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Undergraduate Bulletin 1968-69

State University of New York at
Stony Brook

Long Island Sound near Stony Brook

ACADEMIC CALENDAR

1968 — 1969

Fall Semester 1968

NEW STUDENT ORIENTATION	September 15-17
FINAL REGISTRATION	September 16-17
CLASSES BEGIN	September 18
END OF CHANGE OF REGISTRATION PERIOD	October 1
LAST DAY TO DROP A COURSE WITHOUT PENALTY	November 19
THANKSGIVING HOLIDAY	November 27-December 1, inclusive
CLASSES RESUME	December 2
CHRISTMAS HOLIDAY	December 22-January 5, inclusive
CLASSES RESUME	January 6
LAST DAY OF CLASSES	January 11
SEMESTER EXAMINATIONS	January 13-23

Spring Semester 1969

FINAL REGISTRATION	January 30-31
CLASSES BEGIN	February 3
END OF CHANGE OF REGISTRATION PERIOD	February 14
SPRING RECESS	March 30-April 7, inclusive
CLASSES RESUME	April 8
LAST DAY TO DROP A COURSE WITHOUT PENALTY	April 11
LAST DAY OF CLASSES	May 20
SEMESTER EXAMINATIONS	May 21-31
COMMENCEMENT	June 1

Summer Session 1969

REGISTRATION	June 23
CLASSES BEGIN	June 24
LAST DAY OF CLASSES	August 1

CONTENTS

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.

AN INTRODUCTION
TO 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. As of fall, 1968, there are 32 buildings on the campus, the acreage has more than doubled, and the University is engaged in a $50 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 1968, Stony Brook will have over 500 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 currently 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 judgment to be made is whether he is capable of successfully meeting the demands of the academic program.

Enrollment, which totaled 145 students ten years ago, will exceed 6,000 in the 1968-69 academic year. This number is expected to approach 10,000 by 1970.

The residential college plan will be an important element in this rapidly growing student population. Consisting of individual colleges of 200 to 400 students, with faculty masters living in the colleges and faculty and graduate associates participating with the students in each college's special extracurricular intellectual and cultural programs in the residences, the system will do much to scale the large university down to human proportions which encourage more meaningful relationships between students and members of the faculty.

The residential colleges, patterned somewhat after those at leading private universities, will each represent an approximate cross-section of the University, including commuter as well as residence students, with a friendly spirit much like that of a good, small liberal arts college.

Programs and Accreditations

Academically, all new undergraduate students enter either the College of Arts and Sciences *or* the College of Engineering.

The College of Arts and Sciences with 19 departments offers Bachelor of Arts and Bachelor of Science degrees and programs of concentration in 23 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, earth and space sciences, English, history, mathematics, physics, psychology, sociology, and engineering. The Ph.D. is offered in nine departments and by 1970 or 1971, it is expected that graduate programs through the Ph.D. will be offered by all 23 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 20 miles to the south. The campus consists of 1000 acres of rolling, densely wooded terrain, with the central core area largely cleared for the buildings now in use.

There are nine 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, the Social Sciences Center, the Lecture Hall, and buildings for Chemistry, Biology, Earth and Space Science, and Engineering. The Physics Building accommodates the departments of Physics and Mathematics. The Nuclear Structure Laboratory, which adjoins the Physics building, houses the King tandem Van de Graaff accelerator which is used for low energy nuclear research.

Eighteen two- and three-story residence hall buildings afford living quarters for 4,000 students and contain numerous lounges and dining halls. The Gymnasium, with its swimming pool, basketball and squash courts, and rooms for gymnastics 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. The Infirmary building also performs a dual role, housing the University business offices.

Libraries

The Frank Melville Jr. Memorial Library, a three-story air-conditioned building, is designed for 350,000 volumes and seating for 700 students. It constitutes the first phase of a larger structure that will house a million volumes at its next state of development. Four scientific collections are housed in the science and engineering buildings. In all campus libraries students have free access to the open stacks, with reading areas and bookstacks interspersed. During regular semesters the Melville Library is open until midnight except on Saturday.

Small study rooms are provided in the Melville Library. A special area houses the files of microfilm, microcards, microprint, and microfiche. A Xerox copier is available for student use.

As a selective government depository the University Library receives large numbers of publications issued by the United States and New York State governmental agencies. About 4,800 periodicals are currently received and books are being added at the rate of over 70,000 volumes per year. The total library collection now numbers 268,000 volumes and over 50,000 documents.

The library furnishes students with recordings of speeches, poetry, and drama, as well as music in the Music Library, which occupies a portion of the first floor of the Melville Library.

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 computing 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 programming and problem oriented languages are held periodically for faculty and administrative staff.

During the 1968-69 academic year, a new major IBM 360 computing system was installed, replacing the IBM 7044, with capabilities reflecting the latest state of the art. This system permits instantaneous communication to the central computer via controls located throughout the campus, thus allowing many users and experiments facilitated access to the computing system. The Computing Center building, completed this year, is located in the Engineering Quadrangle.

The Instructional Resources Center

The Instructional Resources Center exists to provide new methods and materials for instruction. Essentially, the Center is planned as a unit of the University which has a primary mission to improve the effectiveness of instruction by the invention and provision of working instructional models, and by the preparation of the associated materials as prototypes. It is intended to support that fraction of the instructional burden of scholars in the disciplines related to the creation of resources which can enrich instruction in a continuing way—in classrooms beyond their own. To this end the Center produces educational films, provides audio-video systems and is developing a program in Computer Assisted Instruction.

