFF

Assistant Professor: FRANK E. MEYERS

Instructors: MERTON L. REICHLER, HERBERT H. WERLIN

Requirements for the Major in Political Science

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are required for the major in Political Science:

A. *Study within the area of the major*

Completion of 24 credit hours in political science including:

1. Introduction to *Political Theory, Comparative Government, American Government;*
2. A course in research methods in political science (either *Political Science* 391 or 392);
3. Advanced work, with the consent of the adviser, in courses which emphasize diverse current approaches to political science.

B. *Courses in related areas*

Completion of 9 credit hours in appropriate courses in the social sciences and/or humanities, selected with approval of the adviser. For Education majors *Social Science* 201, 202 and 211, 212 will most easily fulfill these requirements.

Courses in Political Science

POL 101. American Government

This course will cover 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.

Messrs. Reichler, Schiff, Williams

Fall and Spring, 3 credits each semester

POL 102. Comparative Government

An introduction to the analysis of political systems with major examples being drawn from British, Western European, and Soviet systems. Comparison of these systems with each other and with that of the U.S. Emphasis upon the formal institutions of government as well as the dynamics of politics.

Messrs. Myers, Scarrow, Werlin

Fall and Spring, 3 credits each semester

POL 103. International Relations

Introductory survey of the nation-state system, its characteristic forms and the principal forces making for conflict and adjustment. Application of various approaches to the study of international relations (decision making, capability analysis, game theory, field theory) to contemporary problems.

Fall, 3 credits

POL 156. Introduction to Political Theory

The course will examine the treatment given perennial theoretical problems in political theory from Plato to Dewey and McIver. The main emphasis will be placed on such problems as (1) definition of the political community, (2) relation of political institutions to each other, to cultural states, to parts of the community, to varieties and aspects of human nature and to ethical norms, (3) the effect which methods of inquiry have on the definition of problems and relevant data.

Messrs. Lakoff, Williams

Fall and Spring, 3 credits each semester

POL 201. American Political Thought

An analysis of the major policy problems from the Revolution to the present, with the aim of discovering the prevailing concerns, methods, and spirit of American thought in civic matters.

Mr. Williams

Fall, 3 credits

POL 202. 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.

Mr. Williams

Spring, 3 credits

POL 209. Politics in the Developing Areas

Survey of developmental politics in selected emerging nations. Emphasis upon colonial policies prior to independence, nationalistic movements, constitution building, and the emergence of leadership, parties, and interest groups. Comparison of the Western and non-Western political process.

Mr. Werlin

Fall, 3 credits

POL 210. Politics of Tropical Africa

A study of traditional African society, the rise of African nationalism, the transition to independence, and the problems that have arisen since independence. Political parties in Africa, interest groups, local government, regional associations, public administration, political ideology, inter-African and foreign relations will be considered.

Mr. Werlin

Spring, 3 credits

POL 211. Comparative Political Parties and Pressure Groups

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 102 or consent of instructor.

Fall, 3 credits

POL 213. 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.

Prerequisite: POL 102 or consent of instructor.

Mr. Myers

Fall, 3 credits

POL 216. Democratic Politics in Western Europe

Examination of the political process in France, Italy and Western Germany. The course will focus on selected problems, rather than presenting a country-by-country summary. Emphasis will be placed upon the inter-play of institutions, ideas and personalities as they affect the vitality of democratic politics and the future of Western European unity.

Prerequisite: POL 102 or consent of instructor.

Mr. Myers

Spring, 3 credits

POL 221. 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.

Mr. Travis

Fall, 3 credits

POL 223. Latin America and the United States

Survey of the international relations of the Latin America republics; formulation of Latin American policy; relations with the United States and Europe; relations with international organizations (U.N. and O.A.S.); international trade; economic and financial development.

Mr. Travis

Fall, 3 credits

POL 224. 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.

Mr. Travis

Spring, 3 credits

POL 226. Problems in the Politics and International Relations of Latin America

Consideration in depth of selected political problems of Latin America including political parties, decision making processes, political leadership, training and recruitment of administrative personnel, and foreign policies of key Latin American governments.

Prerequisites: POL 223 or History 151 or permission of instructor.

Mr. Travis

Spring, 3 credits

POL 230. American Constitutional Law

A study of the role of the modern Supreme Court within the political and governmental process; its relations with Congress, the Presidency, 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.

Mr. Reichler

Spring, 3 credits

POL 241. Political Attitudes and Propaganda

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 political other determinants of interest and participation levels, and political loyalties; (3) the nature, varieties, and actual effects of propaganda. Some attention will also be given to attitude research methods.

Fall, 3 credits

POL 242. American Political Parties and Pressure Groups

This course examines: (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.

Mr. Scarrow

Spring, 3 credits

POL 244. Private Government

Treats an assortment of significant private groups in the U.S. (corporations, unions, churches, professional associations, radical movements) in terms of their exercise of political power internally and externally. Topics include "shareholder democracy," union democracy, lobbying, church and state and political extremism.

Mr. Lakoff

Fall, 3 credits

POL 250. Bureaucracy and Public Administration

Intended for students interested in a public service career. 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.

Mr. Schiff

Spring, 3 credits

[POL 251. 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. The significance of technological innovation, value orientations, and economic welfare analysis in giving direction to policy planning.

Mr. Schiff

Fall, 3 credits

To be offered 1967-68.

POL 253. State and Local Government

Roles of states in the federal system. Federal-state, inter- and intra-state relations, urbanization and the growth of metropolitan communities. Urban politics and decision making in selected policy areas.

Mr. Schiff

Fall, 3 credits

[POL 255. Government and Science]

Impact on society of advances in science and technology. Public policy regarding contracting for research and development, grants to universities for research and training. Coordination and control of science policy by the executive and Congress. The role of scientists in foreign policy.

Mr. Lakoff

Fall, 3 credits

To be offered 1967-68.

POL 391. Research Methods in Political Science: American Political Institutions

Contributions and limitations of several approaches to and methods of the study of American politics and government, e.g., those emphasizing historical and institutional development, those focusing on interest and power conflicts, those analyzing political decision-making, and those concentrating on behavioral and interdisciplinary data; and the values of each approach in the quest for valid generalizations and predictions.

Mr. Reichler

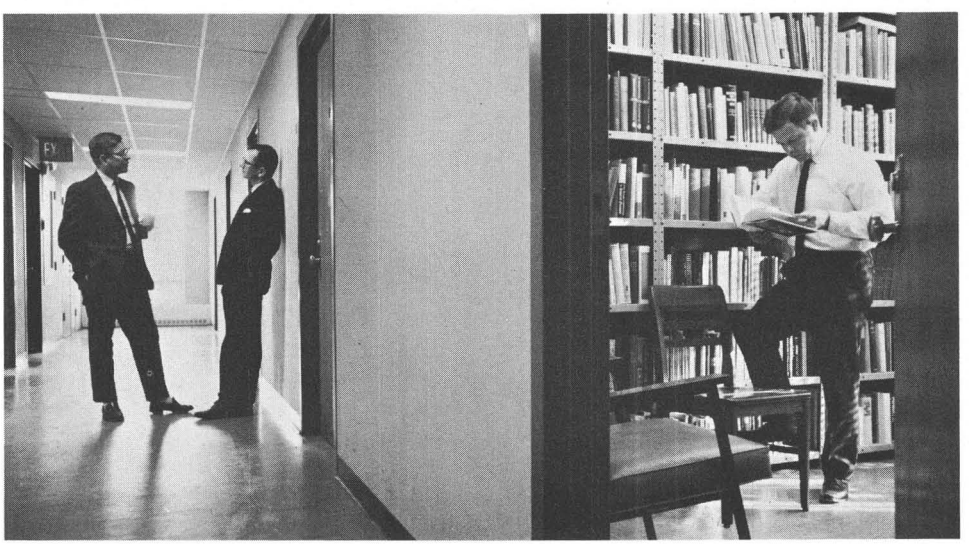
Fall, 3 credits

POL 392. Research Methods in Political Science: Comparative Politics

Approaches to the study of political systems with emphasis upon comparative analytical schemes, and upon comparison of specific institutions and patterns of behavior. Attention will also be devoted to the development of the study of comparative politics, including methods and problems of cross-governmental (international and intranational) and cross-cultural comparison.

Mr. Scarrow

Spring, 3 credits



DEPARTMENT OF PSYCHOLOGY

Professors: HARRY I. KALISH *(Chairman)*, LEONARD KRASNER

Associate Professors: LEWIS PETRINOVICH, MARVIN LEVINE

Assistant Professors: ELIO BRUSCHI, THOMAS J. D'ZURILLA, EDWARD M. EISENSTEIN, MARVIN R. GOLDFRIED, STANLEY J. WEISS

Requirements for the Major in Psychology

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are required for the major in Psychology:

A. *Study within the area of the major*

Completion of 25 Units in Psychology

Psychology 101. *(General Psychology)*
Psychology 102. *(Learning and Motivation)*
Psychology 162. *(Statistical Methods in Psychology)*
Psychology 205. *(Experimental Psychology)*

12 credit hours in Psychology electives, only six to be chosen from 300 level courses.

B. *Courses in related areas*

The Department requires that students take 15 credits of courses related to Psychology. The student will select these courses in consultation with his advisor.

Courses in Psychology

PSY 101. General Psychology

An introduction to psychology as the science of behavior, this course familiarizes the student with the major areas of behavior: conditioning, learning, perception, motivation, psychological development, personality, and measurement. Stress is placed on contemporary research. Prerequisite to all other courses in psychology.

Staff

Fall, 3 credits

PSY 102. Learning and Motivation

A critical examination of the basic concepts, empirical findings, and theoretical interpretations in the experimental study of learning and motivation.

Prerequisite: PSY 101.

Mr. Levine

Fall and Spring, 3 credits each semester

PSY 162. Statistical Methods in Psychology

Designed to provide the student with a knowledge of the use and interpretation of elementary statistical techniques in research. Emphasis is placed on descriptive statistics, correlational analysis, and inferential statistics, including chi-square, critical ratio, t, F, and certain selected non-parametric techniques. Two lecture sessions and a one-hour laboratory each week.

Prerequisite: PSY 101, 102.