One of the main concerns of the Instructional Resources Center is to assist all departments to exploit new technologies in order to optimize the many ways in which a student can learn. Instructors in Physics, German, and French are already using Computer Assisted Instruction. CAI programs in Political Science, English Essentials, Spanish and a variety of other subjects are being developed. There is being established an instructional materials collection which may be drawn upon by all departments. In the near future there will be a video-tape archive of regular commercial programs which will be useful in the research of both historians and sociologists. A video recording service is available which offers wide possibilities. For example, in micro-teaching sessions, graduate students can record their own lectures for self criticism. They may also study lectures recorded by experienced teachers and make comparisons with their own recordings and in this way improve their own teaching. A project in which the IRC will assist the University Psychological Services to explore the uses of specially created motion pictures sequences for both research and training has just begun.

The IRC researches into new ways of using media to individualize student learning. Film, television, Computer Assisted Instruction, displays, exhibits, audio and video tape, singly and in combination, are explored.

If these new materials are to be used effectively, both faculty and students must understand them. The Instructional Resources Center hopes to develop a program for instruction in the use of media and in the creation of media

materials. The IRC is currently cooperating with the Center for Continuing Education in offering a course called *Film As a Living Art.*

Campus Expansion Program

A host of new facilities, offering an interesting variety in architectural styling as well as academic purpose, will be constructed over the next several years. Prominent among the many new buildings to be erected will be a Campus Center, with meeting rooms, recreational facilities, an auditorium, and extensive dining facilities; and a Fine Arts Center, with buildings for music, art and theater.

Other structures will include additional facilities for the College of Engineering; 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 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. 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.

STUDENT
SERVICES AND
ACTIVITIES

Student programs and services—including residence halls, health services, psychological services, financial aid, placement, recreation, intercollegiate athletics, general counseling 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 counseling 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 Advisement

Each student is assigned a faculty adviser to aid him in planning his academic program and to assist him regarding any academic problem which may arise during the year. If the student has decided upon a major field, his adviser will be a member of that department. Any student who has chosen a major but has not been notified of his adviser should consult his department office. If a student is undecided as to a major, he will be assigned by the office of the Dean of the College of Arts and Sciences to a faculty adviser in the field most closely related to his prevailing interest.

Any student who would like additional assistance concerning choice of academic major or help with study skills should contact Mr. Edwards, Coordinator of Guidance Services.

Psychological Services

Psychological Services, through the co-sponsorship of the Dean of Students and Department of Psychology, consists of a staff of trained psychologists and counselors experienced in helping students with personal, social, educational, and vocational problems. This service is intended for students who have problems of a psychological nature or who are experiencing considerable difficulty in adjusting to university life and its demands.

Commuter Services

A member of the Dean of Students Staff has been assigned to be a general adviser to commuting students. In addition, there is a Commuter Board which represents the commuter population in advising the Executive Committee of the student government and the Dean of Students Office on the concerns of the commuters. The Board is allocated funds to sponsor events at times convenient for the commuting student.

There are two snack bars available for the commuting student. One is located in the lower level of the Eugeue O'Neill Residential College; the other, a delicatessen, is located in the lobby of the Physical Education Building.

Intra-campus mailboxes, located in the lobby of the Physical Education Building, are also available to commuters.

Guidance Services

The Office of Guidance Services is designed to assist students in the evaluation of their educational-vocational objectives, as well as with personal and social

problems. General short-term, non-therapeutic counseling is provided by the office's professional staff. A student may seek help on his own initiative or may be referred by faculty or staff members.

Students may also seek assistance with study skills, vocational guidance, and career planning from the Guidance Services Offices. The office maintains a library of graduate school and vocational information and administers aptitude and interest tests. Information about testing for professional or graduate school admission may also be obtained through this office.

Foreign Student Adviser

Students from other nations who are studying at the University have available to them the services of a Foreign Student Adviser, located in the Dean of Students Office. This office coordinates university service related to the foreign student, such as orientation, host family program and other community contacts, financial aid, living accommodations, and immigration matters. New students should contact the Foreign Student Adviser soon after arrival on campus and plan to participate in the special orientation program for foreign students to be held before registration.

Health Service

The Student Health Service is located on the second floor of the Infirmary building. Students needing treatment for minor illnesses can arrange to see one of the University physicians during the daily sick call. In-bed care can be provided for residence hall students with illnesses requiring short-term supervised bed rest. 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 his choice.

A nurse is on duty at the Health Service 24 hours a day, seven days a week and one or more physicians are on call at all times. The Health Service should be called for any accident or health emergency which occurs on campus. The phone number is 5138.

All undergraduate students are required to carry an accident and sickness insurance plan. Students who do not have hospitalization, surgical and major medical coverage are required to enroll in a plan adopted by the University which was developed to meet the special needs of students.

Housing

Residence life at Stony Brook is considered to be an integral part of the student's educational experience, offering opportunities for social, intellectual and cultural development. Students live in Residential Colleges, in which faculty, staff and students work together in the development of programs and traditions. Each college houses students of different classes and varying academic interests. New students are assigned randomly among the colleges, while returning students have an opportunity to choose the college in which they wish to live. The colleges are organized under a system of student self-government. Student governing and planning organizations are advised by faculty and staff, some of whom live in the colleges. Each college has a faculty master, faculty associates and a professional counseling staff. Commuting students may affiliate with a Residential College if they wish.