(PSY 102 may be waived with permission of instructor.)

Mr. Kalish

Fall and Spring, 3 credits each semester

PSY 205. Experimental Psychology

Application of the experimental method to the analysis of behavioral phenomena in human beings and animals. Design and execution of experiments, in conditioning, learning, perception, motivation, conflict, and certain selected personality problems. One lecture, one seminar and one two-hour laboratory period per week.

Prerequisites: PSY 101, 102, and permission of the instructor.

Messrs. Petrinovich, Weiss

Fall and Spring, 4 credits each semester

PSY 208. Theories of Personality

Contemporary theories of personality will be studied with emphasis on the experimental literature pertaining to personality development. Current methods of personality assessment in the applied areas will also be considered.

Prerequisite: PSY 101.

Mr. Goldfried

Fall, 3 credits

PSY 209. Social Psychology

Behavior, and methods of studying behavior in groups and social situations will be considered. The topics will include communication, behavior in large and small groups, opinion and attitude measurement and change, and social interaction.

Prerequisite: PSY 101 (possible prerequisite or corequisite PSY 162).

Spring, 3 credits

PSY 210. Empirical and Theoretical Studies of Social Conflict

Classical and current views of social conflict will be considered. Emphasis will be placed on recent empirical and mathematical studies, and a number of laboratory exercises will illustrate contemporary methods in the study of social conflict. The views of Plato, Machiavelli, and others will be compared and contrasted with current empirical and theoretical work.

Prerequisites: PSY 101, and permission of the instructor.

Spring, 3 credits

PSY 211. Development and Adolescent Psychology

A study of the hereditary, maturational and learning factors responsible for the personality development of the human organism

from birth through adolescence. Emphasis will be on the theoretical research aspects of social learning from the point of view of modified behaviorism and modern cognitive social psychology.

Prerequisite: PSY 101, or permission of Department Chairman.

Messrs. Bruschi, D'Zurilla

Fall, 3 credits

PSY 215. Abnormal Psychology

The major categories of psychopathology, including the neuroses and functional and organic psychoses, will be examined. Emphasis will be placed on an analysis of current research in psychopathology and its relationship to the theories of abnormal behavior.

Prerequisite: PSY 101.

Messrs. Goldfried, Kalish, Krasner

Fall and Spring, 3 credits each semester

PSY 244. Comparative Psychology

This course will be concerned with the phylogenetic distribution and evolution of both learned and unlearned behavior patterns with an emphasis on the former. Such phenomena as kineses, taxes, instinct, respondent and operant conditioning, generalization and discrimination will be considered.

Prerequisites: PSY 101 and Biology 101 or equivalent.

Mr. Eisenstein

Fall, 3 credits

PSY 330, 331. Research in Psychology

Selected senior majors in Psychology will be offered a laboratory apprenticeship. The work consists of laboratory or field work by the student under the direct supervision of a faculty member in the Department of Psychology.

Prerequisite: Advanced standing in Psychology and written permission of the faculty supervisor.

Staff

Fall and Spring, 1 to 3 credits each semester

PSY 332, 333. Readings in Psychology

Senior majors in Psychology will be afforded the opportunity to read selectively under the guidance of a faculty member.

Prerequisites: Major in Psychology, senior standing and permission of Department Chairman.

Staff

Fall and Spring, 1 to 3 credits each semester

PSY 340. Physiological Psychology

This course will consider in detail the evolution of the nervous system with an emphasis on integrative processes and their relationship to behavior.

Prerequisites: PSY 101, 102, and Biology 101, or equivalent.

Mr. Eisenstein

Spring, 3 credits

PSY 352. History and Systems of Psychology

The history and present status of conceptual trends in Psychology. The development of psychological principles and theories will be traced from the early Greek philosophers, through the European philosophers and empiricists to their embodiment in contemporary psychological theory.

Prerequisite: Nine credits of Psychology.

Mr. Petrinovich

Spring, 3 credits

PSY 391, 392, 393. Special Topics in Psychological Research and Theory

A seminar to be offered to selected senior majors and to be organized by the faculty member who will deal with current research and theory in areas of special interest to him. Topics will be announced prior to the beginning of each semester.

Prerequisites: PSY 101, 102, 162 and 205, and permission of the instructor.

Staff

Fall and Spring, 3 credits each semester

DEPARTMENT OF ROMANCE LANGUAGES AND LITERATURES

Professors: Oscar A. Haac (*Acting Chairman*)

Associate Professors: Linette F. Brugmans, Herman Iventosch, Leonard R. Mills

Assistant Professors: Harriet R. Allentuch, Frederick Brown, Donald Petrey, Joseph Tursi, Benkt Wennberg

Instructors: Salome Benedict, Carol K. Blum, Lisa Davis, Alfred Ehrenfeld, Gemma Roberts, Alexandra Rakowsky, Georges Turkewicz

Requirement for the Major in Spanish and French

In addition to the general requirements for the Bachelor of Arts degree, the following courses are required for the major in Spanish or French (no major is offered in Italian or Portuguese at this time):

A. *Study within the area of the major*

1. 18 semester hours in one foreign language in courses numbered 300 or above; in French the course 321 is required.
2. All students who major in a foreign language will be required to achieve proficiency in a second foreign language.

B. *Courses in related areas*

18 semester hours in related courses with the approval of the departmental advisor.

C. *Teaching Certification*

Students who wish to prepare for certification as secondary school teachers must take the courses in education required for certification in addition to Sections A and B. They will also be required to earn 6 credits in a conversation and composition course in the language they intend to teach. The three

credits in "Methods and Materials in the Teaching of Foreign Languages" and the 12 credits of a second foreign language may, at the discretion of the Department, be counted toward the fulfillment of the related field requirements.

Placement in Language Courses for Incoming Freshmen

Students continuing the study of a foreign language started in high school will be placed in the appropriate college course by a placement examination; however, after two years of high school preparation, they will receive no graduation credit for the first course (111) in the same language and after three years of high school preparation they will receive no credit for the first two courses (111, 112) in the same language.

Courses in French

FRN 100. Reading French

A course to help graduate students and others to attain a basic reading knowledge of French.

Prerequisite: None.

Mr. Turkewicz

Fall, no credit

FRN 111, 112. Elementary French

An introduction to spoken and written French, stressing pronounciation, speaking, comprehension, reading, and writing. Selected texts will be read. Practice in the language laboratory supplements class work.

Prerequisite: None.

Mr. Mills and Staff

Fall and Spring, 3 credits each semester

FRN 211, 212. Intermediate French

An intermediate course in the reading and interpretation of French texts, with a review of French grammar, composition, and conversation. The student gains an acquaintance with the various literary genres through examples drawn from representative French authors. Work in the language laboratory will further develop audiolingual skills.

Prerequisite: FRN 112, or equivalent.

Mr. Wennberg and Staff

Fall and Spring, 3 credits each semester

FRN 221, 222. French Conversation and Composition

This is a course in the active use of spoken and written French. At least one hour per week of work in the language laboratory is required.

Prerequisites: FRN 212 or language "proficiency" or equivalent, and permission of instructor.

Mrs. Brugmans and Staff

Fall and Spring, 3 credits each semester

FRN 231, 232. Major Writers in French

Reading and interpretation of selected works by great French writers from the Middle Ages to the present day. These works are treated in the context of the history of French literature, so that the student is prepared for further literary study. This course is conducted in French.

Prerequisite: FRN 212, or equivalent.

Mrs. Allentuch, Mr. Wennberg

Fall and Spring, 3 credits each semester

FRN 321. Advanced French Conversation, 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 two hours of weekly laboratory practice will be required.

Prerequisites: FRN 221, 222, or junior or senior standing, and the permission of the instructor.

Mrs. Brugmans

Fall, 3 credits

FRN 322. Advanced French Grammar and Composition

A course designed to acquaint students with the subtelties of French grammar and style. Extensive practice in composition and in translation from English to French.

Prerequisites: FRN 221, 222, or junior or senior standing, and the permission of the instructor.

[FRN 335, 336. French Literature in the 17th Century]

Reading of selected masterpieces from *Le Grand Siècle*. The study of classicism and of the main literary genres of the period will be included.

Prerequisite: FRN 231, 232, or equivalent.

Mrs. Allentuch

Fall and Spring, 3 credits each semester

To be offered 1967-68.

FRN 337, 338. French Literature in the Eighteenth Century

Reading of selected works from representative authors of the main literary genres of the eighteenth century, including the *philosophes* and their forerunners. Attention will also be given to the development of the drama and the novel.

Prequisite: FRN 231, 232, or equivalent; FRN 337 is a prerequisite for FRN 338.

Mr. Haac

Fall, 3 credits

FRN 341, 342. Poetry since Baudelaire

A study of the major poets and "schools" since Romanticism, with discussion of changing poetic practices and doctrines. Critical readings in Baudelaire, Rimbaud, Mallarmé, Verlaine, Valéry, Apollinaire, St. John Perse, and others, with explication of individual poems.

Prerequisite: FRN 231, 232, or equivalent.

Fall and Spring, 3 credits each semester

FRN 345, 346. Modern French Fiction

Critical reading and interpretation of French fiction in the 20th century, with emphasis on the work of such masters of French prose as Proust, Gide, Malraux, Sartre, Camus.

Prerequisite: FRN 231, 232, or equivalent.

Fall and Spring, 3 credits each semester

FRN 361, 362. Nineteenth Century French Literature

The various *genres* will be examined through the works of the century's greatest writers. Critical readings and discussion of Romanticism, Realism, Symbolism, Naturalism.

Prerequisite: FRN 231, 232, or permission of the instructor.

Fall and Spring, 3 credits each semester

Courses in Italian

ITL 111, 112. Elementary Italian

An introduction to spoken and written Italian, stressing pronounciation, speaking, comprehension, reading, and writing. Selected texts will be read. Practice in the language laboratory supplements class work.

Prerequisite: None.

Fall and Spring, 3 credits each semester

ITL 211, 212. Intermediate Italian

An intermediate course in the reading and discussion of selected Italian texts. An inten-

sive grammar review with practical language laboratory exercises will offer an opportunity to develop conversational ability.

Prerequisites: ITL 112, or equivalent.

Fall and Spring, 3 credits each semester

Courses in Portuguese

POR 111, 112. Elementary Portuguese

An introduction to spoken and written Portuguese, stressing pronounciation, speaking, comprehension, reading and writing. Selected texts will be read. Practice in the language laboratory supplements class work.

Prerequisite: None.

Staff

Fall and Spring, 3 credits each semester

Courses in Spanish

SPN 111, 112. Elementary Spanish

An introduction to spoken and written Spanish, stressing pronounciation, speaking, comprehension, reading, and writing. Selected texts will be read. Practice in the language laboratory supplements class work.

Prerequisite: None.

Staff

Fall and Spring, 3 credits each semester

SPN 211, 212. Intermediate Spanish

An intermediate course in the reading and interpretation of Spanish texts with a review of Spanish grammar, composition, and conversation. The student gains an acquaintance with the various literary genres through examples drawn from representative Spanish authors. Work in the language laboratory will further develop audiolingual skills.

Prerequisites: SPN 112, or equivalent.

Fall and Spring, 3 credits each semester

SPN 221, 222. Spanish Conversation and Composition

This is a course in the active use of spoken and written Spanish. At least one additional hour per week of work in the language laboratory is required.

Prerequisites: SPN 212 or language "proficiency" or equivalent and permission of instructor.

Fall and Spring, 3 credits each semester

SPN 231, 232. Major Writers in Spanish

The reading and interpretation of selected works by great Spanish writers from the Middle Ages to the present day. These are treated in the context of the history of Spanish literature, so that the student is prepared for further literary study. This course is conducted in Spanish.

Prerequisites: SPN 212, or equivalent.

Mr. Iventosch

Fall and Spring, 3 credits each semester

SPN 333, 334. Major Writers in Spanish America

The reading and interpretation of selected works by representative writers of Spanish America. This course is conducted partly in Spanish.

Prerequisites: SPN 212, or equivalent.

Fall and Spring, 3 credits each semester

SPN 337. Spanish Prose of the Golden Age Except Cervantes

An examination of the major prose genres, beginning with the *Celestina,* and including the Chivalresque, Picaresque, and Pastoral narrations, as well as some consideration of Mystic and Historical prose.

Mr. Iventosch

Fall, 3 credits

[SPN 338. Spanish Poetry of the Golden Age]

This course will offer an examination in depth of Spanish poetic literature from the late Middle Ages to the Baroque, from the

Cancioneros to Gongora.

Mr. Iventosch

Spring, 3 credits

To be offered 1967-1968.

SPN 340. Cervantes

A consideration of the literary career of Cervantes including lyrics, theater, novels, short stories, and *Don Quixote.*

Mr. Iventosch

Spring, 3 credits

SPN 361. Spanish Literature of the 18th and 19th Centuries

A brief glance at the Eighteenth Century will be followed by an examination of the major writers and movements of the Nineteenth, including Romanticism, Realism, Naturalism, and Modernism.

Mr. Iventosch

Fall, 3 credits

Other Courses

Foreign Languages 239. 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. Prerequisite: Junior standing.

Mr. Flaxman

Fall, 3 credits

Linguistics 301. Introduction to Linguistics

A course encompassing the theory of language from Panini to the present. Some time will be devoted to comparative and historical linguistics, but the emphasis will be placed on descriptive linguistics and applied linguistics in the classroom. The course will include practical descriptive work in the language laboratory.

Prerequisites: Junior or senior standing as a major in English or a foreign language.

Mr. Ruplin

Spring, 3 credits

Comparative Literature 348. The Theory of Comparative Literature

The Theory of Comparative Literature will view the field of comparative literature from various aspects in an attempt to give the student an understanding of what comparative literature study means and what it involves. This will include an examination of the leading theories of comparative literature.

Prerequisites: The completion of at least two full courses in English literature, the third year of a course in a foreign language, or its equivalent, and senior standing.

Mr. Flaxman

Spring, 3 credits

See also listings under World Literature

INTERDEPARTMENTAL COURSES IN SOCIAL SCIENCE

SSC 201, 202. Topics in the Policy Sciences: Economic Development Programs and the World Struggle for Power

The themes to be treated include the spreading industrial revolution in the underdeveloped areas of the world and cultural tradition and social-political conflict in the modernization of the new nations. The political relations of the United States and the U.S.S.R. will provide the background of the readings and discussions. Either semester may be taken separately.

Staff

Fall and Spring, 3 credits each semester

SSC 211, 212. Topics in the Cultural-Behavioral Sciences

An analysis of selected cultural institutions of modern complex societies with particular emphasis upon the wide-spread search for cultural and individual identity. The principal themes to be studied in the methods of contemporary socio-cultural analysis will be: (1) value-orientations in an era of scientific revolution, economic affluence, and political uncertainty; (2) the social organization of the "image industries" and other cultural enterprises.

Staff

Fall and Spring, 3 credits each semester

SSC 239. Materials and Methods in Teaching Social Studies

This course emphasizes the methods and materials appropriate to the teaching of a broad range of subject matter in the social sciences at the high school level. It is designed for prospective secondary school teachers of social studies.

Prerequisite: Permission of the Chairman of the student's major department.

Staff

Fall, 3 credits

SSC 381, 382. Problems and Methods in Social Theory and Social Science

Social Science 381 will emphasize problems in the scope and method of the policy sciences. Social Science 382 will emphasize problems in the scope and method of the cultural-behavioral sciences.

Prerequisite: Either semester may be taken concurrently with SSC 201, 202, or 211, or subsequently. Social Science 382 may be taken prior to 381.

Staff

Fall and Spring, 3 credits each semester

DEPARTMENT OF SOCIOLOGY

Professors: KURT LANG (*Acting Chairman*), BENJAMIN NELSON, *HANAN C. SELVIN

Assistant Professors: ABRAHAM S. BLUMBERG, NORMAN GOODMAN

Instructors: M. HERBERT DANZGER, NED H. POLSKY

Requirements for the Major in Sociology

In addition to the general University requirements for the Bachelor of Arts degree, the following courses are required for the major in Sociology.

A. *Study within the area of the major*

Sociology 101 (American Dilemmas) *or*
Sociology 102 (Culture, Person, Social System, Community)

Sociology 151 (Systematic Sociology)

Sociology 201 (Research Methods in Sociology)

Sociology 361 (Historical Development of Contemporary Sociology)
Sociology 362 (Sociology Today)

At least fifteen additional credit hours in Sociology on the 200-level or above.

B. *Courses in related areas*

At least six credit hours in related social science disciplines (200-level or above) in consultation with the departmental advisor.

The department recommends that the language proficiency requirement be ordinarily met in French or German.

*On leave 1966-67 academic year.

Courses in Sociology

SOC 101. American Dilemmas: Problems of Present Day Society and Culture

This course will explore with the aid of a wide variety of sources and methods the main value dilemmas and problems of the present day as they have been influenced by the contemporary revolutions in science, technology, communication, transport, organization, expectations, and cultural attitudes. Themes to be considered include: pressures in the direction of mass society, automation, the missile and space races, cultural homogenization, collectivistic controls, elites of experts, individual identity.

Staff

Fall and Spring, 3 credits each semester

SOC 102. Culture, Person, Social System, Community

The topics to be explored from a structural-functional point of view include: patterns of culture; determinants of clan, caste, status, role, meaning, and social action systems; the social factors in the production and distribution of desired social values; the promise and paradoxes of collective effort and bureaucratic organization; the life-cycle of individual and group in industrial and non-industrial societies; cultural processes; the effects upon the sense of community of changes in the religious, scientific, and educational spheres.

Staff

Fall and Spring, 3 credits each semester

SOC 151. Systematic Sociology: Principles, Methods and Perspectives

This course will direct the attention of students to the central frames of reference, the productive techniques, and the unsolved problems of the scientific study of behavioral and cultural institutions, which has made giant strides in the last two decades.

Prerequisite: SOC 101 or 102.

Staff

Fall and Spring, 3 credits each semester

SOC 161. Ethnic Group Relations

This course will take up theories of the formation, migrations, and conflicts of ethnic and minority groups; basic research on the phenomena of prejudice, discrimination, minority self-hatred and on the relations of ethnic group conflicts to nationalism and totalitarianism. Within this framework, the stress will be placed on recent American developments.

Prerequisite: SOC 151 or permission of instructor.

Mr. Danzger

Fall, 3 credits

SOC 201. Research Methods in Sociology

An introduction to modern methods of social-cultural research, emphasizing the design, interpretation and critique of a wide variety of research procedures.

Prerequisite: SOC 151 or permission of instructor.

Mr. Goodman

Spring, 3 credits

SOC 203. Social Stratification

Consideration of alternative theories of social stratification; patterns of differentiation in wealth, prestige, and power; the emergence of class, status, and power groups; the indicators and consequences of social class position; class consciousness, social mobility, power structures and elites.

Prerequisite: SOC 151 or permission of instructor.

Messrs. Danzger, Polsky

Spring, 3 credits

SOC 204. Courtship, Marriage and the Family

An examination of the structure and functions of a basic institution in contemporary American society; concern with the problems of courtship, mate-selection and engagement, the processes of marital adjustment, the responsibilities and opportunities of parent-

hood, and family crises in contemporary American society.

Prerequisite: SOC 151 or permission of instructor.

Mr. Goodman

Fall and Spring, 3 credits each semester

SOC 207. Social Problems

This course explores the ways in which social definitions of social problems emerge and change. Stress will be placed upon the varying scope and intensity of social problems in shifting settings of economic scarcity and abundance, socio-cultural integration and dissension. The topics include poverty and affluence, dilemmas in organization of education, population imbalances, generational conflict, homicide and suicide, racial and ethic relations, structural and functional unemployment, prostitution and addiction.

Prerequisite: SOC 151 or permission of instructor.

Mr. Polsky

Spring, 3 credits

[SOC 209. Social Conflicts and Movements]

An examination of aggregate phenomena: basic elements in social movements and conflict; conformity and deviant behavior in mass society; "revolutionary" and "counter-revolutionary" programs and organizations. Historical and cross-cultural illustrations will be stressed.