The colleges are arranged in complexes called Quadrangles, which normally accommodate a total of approximately 1000 students of both sexes and all classes. Each college accommodates students in double rooms or suites. Provided for each student are a bed, mattress, bureau, study desk and chair, and closet. Each college also contains public lounges, study areas, and recreation facilities. All residents of a Quadrangle eat in a common dining hall. All resident students subscribe to a board plan which provides 21 meals a week. Snack bar facilities are also available.

The majority of Stony Brook students reside on-campus in the Residential Colleges. Unmarried freshmen who do not live at home during the school year are required to live on campus. Upperclass students may, under certain circumstances, live in off-campus residences. Upperclass students under 21 years of age are required to have parental approval to live off-campus and must live in accommodations that meet standards set by the University.

Orientation

An orientation program is conducted for all incoming undergraduates during a period preceding their initial registration. The program occurs in two phases: one during the summer and one directly prior to the beginning of classes in the fall. During both sessions, professional personnel and carefully selected and trained upperclassmen attempt to introduce new students to the academic and social realities of the University. The fall session is designed to follow up and compliment the summer session. All entering undergraduates will be notified of the details pertaining to the orientation programs.

Placement

The University Placement Office, located in Room 103 of the Health and Physical Education Building, provides students with a variety of services. Seniors, graduates, and alumni are provided assistance and advisement in the selection and procurement of career positions. To this end, seniors are encouraged to compile a permanent credentials file which is maintained for their benefit as alumni. Students are also aided in their search for jobs during the summer recess. A student Babysitting Service which serves members of the University as well as the community is run with the aid of the Placement Office. Information regarding teaching careers is available through the University's Department of Education.

Special Projects

The Office of Special Projects coordinates student participation in community activities. Undergraduates serve as counselors in the UPWARD BOUND and WIDER HORIZONS programs for local disadvantaged youth. These programs are directly run from this office. There are also opportunities for tutoring in local high schools, hospital volunteer work and involvement with youth organizations. Information about Vista, the Peace Corps, internships in New York City, and the programs mentioned above can be obtained from the Director of Special Projects located in Room 107 of the Health and Physical Education Building.

Campus Center

Construction of the building is past the half way point and the development of an ambitious Campus Center program of activities is underway. The first Campus Center Governing Board is being formed and will begin to write policy for the new facility. The current program, temporarily centered in the Physical Education Building, includes concerts, dances, lectures, movies, festivals, and theatre productions. Construction of the permanent Campus Center, which will include a cafeteria-ballroom, formal dining room and lounge, bookstore, little theatre, post office, meeting and conference rooms, barber shop, beauty parlor, recreation area, radio station, craft shops, photography lab, student activities offices, lounges, bowling alleys, etc., is expected to be completed in the early months of 1969. Gradual expansion of the temporary program will be aimed at a well coordinated move into the permanent structure.

Student Organizations

The Student Polity, to which all undergraduates belong, allows students to

govern themselves to a large extent in extra-curricular areas. The Executive Committee of Polity, composed of elected members, approves student organizations and, with the Student Activities Board, coordinates social, cultural, and recreational activities. Over fifty clubs and organizations exist on campus falling within the following categories: Academic and Intellectual, Social and Recreational, Political, Religious, and Athletic. Other groups include: "The Statesman," the student newspaper; "Soundings," the literary magazine; "Specula," the yearbook; W.U.S.B., the campus radio station; and the Committee on Cinematographic Arts (C.O.C.A.), the movie committee. Activities range from full scale concerts to small club socials, providing diverse areas of interest to challenge and sustain the multifaceted personality of our University Community.

Athletics

Intramural sports are conducted in many areas for both men and women. The intercollegiate program for men consists of: baseball, basketball, bowling, crew, cross-country, judo, soccer, squash, swimming, tennis, and track. The intercollegiate program for women consists of: archery, badminton, basketball, bowling, fencing, field hockey, gymnastics, softball, synchronized swimming, tennis, and volleyball.

While there is no fixed closing date for fall admissions, applicants are urged to file during the fall of the senior year. Applications received before February 1st will be considered as a group. Later applications will be considered as another group and it is possible all available space may have been filled by that time.

Applications for admission to the spring semester should be filed before December 15. It is questionable if residence hall space will be available for mid-year entrants. Students for whom this is a requirement should check for the latest available information at the time of application.

Candidates may 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. Appointments for interviews may be made by mail or by telephone to the Admissions Office, Telephone: Area Code 516, 246-5126. Appointments may be made between 10:00 a.m. and 4:00 p.m., Monday through Friday. There are no interviews conducted on Saturdays and Sundays.

When classes are in session, the Admissions Office provides an informative talk and a tour of the campus at 3:00 p.m. every Friday during the school year. This is a group meeting and appointments are not required. If a personal interview is desired, please write or telephone at least a week in advance.

When school is in session student guides are available in the lobby of the Admissions Office on Saturdays and Sundays during the daylight hours for tours of the campus. Guides are not available during vacation periods.

Additional information may be obtained by writing to the Office of Admissions.

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 from each collegiate institution attended:

     A. An official transcript of record.

     B. A personal inventory form.

(If no grades were earned, a statement of attendance and honorable dismissal is required.) An average of C+ or 2.5 (A=4) is the lowest base considered for admission in most cases. Applicants for the spring semester should file by December 15. While there is no deadline for fall applications, students are urged to file by April 1.