Staff

Fall, 3 credits

SOC 235. Sociology of Religion

An examination of the ways in which sociocultural processes are influencing and being influenced by the organizations and belief systems of the historic world religions and their denominational variants. Changing structures and functions of religious institutions in the present era of accelerated modernization; ecumenical tendencies; recent religious trends in the U.S. since World War II.

Prerequisite: SOC 151 or permission of instructor.

Mr. Nelson

Fall, 3 credits

SOC 236. Technology, Industrialization Social Change

A comparative analysis of the interrelations between technological and social change, of technological and organizational preconditions of economic development, and of the social implications of automation in highly industrialized countries.

Staff

Fall, 3 credits

SOC 237. Sociology of Deviance and Delinquency

The course examines juvenile and adolescent vandalism, chronic truancy, theft, gang violence, sex offenses, drug use, and other forms of deviance in complex societies, as these relate to social structure and social change. Competing theories of delinquency causation and prevention are tested against historical and cross-cultural as well as contemporary American empirical data. Alternative research methods are considered in detail.

Mr. Polsky

Spring, 3 credits

SOC 238. Self, Society, Culture and Mental Health

A critical survey interpretation of the self, and its predicaments and powers in contemporary society and social science. Ongoing sociological research on community mental health profiles and programs will be reviewed.

Mr. Nelson

Spring, 3 credits

SOC 239. Sociology of Crime

Crime in relation to social structure and social processes. Major emphasis is to be on the nature of crime, the significant features of crime causation, criminal life-styles and behavior systems (e.g.: organized crime, white-collar crime, sex offenses, and homicide); the effects of differential law enforcement, and the existing and proposed methods of crime control.

Prerequisite: SOC 151.

Messrs. Blumberg, Polsky

Spring, 3 credits

SOC 241. Social Psychology: Sociological Perspectives

The themes to be explored include: the influence of social and cultural factors on the personality development; group influences upon perception, memory, judgment, motivation, attitudes, the formation of social norms, communication processes, conformity, and deviance. Stress will be placed on the relation of theory and current research and experiment.

Prerequisite: Sociology 151 and Psychology 101 or permission of instructor.

Mr. Goodman

Fall, 3 credits

SOC 251. Work and the Professions

The world of work and the professions is examined with particular reference to inter-organizational conflict and accommodation.

Prerequisite: SOC 151 or permission of instructor.

Mr. Blumberg

Fall, 3 credits

SOC 254. Sociology of Law

A sociological analysis of law as a form of social control with particular emphasis on the legal profession (bar and bench), the functioning of the court system, the bureaucratization of the legal process; comparisons of systems of civil and criminal justice, and the relation of law to social change.

Prerequisite: SOC 151.

Mr. Blumberg

Spring, 3 credits

[SOC 256. Political Sociology]

Stress will be placed on current research and unresolved problems in the spheres of power, authority, and legitimacy.

Prerequisite: SOC 151 or permission of instructor.

Staff

Spring, 3 credits

[SOC 260. Comparative Social Structures and Institutions]

A systematic study, with a strong historical emphasis, of the central institutions and social formation of the principal complex societies. In particular, highly industrialized nations such as the United States, Great Britain, Germany, and the Soviet Union will be compared with one another and with the newly developing states in respect to patterns of institutional persistence and change, emerging status-role and value conflicts.

Prerequisite: SOC 151 or permission of instructor.

Staff

3 credits

SOC 262. Mass Communications

Particular attention is directed to the sociological patterns affecting recruitment of personnel, organization of services, and public functions of mass communication facilities.

Prerequisite: SOC 151 or permission of instructor.

Mr. Lang

Spring, 3 credits

SOC 263. Collective Behavior

Examination of major unstructured social phenomena (e.g., mob violence, panic, diffusion of fads and fashions, public opinion) as the outcome of collective problem-solving activity. The emphasis will be on a broad theoretical framework illustrated by case studies.

Prerequisite: SOC 151 or permission of instructor.

Mr. Lang

Fall, 3 credits

SOC 281. Sociology of Organizations

This course will focus on structural features of organizational systems: chains of command, life-staff conflicts, organizational goals and performances, patternings of cooperation and conflict, status symbols, legal guarantees and grievance procedures.

Prerequisite: SOC 151 or permission of instructor.

Messers. Blumberg, Lang

Fall, 3 credits

SOC 284. Social Roles and Role-Systems

Following a review of the extensive current sociological research on role, attention will be directed to alternate arrangements and functions of roles in historical contemporary, and cross-cultural contexts.

Prerequisite: SOC 151 or permission of instructor.

Mr. Nelson

Spring, 3 credits

SOC 287. Sociology of Education

Stress will be placed on the following themes: the effects of social and cultural imperatives on the missions assumed by educational institutions; secondary schools and collegiate centers as social systems; the impact of the "knowledge revolution" on the changing definitions of educational facilities: social-cultural patterns in the life-cycle of students and teachers; social-class and ethnic factors in educational developments.

Prerequisite: SOC 151 or permission of instructor.

Messrs. Goodman, Lang

Spring, 3 credits

SOC 358. War and Military Institutions

A survey of "military sociology" with special attention to the role of violence in social affairs. Topics to be covered are military organization, civil-military relations, and mobilization for and the conduct of war under varying social conditions.

Prerequisite: SOC 151 and senior standing.

Mr. Lang

Fall, 3 credits

SOC 361. Historical Development of Contemporary Sociology

A survey of the main currents in the development of theories and empirical investigation of society, culture, personality. The authors studied include Adam Smith, Hegel, Saint-Simon, Comte, Feuerbach, Marx, Maine, Spencer, Burckhardt, Tylor, W. R. Smith, Toennies, Durkheim, Dilthey, Simmel, Pareto, Freud.

Prerequisite: SOC 151 or permission of instructor.

Mr. Nelson

Fall, 3 credits

SOC 362. Sociology Today

A review of the recent contemporary advances in research, theory, and method in the field of sociology, especially in Great Britain and the United States. The authors studied include W. G. Sumner, T. Veblen, W. F. Ogburn, C. H. Cooley, G. H. Mead, R. E. Park, R. Linton, T. Parsons, R. K. Merton, C. Wright Mills, G. Homans, E. Goffman, K. Davis and others.

Prerequisite: SOC 151 or permission of instructor.

Messrs. Danzger, Nelson

Spring, 3 credits

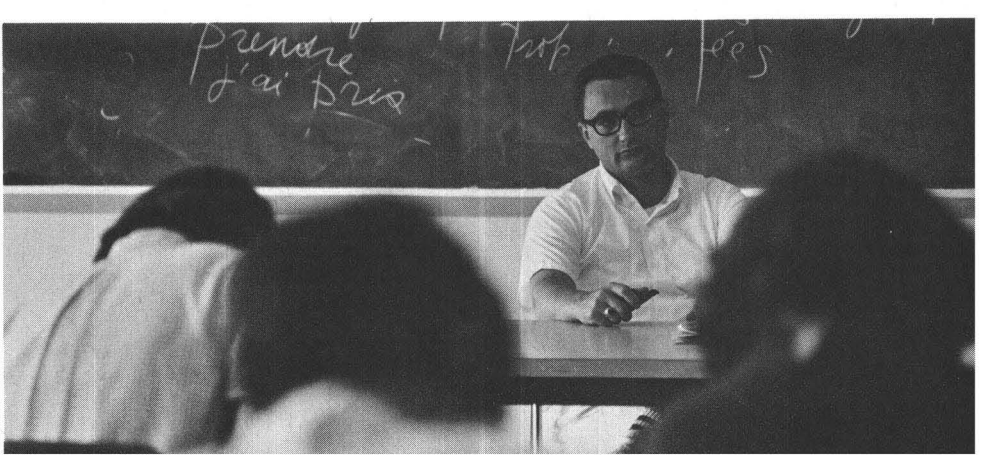
SOC 391, 392. Senior Seminar in Sociology

Special projects and research papers each semester on a general topic chosen in terms of faculty and student interest.

Prerequisite: Permission of departmental chairman.

Staff

Fall and Spring, 3 credits each semester



INTERDEPARTMENTAL COURSES IN WORLD LITERATURE

WL 296. Studies in the Epic

Selected epics and other major narrative poems, such as the works of Homer, Virgil, Dante, Tasso, *Beowulf*, or the Norse sagas. The specific poems to be considered will be announced prior to each offering of the course.

Spring, 3 credits

WL 346. The Modern European Drama

A critical examination of the development of dramatic literature in Europe from Ibsen to Anouilh, including a comparative study of such movements as Naturalism, Neo-Romanticism, and Expressionism.

Mr. Flaxman

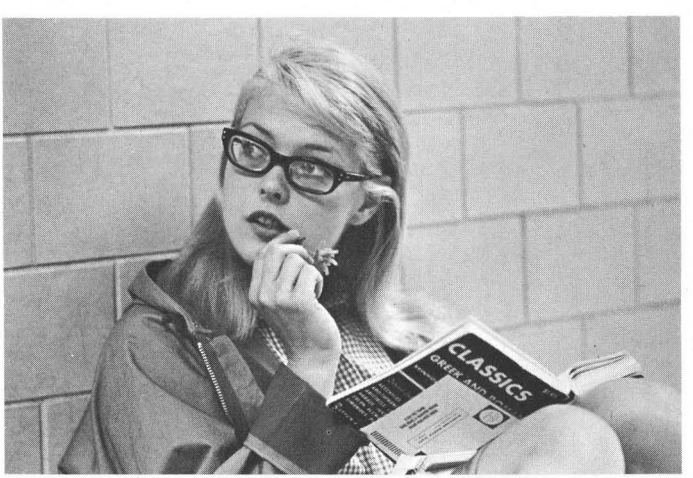
Spring, 3 credits

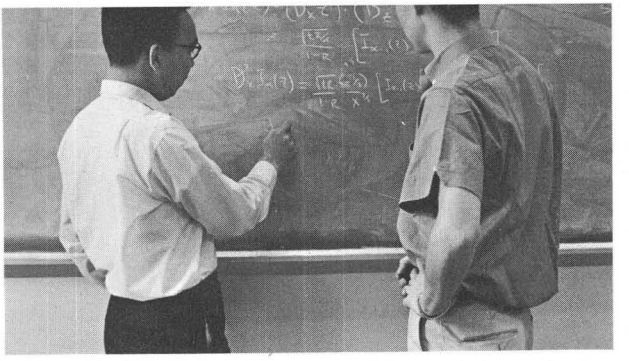
WL 395. The European Novel

Selected masterpieces of European fiction, such as the novels of Stendhal, Balzac, Dostoevsky, and Tolstoy.

Mr. Kazin

Spring, 3 credits





COLLEGE OF ENGINEERING

Program in Engineering Science

The undergraduate program in engineering science consists of intensive study in the basic sciences of mathematics, physics and chemistry as well as comprehensive work in the engineering sciences of fluid mechanics, solid mechanics, thermodynamics, electrical theory, applied analysis and properties of matter. In addition, the curriculum embraces broad training in the humanities, social sciences, and communications.

Traditional engineering departments are not represented at the State University at Stony Brook since engineering science is concerned with areas of knowledge which are fundamental to all of the conventional engineering fields and by its nature seeks to avoid overtraining in existing engineering techniques and applications. A degree of specialization in particular engineering areas is provided in the senior year through elective courses and senior projects.

Engineering experiences in the last decade have indicated that engineers today must have a new depth and breadth of scientific knowledge to cope with the problems of a rapidly changing technology. The undergraduate engineering program is designed to provide this fundamental scientific background and to develop engineers who can creatively translate the knowledge of basic science into engineering results.

Programs of graduate work with specialization in the various Engineering Departments are offered. (For further information see the *Graduate School Bulletin.*)

Requirements for the Bachelor of Engineering Degree

A student will be recommended by the Faculty for the degree upon completion of the requirements listed in sections 1, 2, and 3 below.

1. Required courses: Credit for, or exemption from, each of the following is required of all candidates:

Chemistry 103, 104	8 credits
English 101, 102	6 credits

Humanities	6 credits
Mathematics 102, 103, 155, 156	12 credits
Physics 101, 102, 151	12 credits
Social Science	6 credits
Physical Education	2 semesters

(Courses in Physical Education are to be completed *after* the Freshman Year.)

2. Elective requirement: 6 credits are normally required in the sophomore year in the areas of the humanities, (including foreign language courses numbered 150 and above), and the social sciences. An additional 6 credits are required in the senior year and can be taken in any area of study. With the approval of his academic adviser, a student may substitute the 7th-semester Open Elective for the 4th-semester Non-Technical Elective. In this case the Non-Technical Elective must be taken in the 7th semester.

3. Concentration requirement: Every student must meet the requirements of a program of concentration in Engineering Science approved by the Curriculum Committee of the College of Engineering.

4. Unless an alternate program is approved by the College of Engineering Curriculum Committee, every student admitted without advanced standing is required during the freshman year to register for:
ESG 100, 101
English 101, 102
Two semesters of Humanities
Mathematics 102, 103
Physics 101, 102
Two semesters of Social Science

Courses to meet the Humanities requirement are to be chosen from the following:

Humanities 103, 104, 105, 106, 113, 114, 115, 116, 121, 122, 123.

There is no prescribed sequence nor prerequisite for any of the *Humanities* courses.

Courses to meet the Social Science requirement are to be chosen from the following:

Anthropology 101, 102
Economics 101, 102
History 101, 102
Political Science 101, 102
Psychology 101, and any *Psychology* course for which the prerequisites have been fulfilled.
Sociology 101, 102

5. Exemptions: On the recommendation of the Chairman of the appropriate Department, a student is exempted without credit from any of the course requirements specified in sections 1 or 4 above.

Undergraduate Sequence

First Year

1st Semester	*Credits*	*2nd Semester*	*Credits*
ESG 100 Principles of Engineering I	0	ESG 101 Principles of Engineering II	0
English 101	3	English 102	3
Humanities	3	Humanities	3
Mathematics 102	3	Mathematics 103	3
Physics 101	4	Physics 102	4
Social Science	3	Social Science	3
	16		16

Second Year

1st Semester	*Credits*	*2nd Semester*	*Credits*
†ESG 162 Introduction to Digital Computers	3	†ESG 151 Graphic Arts	3
Chemistry 103	4	ESG 161 Mechanics I	3
Mathematics 155	3	Chemistry 104	4
Physics 151	4	Mathematics 156	3
Elective (Non-Technical)	3	*Elective (Non-Technical)	3
	17		16

*May be reversed with permission of adviser.
†May be taken in either 1st or 2nd semester.

Third Year

1st Semester		*Credits*
ESG 221	Applied Analysis I	3
ESG 251	Electrical Sciences I	3
ESG 232	Material Sciences I	3
ESG 263	Mechanics II	3
ESG 201	Thermodynamics I	3
ESG 211	Engineering Laboratory I	2
		17

2nd Semester		*Credits*
ESG 222	Applied Analysis II	3
ESG 252	Electrical Sciences II	3
ESG 233	Material Sciences II	3
ESG 202	Thermodynamics II	3
ESG 212	Engineering Laboratory II	4
		16

Fourth Year

1st Semester		*Credits*
ESG 334	Material Sciences III	3
ESG 364	Mechanics III	3
ESG 305	Heat and Mass Transfer	3
ESG 340	Engineering Design I	1
	Elective (Technical)	3
	*Elective (Open)	3
		16

2nd Semester		*Credits*
ESG 323	Applied Analysis III	3
ESG 353	Electrical Sciences III	3
ESG 341	Engineering Design II	5
	Elective (Technical)	3
	Elective (Open)	3
		17

Courses of Instruction

Course designations are abbreviated according to the following scheme:

ESG: Required Undergraduate Courses
ESA: Courses offered by the Department of Applied Analysis
ESE: Courses offered by the Department of Electrical Sciences
ESM: Courses offered by the Department of Material Sciences
ESC: Courses offered by the Department of Mechanics

May be reversed with permission of adviser.

The numbering of courses will indicate the year in which they are normally taken:

101–150: freshman courses
151–199: sophomore courses
201–299: junior courses
301–399: senior courses
501–699: graduate courses

Required Undergraduate Courses

ESG 100, 101. Principles of Engineering I, II

The purpose of this course is to acquaint the freshman engineering student with the type of problems that are encountered in modern engineering practice. Meetings will be devoted to classroom sessions concerning typical engineering problems, as well as lectures by the engineering faculty and outside lecturers from industry. Finally, every student will be required to prepare a brief essay on some general engineering topic.

No credit

ESG 151. Graphic Arts

A broad introduction to the principles of graphic art. Attention is paid to the perspective and projection problems connected with architectural and mechanical subjects, to rendering techniques, to drawing in mixed media, and to the achievement of speed and accuracy. Class work covers free-hand drawing and sketching through finished drawing using mechanical drafting tools and lettering. At each stage the student studies and discusses the work of such artists as Uccello, Da Vinci, Dürer, Fulton and Morse.

Prerequisite: None.

Six laboratory hours.

To be offered both semesters.

3 credits

ESG 161. Mechanics I: 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 and Lagrange's formulation of the equations of motion.

Prerequisite: Physics 151.

Corequisite: Mathematics 156.

3 credits

ESG 162. Introduction to Digital Computers

An introduction to concepts of problem solving on a digital computer with emphasis on analyzing the problem, determining the solution process and coding the problem for solution on the digital computer. A problem oriented language (FORTRAN) serves as the communication medium. Fundamental concepts of computer logic are also introduced, with emphasis on computer organization, number representation, arithmetic operations, and the fundamental postulates of Boolean algebra.

Prerequisites: Sophomore standing and Mathematics 102, 103.

Two lecture hours, one laboratory hour.

To be offered both semesters.

3 credits

ESG 201. Thermodynamics I

An introduction to the concepts of energy, information, and states of matter with engineering applications is presented. The elementary concepts of information theory are considered as primitive and basic. The formalism of equilibrium statistical thermodynamics based on maximum uncertainty is developed from Shannon's equation for uncertainty. The classical, macroscopic equations of thermostatics (Zeroth, First, Second, and Third Laws) are derived from the formalism. The ideal monatomic gas temperature, equations of state, and generalized thermodynamic property relationships by the method of Jacobians are considered.

Prerequisites: Mathematics 156, Physics 151, Chemistry 104.

3 credits

ESG 202. Thermodynamics II

The formalism developed in Thermodynamics I is applied to the open system, equilibrium and the grand potential function, chemically reactive systems, cycles, and an introduction to the thermodynamics of irreversible processes.

Prerequisite: Thermodynamics I.

3 credits

ESG 211. Engineering Laboratory I: 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.

One lecture hour, three laboratory hours.

Prerequisite: Junior standing.

2 credits

ESG 212. Engineering Laboratory II: Engineering Experimentation

The study of electronic instrumentation in scientific research is continued. Additional considerations are: establishing the experimental environment, introduction to, and uses of, dimensional analysis, pure empiricism and its uses, details of methods of experimental analysis, including experimental planning, data analysis and interpretation of results, selected experimental examples and problems which supplement the lectures. Individual projects are encouraged.

One lecture hour, nine laboratory hours.

Prerequisite: Engineering Laboratory I.

4 credits

ESG 221. Applied Analysis I

Analogues; modelling and normalization techniques; characteristic value problems with the use of matrices; transient analysis; Fourier series and Fourier transform; review of one-sided Laplace transform with use of tables for transform inversion; transforms of operations; solutions of linear differential equations and of simultaneous equations of this type; applications to various physical lumped systems.

The probability concept; sample spaces; distribution functions and density functions; random variables; expectation; variance; correlation.

Prerequisites: Mathematics 155, 156.

3 credits

ESG 222. Applied Analysis II

Formulation and classification of basic partial differential equations; the Laplace operator in generalized orthogonal coordinate systems; Laplace's equation. Poisson's equation, heat equation, and wave equation in x, y, z and t; telegrapher's equation in x and t. Boundary-value and initial-value problems; separation of variables; Sturm-Liouville problem; divergence theorem; Green's function. Use of Fourier series, Fourier transforms, and Laplace transform. Consideration of Bessel functions (first and second kind), Legendre polynomials, and Mathieu functions.

Review of complex numbers, functions of a complex variable, limits, continuity, differentiability, analytic functions, Cauchy-Riemann, harmonic functions, Cauchy's integral formula, Cauchy's integral theorem, Taylor's series, singularities, residues.