The amount of advanced standing to be granted a transfer student will be determined by means of a complete evaluation of his record. Ordinarily only those courses which have been completed at an accredited collegiate institution

with a grade of C or better will be considered for transfer credit. Courses in the major field will be evaluated by the department concerned for applicability to major requirements. After admission course evaluation forms will be sent to the student and should be completed for each course within the major area the applicant wishes considered for advanced standing. 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 most technology courses will generally not receive collegiate credit. The amount of transfer credit finally allowed will be entered on the student's record. The grades earned at the previous institution are not transferable and they will not be entered on the Stony Brook record. Transfer students will be classified according to the following schedule of semester hours accepted for transfer credit: Freshman 0-23, Sophomore 24-54, Junior 55 or more. Students in the first or second year of collegiate work will be expected to supply fall semester grades in January before a decision will be made.

The University is cooperating in placing graduates of the transfer programs from Community Colleges and Agricultural and Technical Colleges within the State University system. Such students will be given preference if the number of applications necessitates priority. Graduates of these programs must have a 2.0 or C average and the recommendation of the sending college. Graduates of career oriented programs should check on the amount of credit to be transferred before making a decision as to attendance.

Entrance Examination

Applicants for admission must take the entrance examination described in HOW TO APPLY FOR ADMISSION. Candidates are urged to complete these requirements as early in the application process as possible. High school seniors are urged to take the Regents Scholarship Examination since this is the only examination for awarding Regents Scholarships.

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 to supplement other scores. Candidates who reside out of state must submit Scholastic Aptitude Test scores. The December examination taken during the senior year is preferred.

Notification of Admission

The State University of New York at Stony Brook uses a "rolling decision"

admission system. First notifications are made in February but the majority of decisions will be mailed in March and April. Students should not plan on receiving an answer before April.

All admissions are conditional subject to receipt of official records showing successful completion of academic work in progress at a level commensurate with the work upon which acceptance is based. It is the student's responsibility to see that the final record is sent to the Admissions Office. For freshmen this includes proof of graduation from high school. In addition, an acceptable medical report and payment of necessary deposits within the deadline dates are required to be certified for registration.

Advanced Placement

Advanced placement may be extended to new students who have completed specified advanced courses in secondary school and who have in other ways developed academic competencies which entitle them to waiver of course requirements. This does not confer point credit toward the graduation requirement. 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.

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. After May 1st 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 final certification of admission.

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 semester.

CHARGE OR FEE	FIRST SEMESTER	SECOND SEMESTER	YEAR
Tuition			
Undergraduate (N. Y. State Resident)	$200.00	$200.00	$400.00
Undergraduate (Out-of-State Resident)	300.00	300.00	600.00
Graduate Student	300.00	300.00	600.00
Special Graduate Student Part Time (6 or less credits) per cr.	20.00	20.00	
Special Undergraduate Student (N. Y. State Resident) per cr.	13.50	13.50	
Special Undergraduate Student (Out-of-State Resident) per cr.	20.00	20.00	
College Fee			
Undergraduate and Graduate	12.50	12.50	25.00
Special Graduate Student Part Time (6 or less credits) per cr.	.85	.85	
Special Undergraduate Student per cr.	.85	.85	

	FIRST SEMESTER	SECOND SEMESTER	YEAR
*Student Health Insurance Fee**			
Individual	$ 26.50		$ 26.50
Student & Spouse	66.25		66.25
Student, Spouse & Dependent Child or Children	113.95		113.95
Student Activity Fee	50.00		50.00
Identification Card	2.00		
General University Deposit			
Commuting Student	20.00		20.00
Resident Student	35.00		35.00
Orientation (Freshmen Only) **	25.00		25.00
*Graduation***	15.00		15.00
Room Double Occupancy	197.50	197.50	395.00
*Board**** 21 Meal Plan	250.00	250.00	500.00

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*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.

***Required in the year that the candidate will receive his baccalaureate, master's or doctoral degree.

****Tentative

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.

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.

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.

Request for refund must be made in writing to the Business Office.

Residence Charges

Room charges for an academic year are listed in the preceding schedule. Once a student has registered and occupied a room, no refund will be granted for payment 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. Coin operated washing machines and dryers are available in the residence halls.

Each room is provided with a private telephone. A General University Deposit of $35.00 is required of resident students.

National Defense Student Loans

Under this, another federal program administered by individual colleges, a needy student may borrow up to $1000 during each year of undergraduate study and $2500 during graduate years. No interest accumulates and repayment of a loan does not begin until nine months after graduation. From that time the student has ten years to repay at 3% interest per year. Payment may be deferred during service in the Armed Forces or Peace Corps. For persons entering the field of education, cancellation of the loan obligation is possible at the rate of 10% per year for a maximum of five years. Teachers of the underprivileged may obtain cancellation at the rate of 15% per year. Thus a person may cancel 50% or more of his total loan liability by teaching.

NYHEAC/Federal Guaranteed Loan Program

This program permits a student to borrow money from his local bank to meet college expenses. The government will pay the interest on a loan until the student graduates, at which time he must repay his obligation to the bank at 3% interest. The word "guaranteed" means that in the event of death or disability of the borrower, his obligation is paid in full by the government.

Terms of repayment are essentially the same as the National Defense Student Loan program above, with the exception of the teacher cancellation provision. Applications may be obtained from local banks or from the Financial Aid Office at the University.

Part-Time Work and the College Work-Study Program

These possibilities are mentioned last because the University recommends that, if possible, the student not work during his first year of college. It is generally a good idea to become accustomed to the academic and social pressures of college life without the additional burden of a job. In future years, however, depending on his capabilities, a student may wish to meet part of his expenses or reduce his loan obligation by taking a part-time job. The University has a limited number of positions available as part-time secretaries, laboratory assistants, cafeteria workers, etc. This area has been broadened considerably by the College Work-Study Program. Under this program the Federal Government pays a portion of the salaries of students having demonstrated financial need. They may be employed up to fifteen hours per week in on-campus jobs or off-campus community service projects. Provision can also be made for students to work full-time during vacation and summer periods. These positions are intended to be educationally meaningful. Often, but not always, a student can obtain a position close to his major field of interest.

Other State and Federal Aids

Scholarships for children of deceased or disabled veterans are granted by New York State 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 12224. Eligible students may also receive financial assistance from the Division of Vocational Rehabilitation of the New York State Education Department.

Students whose parents receive Social Security benefits should be aware that payments for dependent children may be extended from age 18 to age 22 if the child is a full-time student and remains unmarried.

Veterans may receive assistance under the provisions of Public Law 894 (disability), 550 (Korean War), or 89-358, the cold war GI Bill, which provides payments of $100 per month to single veterans who are in full-time study. Veterans with one dependent may receive $150 per month. Further information may be obtained from local V.A. offices.

When approved by the Business Officer of the University, scholarships held by State University students may be applied directly to such expenses as tuition, room, board and fees. In the case of Regents or university administered financial aids, deferred payment can often be arranged, but only when an award has been approved and cash or check is pending. Students are advised to have their notices of award from all programs with them when registering at the University.

Private Scholarship Programs

As Stony Brook becomes established and its reputation grows, an increasing number of scholarships are expected to become available through the generosity of private donors or foundations. Several, granted within the previous year, are listed below:

A. *The Suffolk County Plumbing Industry Development Fund* now offers two $525 scholarships through the College of Engineering. Awards will be made to one Junior and one Senior in the engineering program, preferably Suffolk County residents. Further information may be obtained from the Dean of the College of Engineering.

B. *The Kaltenborn Foundation* offers two $1000 scholarships annually, one each to outstanding juniors in the fields of music and art. These scholarships are awarded without regard to school expenses or financial need and are intended to provide the student with additional resources for persuance of his or her field of interest. Additional information is available through the Department of Fine Arts.

of the Committee, unusual circumstances, such as physical disability, exist. Such petitions should be accompanied by appropriate documentation.

Pass-Fail Option

In September 1967 an experimental pass-fail grading system was introduced on a limited basis to permit sophomores, juniors, and seniors to explore various areas of the curriculum with less immediate pressure for grades. Within the limitations given below students are free to elect courses on a pass-fail basis as they see fit. Questions about the applicability of the Pass-Fail option to individual situations should be discussed with the student's faculty advisor.

A. No courses may be taken on a pass-fail basis during the freshman year.
B. No more than four courses may be taken on a pass-fail basis during a student's University residence.
C. No more than one such course may be taken in any semester.
D. All such courses must be taken outside the student's departmental major requirements.
E. In calculating grade point averages, "pass" shall not be used in the calculation and "fail" shall be used.
F. A student must designate a course for the pass-fail option at registration or during the first two weeks of the semester, and he may not thereafter change this designation.
G. In the event that a student's change of major or a department's alteration of its major requirements should affect a pass-fail course already taken, the department shall accept the student's "pass" but may require an additional examination.

Change of Registration

A student may change his registration only during the first two weeks of the semester. To do so he must first complete the appropriate request form and then obtain the approval of his advisor for the proposed change. Forms for this purpose are available from the Registrar. No record is made of courses dropped during this period.

After the second week of classes no course may be added. A student may, however, drop a course through the ninth week of the semester provided he has the approval of his academic advisor and the change 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 course may be dropped.

Auditing

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

A student who wishes to audit a course must first obtain the permission of the instructor. No petitions to change from audit to credit status will be allowed after the second week of classes.

Assignment of Grades

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

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. If 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 for which will be assigned only after the completion of two semesters.

P (Pass) indicates passing work in a course where the evaluation standard is either Pass or Fail.

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 P are not included in the grade-point average. To compute 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 for that course; 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.

Repeating Courses

With the approval of his advisor, 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 course which has been passed may be counted only once in satisfying credit-hour requirements.

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 grade-point 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.

Classification of Students

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

Dean's List

Students who have registered for 12 or more semester hours exclusive of any pass-fail courses 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 Dean's List.

Grade Reports

Grade reports are prepared as quickly as possible after the conclusion of each semester. Consistent with the University's efforts to encourage mature and responsible behavior in all aspects of a student's development, it is felt appropriate to place upon the student the responsibility for communicating information regarding his academic program and progress to his parents. Accordingly, grade reports are mailed directly to the student at his home address, usually within one week of the end of the final examination period.

Transcripts

Students who desire transcripts of their academic record at Stony Brook, either for their own use or for forwarding to some other institution or agency, are asked to submit their request in writing to the Office of the Registrar at least one week before the transcript is needed. The charge for transcripts is $1.00 per copy. Payment should be made directly to the Business Office and the receipt submitted to the Registrar along with the transcript request. Partial transcripts of a student's record are not issued.

Official transcripts of work taken at other institutions which have been presented for admission or evaluation of credit become the property of the University and cannot be copied or reissued. If a transcript of this work is needed it should be obtained directly from the institution concerned.

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.