Prerequisite: Applied Analysis I.

3 credits

ESG 232. Material Sciences I: Introduction to Properties of Materials

A broad introduction to the scientific principles underlying knowledge of materials and their applications.

The course begins with an introduction to chemical thermodynamics, modern atomic theory, the periodic table and chemical bonds, the perfect crystal, the space lattice, unit cell, x-ray crystal structure determination, specific crystal structures, the imperfect crystal, dislocations, the basic concepts of phase transformation and phase diagrams. The course then continues with principles of electrochemistry, corrosion, colloids and high polymers.

Prerequisite: Physics 151.

3 credits

ESG 233. Material Sciences II: Electrical and Magnetic Properties of Materials

This course is designed primarily as an introduction to the modern theory of the electrical and magnetic properties of matter. Some of the topics discussed include the free electron theory of metals, the bond theory of solids (Brillouin Zone theory and applications), the conductivity of metals, the physics of semiconductors, pn junction theory, photoelectric, thermoelectric, magnetic and dielectric properties of matter.

Prerequisite: Material Sciences I.

3 credits

ESG 251, 252. Electrical Sciences I, II

These two courses together comprise a unified introduction to passive and active lumped circuit theory. Basic circuit concepts, theorems, and methods of analysis are developed first in terms of simple resistive circuits with d.c. excitation, then extended to encompass complex impedance and steady state response to single frequency excitation, then further extended to encompass periodic and transient excitation and response, and finally to encompass simple circuits containing ideal active and/or non-linear elements. Physical phenomena giving rise to the internal behavior of various solid state, vacuum and gas filled devices are discussed. Particular emphasis is given to the manner in which such internal behavior gives rise to externally observable terminal behavior, of how the terminal behavior may be approximated by combinations of ideal circuit elements, and of the practical procedures to be followed for analysis and design when the ideal model approximations are inadequate. Specific types of circuits such as filters, rectifiers, amplifiers and pulse circuits are singled out for illustrative examples.

Prerequisites: Mathematics 156, Physics 102.

Corequisite: Applied Analysis I.

3 credits each semester

ESG 263. Mechanics II: Mechanics of Solids

An introduction to the mechanics of engineering structures and the techniques used in analyzing such structures. Topics include: stress resultants and stress intensities; equilibrium and stability analysis of beams and trusses; elastic deformations due to axial forces and bending moments with emphasis on the conjugate beam method; energy principles including virtual work, Castigliano's Theorems, Betti's Law and Maxwell's Law; and an introduction to statically indeterminate structures with emphasis on the method of superposition, Conjugate Beam, and Virtual Work.

Prerequisite: Mechanics I.

Corequisite: Applied Analysis I.

3 credits

ESG 305. Heat and Mass Transfer

The fundamental laws of momentum, heat and mass transfer are discussed, and the corresponding transport coefficients are examined for gases using elementary kinetic theory. Principles of steady-state and transient heat conduction in solids are investigated. The analyses of laminar and turbulent boundary layer flows are treated, as well as condensation and boiling phenomena. Thermal radiation, including the analogy between molecular and photon transport, is discussed. Radiation heat transfer between surfaces is treated, as well as the derivation and appli-

cation of the radiation flux equation for absorbing-emitting media.

Prerequisite: Thermodynamics II.

Corequisite: Mechanics III.

3 credits

ESG 323. Applied Analysis III: Numerical Methods

Arithmetic of approximation; round-off error; significant figures. Polynomial approximation; interpolation and finite differences; least squares, orthogonal sets, Fourier-Bessel coefficients, Legendre polynomials, Fourier series; Tchebycheff approximation. Numerical solution of linear and nonlinear systems of algebraic equations. Numerical differentiation. Numerical integration. Numerical solution of ordinary differential equations. Numerical solution of partial differential equations (Laplace's two-dimensional equation only). The use of these techniques in solving linear and nonlinear differential equations. Use of the computer in applying these numerical techniques.

Prerequisite: Applied Analysis II.

3 credits

ESG 334. Material Sciences III: Physical Properties of Matter

This course builds on the concepts presented in Material Sciences I and provides an introduction to the physical properties of matter. Among the topics covered are: anisotropy in crystal structure; crystal imperfection theory; atomistic and bulk approach to elasticity, plasticity and fracture of solids.

Prerequisite: Material Sciences I.

3 credits

ESG 340. 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.

1 credit

ESG 341. Engineering Design II

Student groups carry out the detailed design of the senior projects chosen during the first semester. The finished report must be presented and defended before a faculty committee.

5 credits

ESG 353. Electrical Sciences III

The fundamentals of electromagnetic theory. The topics include: elements of vector analysis, Maxwell's equations, static fields, lumped circuit and field concepts, quasistatic fields and distributed constant, transmission lines, plane waves, guided waves radiation, wave guides and antennas.

Prerequisites: Applied Analysis II, Electrical Sciences II.

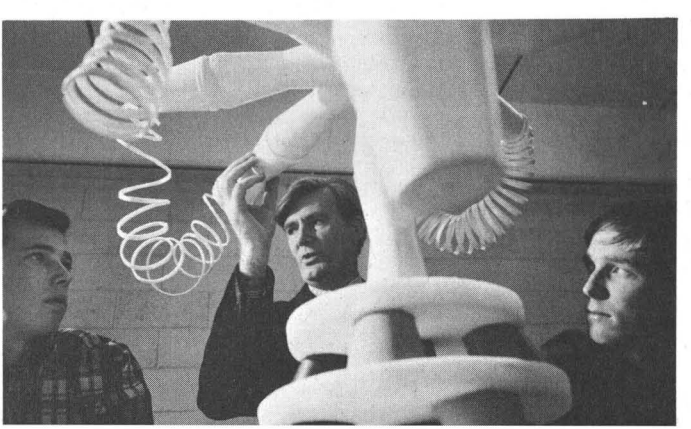
3 credits

ESG 364. Mechanics III: Mechanics of Fluids

Cartesian tensors, state of stress in a continuum, kinematics of fluids, the Newtonian fluid and constitutive equations for other fluids, the continuity equation, equation of motion, energy equation, entropy equation, fluid statics, flow of an ideal fluid, flow of a viscous fluid.

Prerequisites: Applied Analysis II, Mechanics II.

3 credits



DEPARTMENT OF APPLIED ANALYSIS

Professors: AARON FINERMAN (*Director of Computing Center*), IRVING GERST (*Chairman*), ARMEN H. ZEMANIAN

Associate Professors: DANIEL DICKER, DEVIKUMARA V. THAMPURAN

Assistant Professor: REGINALD P. TEWARSON

Departmental Electives

ESA 316. Special Functions of Applied Analysis

A study of the more common higher mathematical functions which are required for the analytical solution of engineering and scientific problems. The Bessel, Legendre, hypergeometric and Mathieu functions are among those to be considered. Topics include: orthogonal sets of functions, recursion formulas, series solution of linear differential equations, Fourier-Bessel expansions, asymptotic expansions, functional equations, application to boundary-value and initial-value problems.

Prerequisite: Applied Analysis II.

3 credits

ESA 320. Introduction to Applied Probability Theory

Elements of combinatorial analysis. Random variables and expectations. Laws of large numbers. The central limit theorem and its applications. Recurrent events and Markov chains. Applications to information theory, methods of coding, queueing problems, theory of games, problems of strategy, decision making, etc.

Prerequisite: Applied Analysis I.

3 credits

ESA 321. Introduction to Statistics

Basic statistical concepts. Probability. Distribution functions and moment generating functions. Frequency distributions. Central limit theorem. Sampling. Regression and correlation. Analysis of variance. Testing of hypotheses. Applications to interpretation of engineering and industrial data by means of statistical methods, curve fitting, methods of quality control, and preparation and use of control charts, reliability, various experimental designs, estimation of response relationships, determination of optimum conditions.

Prerequisite: Applied Analysis I.

3 credits

ESA 322. Introduction to Stochastic Processes

An introduction to the study of random phenomena in engineering. Pertinent concepts such as random variables, probability distributions, mean values, characteristic functions, spectral density and stochastic processes are developed and applied to problems in noise theory, propagation through linear systems, information theory and quality control.

Prerequisite: Introduction to Applied Probability Theory.

3 credits

ESA 330. Linear Programming

Formulation of linear programming models. The Simplex Method and its variations. The Duality Theorem. Sensitivity analysis. Solution of practical problems in blending, transportation, etc. with the help of computer.

Prerequisites: Introduction to Digital Computers, Applied Analysis I.

3 credits

DEPARTMENT OF ELECTRICAL SCIENCES

Professor: SHELDON S. L. CHANG *(Chairman)*

Associate Professors: PETER M. DOLLARD, RICHARD B. KIEBURTZ, VELIO A. MARSOCCI

Assistant Professor: HANG-SHENG TUAN

Departmental Electives

ESE 315. Introduction to Feedback Control Theory

The study of automatic control theory is initiated in this course. Primarily concerned with the analysis of linear feedback systems, the course deals with the transient response and stability of such systems. The techniques employed are the transfer function method and various methods of graphical analysis such as Nyquist diagrams, Bode plots and root locus procedure. The synthesis of feedback control systems is covered in an introductory manner.

Prerequisites: Thermodynamics I, Electrical Sciences I and II, Mechanics I.

3 credits

ESE 317. Logic and Switching

The course introduces the basic principles of modern digital computer and automata technology. Topics covered will include propositional logic and Boolean algebra; canonical forms; applications to diode, relay and electronic switching networks; combinational circuits; sequential circuits; and special topics selected by the students. The latter might include unifunctional and multifunctional circuit design principles, digital computers, or automata.

3 credits

ESE 319 Transistor Circuit Analysis

An introduction to the use of transistors in electronic circuits. Among the topics will be: circuit representations, measurement of transistor parameters, small signal amplifiers, frequency and time-domain response functions, tuned r-f amplifiers, the use of feedback to improve performance, oscillators, large-signal amplifiers and switches, modulation and detection circuits. The course includes a laboratory on alternate weeks.

3 credits

ESE 335. Energy Conversion

Natural energy sources. Basic laws of energy conversion. Transport theory in gas and semiconductors. Operating principles, losses, and preliminary analyses of the electromechanical, magnetohydrodynamic, thermoelectric, thermionic, fuel cell, and photo-voltaic energy converters.

3 credits

DEPARTMENT OF MATERIAL SCIENCES

Professors: SUMNER N. LEVINE *(Chairman)*, LESLIE L. SEIGLE

Associate Professor: JOSEPH JACH

Assistant Professors: ADISHWAR L. JAIN, KALINATH MUKHERJEE, ROBERT ROSENBERG

Departmental Electives

ESM 325. X-Ray Diffraction and Structure of Matter

The primary objective of this course is to provide a fundamental insight into crystal diffraction and application to structural studies. Laboratory work will be incorporated to illustrate measurement techniques. Included will be the following general topics: lattice scattering of x-ray radiation, structural defect scattering mechanisms and effects on diffraction patterns, structure identification, single crystal orientation studies including stereographic projection, and a survey of advanced modern techniques for use of x-ray diffraction as a research tool.

Prerequisite: Material Sciences I.

3 credits

ESM 326. Quantum Theory of Matter

Quantum mechanics has assumed a position of considerable importance in modern engineering. This course provides an introduction to the subject and considers applications to semiconductors, lasers, theory of electrical conduction and other relevant applications.

Prerequisites: Mathematics 156, Physics 151.

3 credits

ESM 327. Semiconductor Theory and Technology

A detailed discussion of the preparation and properties of semiconductors. The theory of thermal and electrical transport is developed in detail and applied to semiconductor electronic devices and thermoelectric devices. The photoelectric and Hall effects are then discussed and applied to measurement technique as well as to devices.

Prerequisite: Material Sciences II.

3 credits

ESM 328. Nuclear Technology and Materials

This course covers broadly the field of nuclear engineering and emphasizes the principles which form the basis of today's knowledge of nuclear materials. The course covers such topics as radioactivity, fission, reactor theory and materials, radiation effects and shielding, industrial applications of nuclear energy and the general use of radiation.

3 credits

ESM 329. Biomedical Engineering

This course provides a systematic and basic development of the engineering principles applicable to medicine and biological systems. The subject matter will be developed in terms of the following basic disciplines: 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. Appli-

cations will be provided to bioastronautics, artificial organs, environmental control, man-machine systems, and the simulation of biological systems.

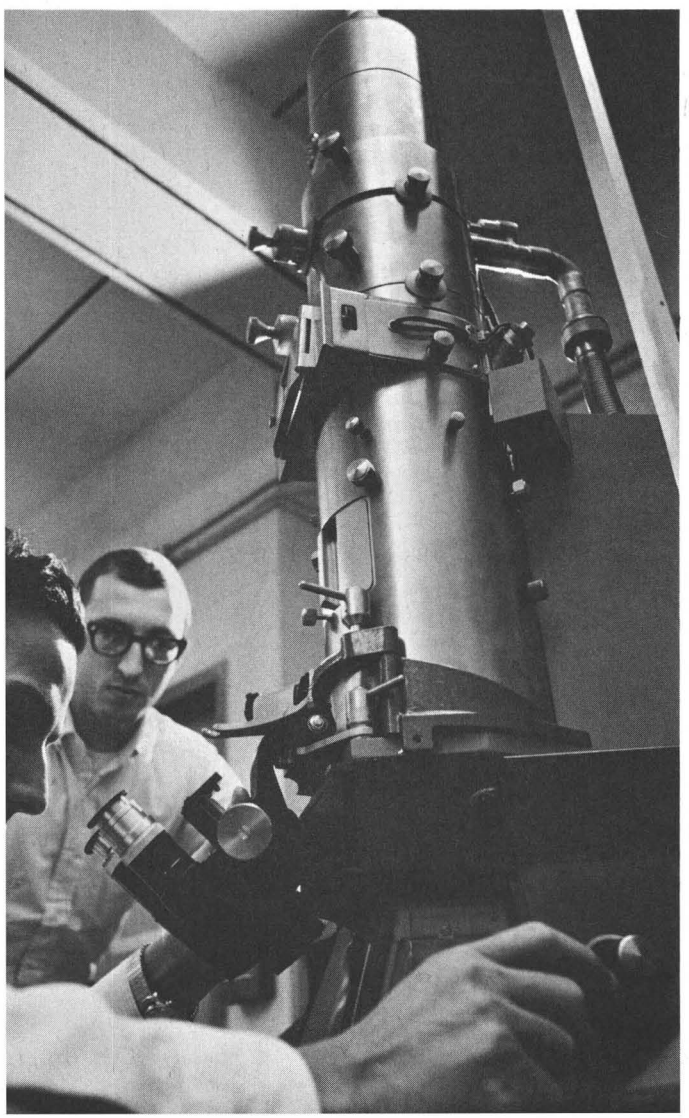
3 credits

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 to be 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, commercial polymer production and processing.

Prerequisite: Material Sciences I.

3 credits



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Associate Professors: RICHARD SHAO-LIN LEE, EDWARD E. O'BRIEN

Assistant Professor: LIN-SHU WANG

Lecturer: JOSEPH J. SHEPPARD

Instructors: JOSEPH T. PEARSON, JR., ARTHUR E. SOTAK

Departmental Electives

ESC 366. Thermal Sciences & Fluid Mechanics Laboratory

Advanced projects in heat transfer, thermodynamics or fluid mechanics to be selected individually by the student or in collaboration with a staff member. The project will be carried out by individuals or small groups under staff supervision. Nine laboratory hours by arrangement.

3 credits

ESC 371. Compressible Fluid Mechanics

The general conservation equations of gas dynamics are derived from a differential and integral point of view. Hyperbolic compressible flow equations, unsteady one-dimensional flows, the nonlinear problems of shock wave formation, isentropic plane flow, small perturbation theory, method of characteristics, and the hodograph method are considered as representative applications of the general equations.

Prerequisite: Thermodynamics II.

3 credits

ESC 372. Boundary Layer Theory

The Navier-Stokes equations and their subsequent reduction to the boundary layer equations are discussed. General properties of the boundary layer equations, conditions for similarity, exact solutions, and approximate methods are treated. The fundamentals of turbulent flow are discussed with application of the mixing length theories to turbulent boundary layers.

Prerequisite: Mechanics III.

3 credits

ESC 375. Continuum Fluid Dynamics

A discussion of the fundamental concepts and theorems of continuum fluid dynamics and a detailed formulation of the general conservation equations of the fluid field. The state, transport, and chemical kinetic properties of the fluid are introduced with their phenomenological coefficients. The mathematical features of the fundamental field equations and the types of applicable boundary conditions are discussed. Examples of specific boundary conditions and simplifying assumptions are treated which reduce the general equations to the "starting equations" for various fields of fluid dynamics.

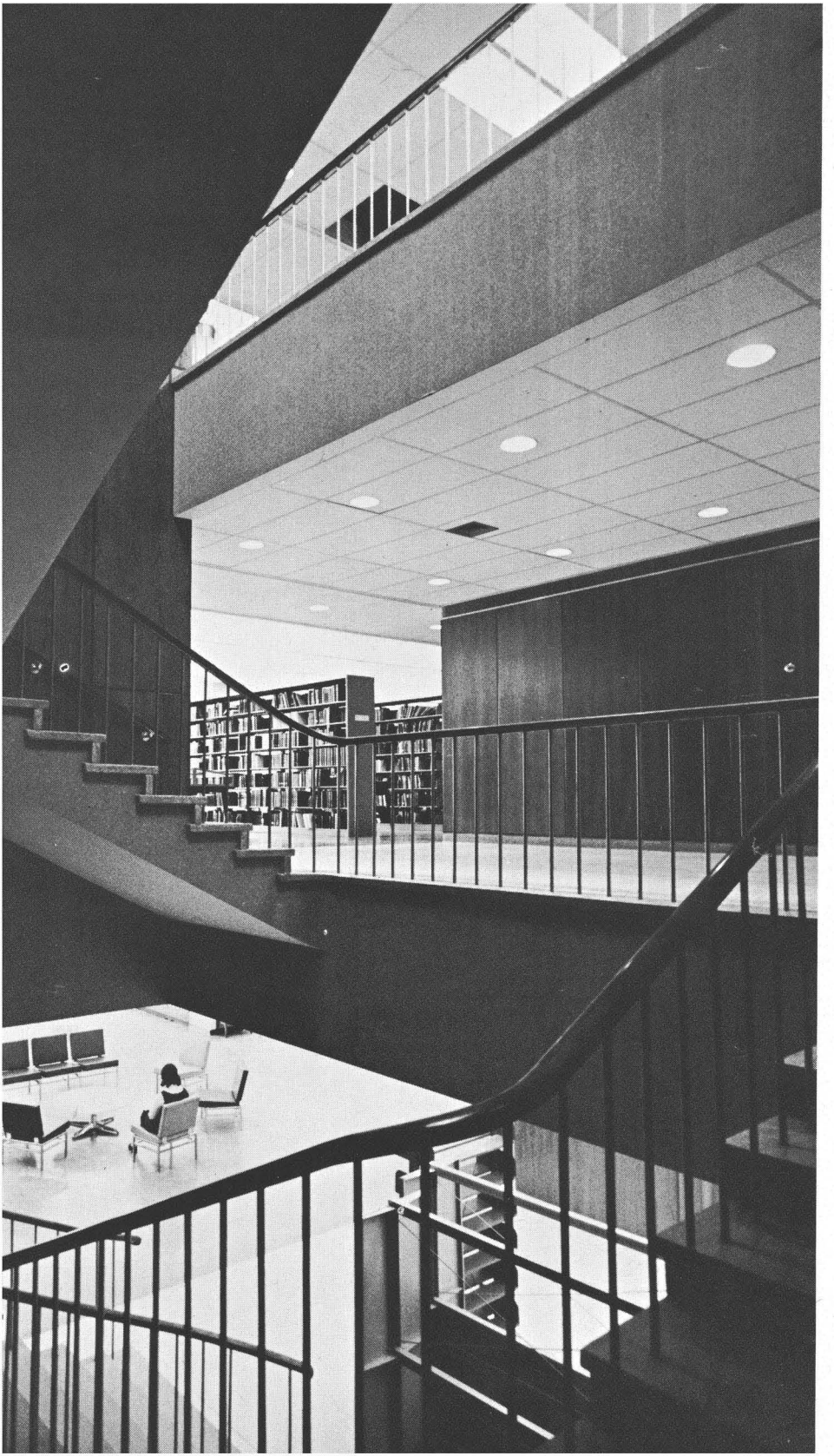
Corequisite: Mechanics III.