Taking Summer Courses Elsewhere

A currently enrolled Stony Brook student who wishes to take a summer course at some other institution for transfer credit to Stony Brook must obtain the advanced approval of both his faculty advisor and a Stony Brook Admissions Officer before doing so. Upon completion of the course with a grade of C or better and submission of an official transcript to the Stony Brook Admissions Office, appropriate transfer credit will be allowed.

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 officially withdraw on or before the day of the last class meeting prior to 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 or been suspended and who wish to be readmitted must apply for readmission through the Office of Admissions. In view of the increasing enrollment pressures, applications for readmission should be filed at least one month prior to the semester for which readmission is desired. If the student has attended another institution since leaving Stony Brook, an official transcript must be submitted before his application will be considered. In the case of students who have been suspended, at least one semester must elapse before they will be considered for readmission. A student who has been suspended twice is not eligible for readmission.

Changes in Regulations and Offerings

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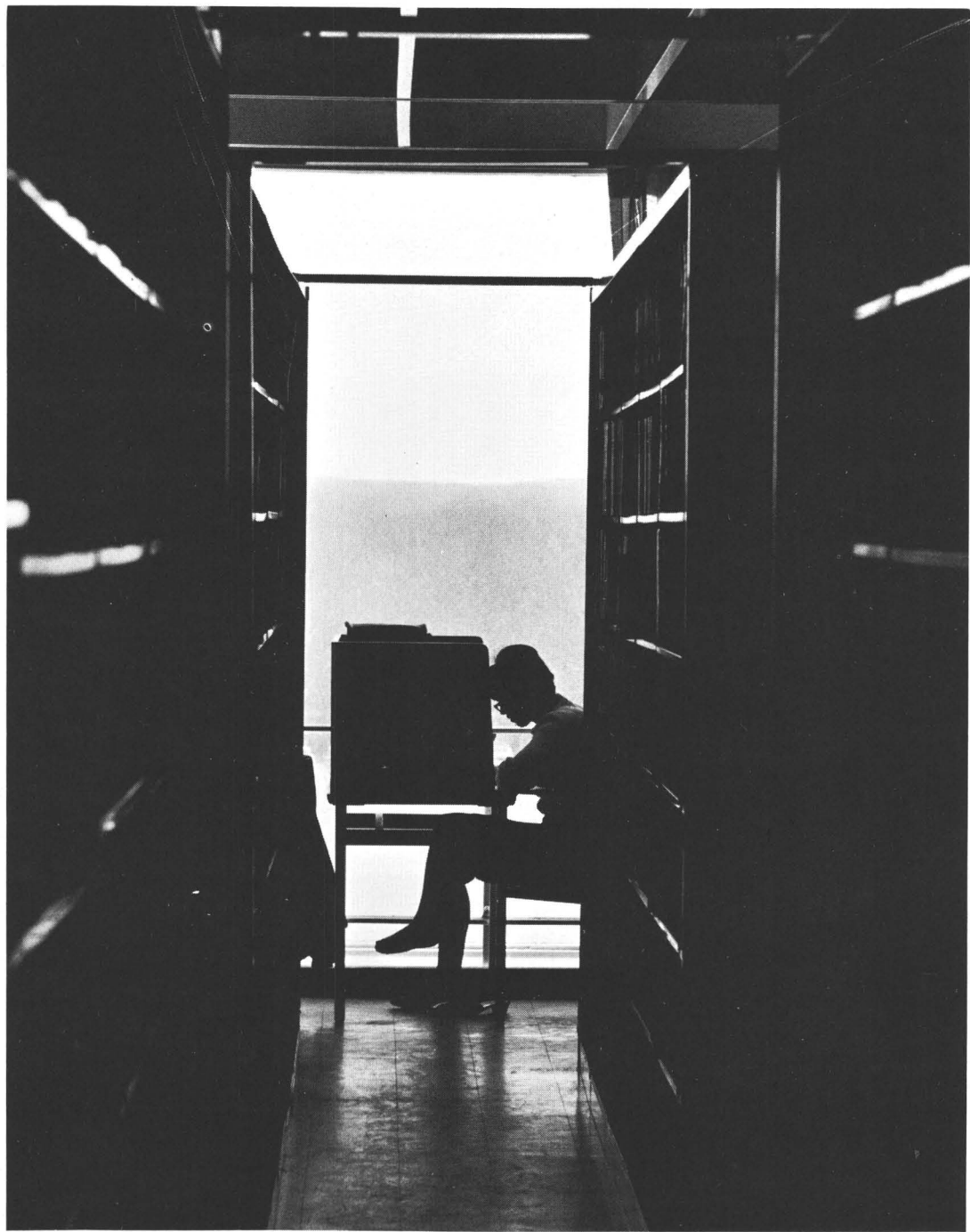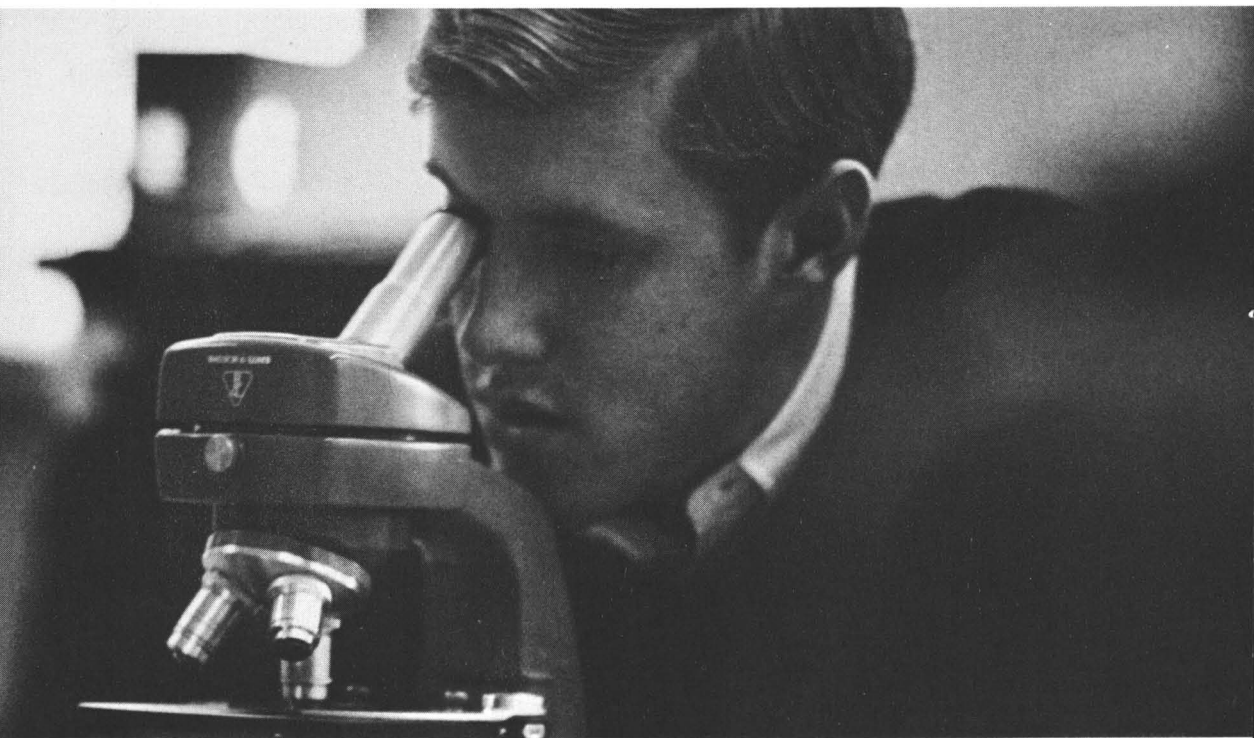
COLLEGE OF ARTS AND SCIENCES

Degree Requirements

All candidates for the Bachelor of Arts or 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, and the other in a course in either mathematics or science. In meeting this requirement no more than one year of course work may be taken in a single department. — 14-16 credits

(Students are to complete the above requirements at the earliest possible time.)

E. Physical Education — 2 semesters

The Physical Education requirement is to be completed *after* the Freshman year.

F. Foreign Language

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.

G. 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, 103; Psychology 101, 102; 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.

ELEMENTARY AND SECONDARY TEACHER CERTIFICATION PROGRAMS

Secondary Education Teacher Certification*

The Secondary Education Teacher Certification Program is designed to prepare students to meet the New York State requirements for provisional certification to teach at the secondary level. Students must fulfill the general University requirements for either the Bachelor of Arts or Bachelor of Science degree, the requirements for the departmental major, and the program of professional study in education. The three groups follow:

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*The Secondary Education Teacher Certification Program has been approved by and is registered with the State Education Department. A student who successfully completes this program will receive provisional certification as a secondary school teacher from the State Education Department.

1. General University Requirements (See description of degree requirements)   44-58 credits
2. Departmental Major Requirements (See description of major requirements) Credits vary according to major. Secondary Education Teacher Certification Programs leading to provisional certification are offered in the following fields: biology, chemistry, earth and space science, English, foreign languages, mathematics, physics, social studies. (Students who are preparing to teach social studies may major in anthropology, economics, history, political science, or sociology) .
3. Professional Study in Education   21 credits
   3.1 Education 203 *(Psychological and Social Foundations of Educational Theory)*   3 credits
   3.2 Methods and Materials of Teaching
   At present, the following courses in Methods and Materials of Teaching are being offered:
   Biology 239 *(Materials and Methods in Teaching Biology)*
   English 285 *(Methods of Instruction in Literature and Composition)*
   Foreign Language 239 *(Methods and Materials in Teaching of Foreign Languages)*
   History 239 *(Methods and Materials in Teaching Social Studies)*
   Mathematics 321 *(Geometric Structures)*
   Physics 239 *(Materials and Methods in Teaching Physical Science)* . For those preparing to teach either physics, chemistry or earth and space science.
   3.3 Six credits selected in the following manner: *one* course from category 3.3.1 and *one* course from either category 3.3.2 or 3.3.3.
   3.3.1. Education 345 *(Philosophy of Education)* or Education 346 *(Philosophy of Education)* Identical to Philosophy 345,346   3 credits
   3.3.2 Education 250 *(Selected Current Issues in Education)*   3 credits
   3.3.3. Education 160 *(History of American Education)* or Education 162 *(History of Western Education)* Identical to History 160 and 162   3 credits
   3.4 Education 350 (Student Teaching)   9 credits

In addition, students must meet distribution requirements in their teaching fields (such as in the sciences and social sciences) as required by the State Education Department. Departmental advisors and the Director of Teacher Preparation will advise students of the courses designed to satisfy these requirements.