3 credits

ESC 399. Kinetic Theory of Gases

Kinetic theory and its basic applications (and limitations) to steady state phenomena in gases. Specific application to transfer processes.

3 credits



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**On leave fall semester 1966.

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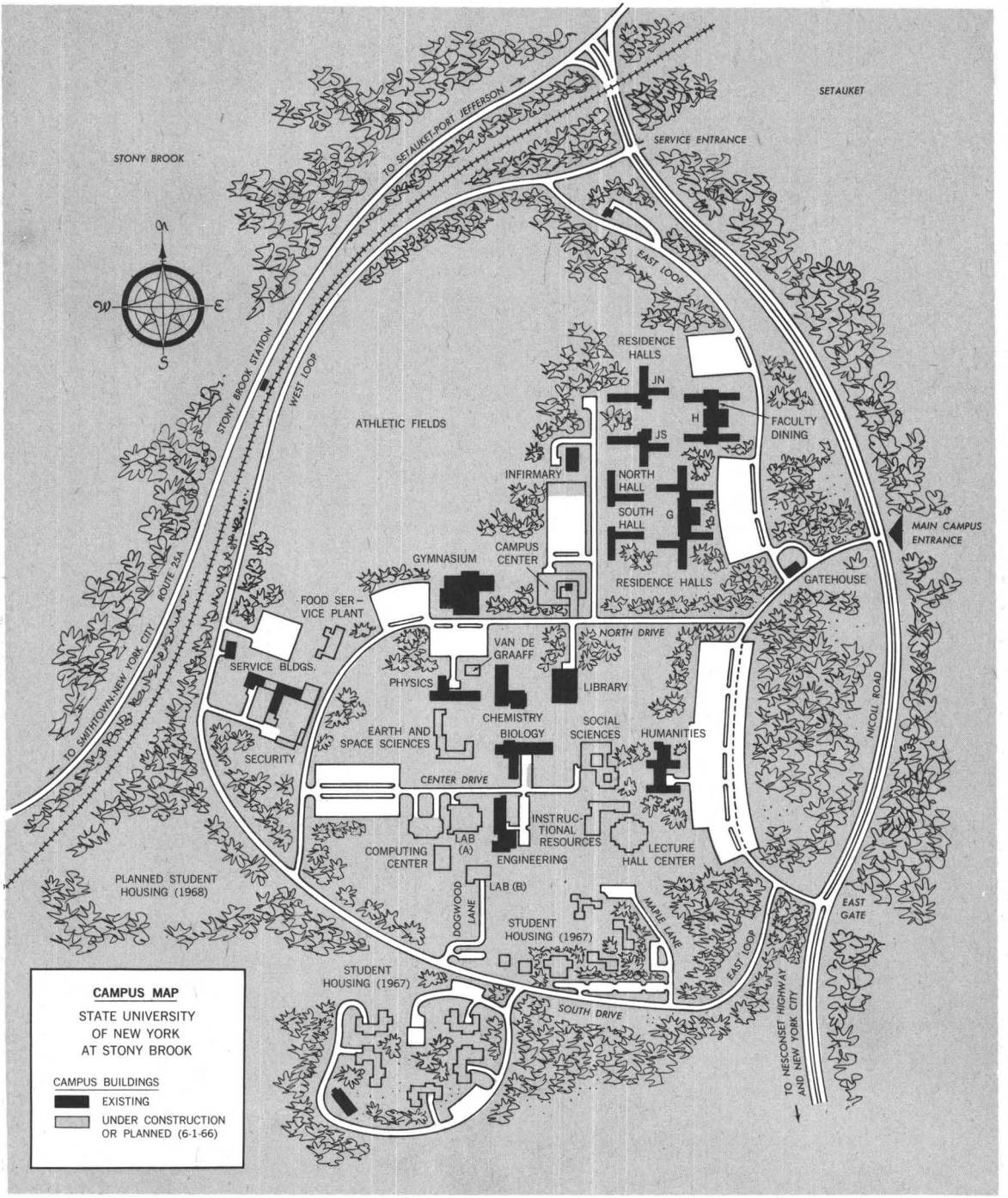
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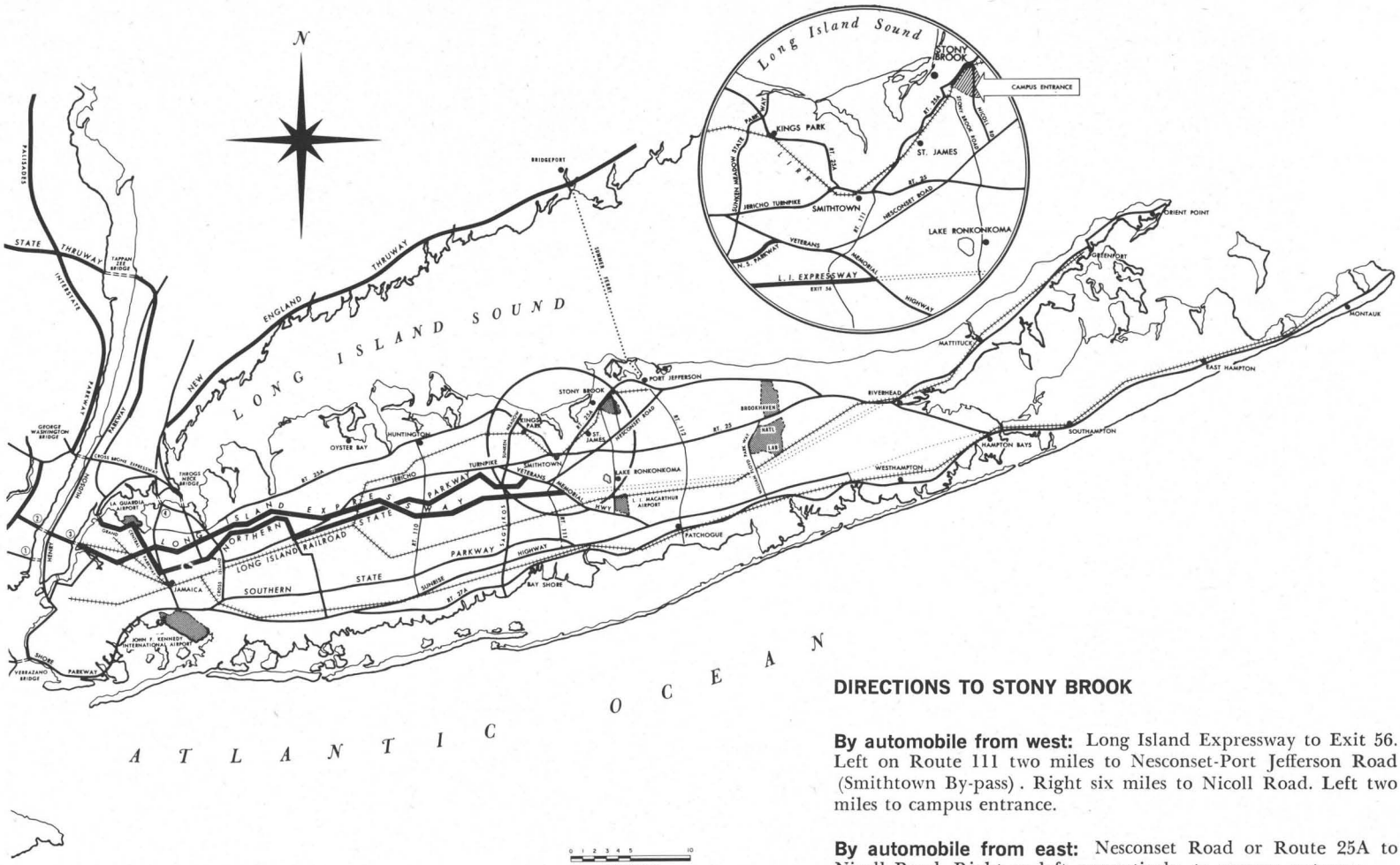

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- College at Plattsburgh
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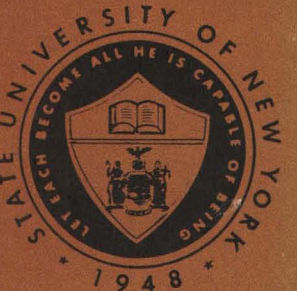
- School of Industrial and Labor Relations at Cornell University
- Veterinary College at Cornell University

AGRICULTURAL AND TECHNICAL COLLEGES (Two-year)

Agriculture and Technical Colleges at:
- Alfred
- Canton
- Cobleskill
- Delhi
- Farmingdale
- Morrisville

COMMUNITY COLLEGES (Locally-sponsored two-year colleges under the program of State University).
- Adirondack Community College at Hudson Falls
- Auburn Community College at Auburn
- Borough of Manhattan Community College at New York City
- Bronx Community College at New York City
- Broome Technical Community College at Binghamton
- Corning Community College at Corning
- Dutchess Community College at Poughkeepsie
- Erie County Technical Institute at Buffalo
- Fashion Institute of Technology at New York City
- Fulton-Montgomery Community College at Johnstown
- Hudson Valley Community College at Troy
- Jamestown Community College at Jamestown
- Jefferson Community College at Watertown
- Kingsborough Community College at Brooklyn
- Mohawk Valley Community College at Utica
- Monroe Community College at Rochester
- Nassau Community College at Garden City
- New York City Community College of Applied Arts and Sciences at Brooklyn
- Niagara County Community College at Niagara Falls
- Onondaga Community College at Syracuse
- Orange County Community College at Middletown
- Queensborough Community College at New York City
- Rockland Community College at Suffern
- Staten Island Community College at New York City
- Suffolk County Community College at Selden
- Sullivan County Community College at South Fallsburg
- Ulster County Community College at Kingston
- Westchester Community College at Valhalla


STATE UNIVERSITY OF NEW YORK
LET EACH BECOME ALL HE IS CAPABLE OF BEING
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