Elementary Education Teacher Certification Program**

The Elementary Education Teacher Certification Program is designed to prepare elementary school teachers adequately to meet the challenges of tomorrow's expanding curricula in which more and more materials in the sciences, mathematics, social sciences, and the humanities will be presented. Students in the program, therefore, take the major portion of their courses in the liberal arts, concentrate in a discipline, and prepare for teaching with courses in the professional study of education. The three groups follow:

1. Liberal Arts (55-73 credits)
   1.1 Physical Science (may satisfy University requirements) — 8 credits
   1.2 Biological Science (may satisfy University requirements) — 8 credits
   1.3 Mathematics (may include 6 credits from University requirements) — 9 credits
   1.4 Social Sciences (includes 12 credits from University requirements) — 15 credits
   1.5 Humanities (includes 12 credits from University requirements) — 15 credits
   1.6 English 101, 102 (exemption possible by examination) — 0-6 credits
   1.7 Foreign Language (2 year proficiency) — 0-12 credits
2. Departmental Concentration (24-30 credits)
   At least 24 credits of an approved departmental concentration (including the introductory year). See approved concentrations in anthropology, art, earth and space science, economics, English, Germanic and Slavic Languages, history, mathematics, music, philosophy, political science, psychology, Romance Languages, sociology, threatre arts.

** The Elementary Education Teacher Certification Program has been approved by and is registered with the State Education Department. Students who successfully complete this program will receive provisional certification as an elementary school teacher from the State Education Department.

3. Professional Study in Education (39 credits)
    3.1 Education 160 *(History of American Education)* or Education 162 *(History of Western Education)* Identical to History 160 and History 162   3 credits
    3.2 Education 203 *(Psychological and Social Foundations of Educational Theory)*   3 credits
    3.3 Psychology 211 *(Developmental and Adolescent Psychology)*   3 credits
    3.4 Sociology 287 *(Sociology of Education)*   3 credits
    3.5 Education 345 *(Philosophy of Education)* or Education 346 *(Philosophy of Education)* Identical to Philosophy 345,346   3 credits
    3.6 Education Senior Seminar Laboratory 351,352   24 credits

Subjects of Instruction

Courses are numbered in accordance with the following general pattern:
        100-199, freshman-sophomore courses
        200-399, junior-senior courses
        500-699, graduate courses
Courses, the titles of which are bracketed, will not be offered in 1968-1969.

DEPARTMENT
OF ANTHROPOLOGY

Professors: PEDRO ARMILLAS, PEDRO CARRASCO, LOUIS C. FARON *(Chairman)*

Associate Professor: PAULA BROWN

Assistant Professors: ROGER PERANIO, ROBERT F. STEVENSON, 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 Anthropology

In addition to the general University requirements for the Bachelor of Arts degree, the following requirements must be met for the major in anthropology:
- A. *Study within the area of the major*
    1. ANT 101 and 102 *(Introduction to Anthropology, Social Organization of Non-Western Peoples)*.
    2. ANT 150 *(Elementary Social Structures)*.
    3. Two ethnographic area courses, such as *Peoples of Africa, Peoples of South America, North American Indians,* etc.
    4. Two topical courses, such as *Comparative Religious Systems, Political Anthropology, Social and Cultural Change,* etc.
    5. One advanced course, such as *Development of Anthropological Theory and Method, Readings in Social Anthropology.*

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

COURSES IN ANTHROPOLOGY

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) Pre-historic archaeology, emphasizing the development of social and cultural systems in the old and new worlds; and 3) 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, Staff
Fall and 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 organization.
Prerequisites: ANT 101 or permission of instructor.
Staff
Fall and Spring, 3 credits

ANT 150. Elementary Social Structures

Detailed structural-functional analysis of basic organizing principles and institutions among a selected range of simpler societies of the world.
Prerequisites: ANT 101, 102 or permission of instructor.
Mrs. Brown, Staff
Fall and Spring, 3 credits

ANT 201. Peoples of South America

The course begins with a detailed coverage of problems of cultural and social evolution in South America during pre-Spanish times and continues this descriptive analysis into the colonial and contemporary periods wherever possible. Major or representative types of socio-cultural systems are discussed from a structural-functional point of view. Consideration is given to problems of cultural and social stability and change in the areas of kinship and marriage, politics, economics, religion, law, etc.
Prerequisites: ANT 101 and 102, 150, or permission of instructor.
Mr. Faron
Fall, 3 credits

ANT 203. North American Indians

The various people 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, 150 or permission of instructor.
Mrs. Wheeler
Fall, 3 credits

ANT 205. Peoples of Africa

The range and distribution of African populations, languages, and socio-cultural systems are surveyed in both full historic perspective and environmental context. Special attention is paid to the implications of case studies from Africa for the development of anthropological theory. The general survey is supplemented by intensive analysis of select socio-cultural systems. The course concludes with an assessment of the problems of the emerging African nation-states and of current research problems, programs and goals in Africa.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mr. Stevenson
Spring, 3 credits

[ANT 206. Peoples of Asia]

A survey of cultures and societies of Asia, with emphasis on the contemporary, simpler societies and their integration into the com-

plex civilizations of India and China.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mr. Stevenson
Spring, 3 credits
To be offered 1969-70.

ANT 207. Indians of Middle America

The transformation of Indian societies after the Spanish conquest. Culture and social institutions of the modern Indian: economic organization, village government, religion, etc. The place of the Indian in the social structure of Mexico and Guatemala.
Prerequisite: ANT 150 or permission of instructor.
Mr. Carrasco
Fall, 3 credits

ANT 209. Ancient Civilizations of Middle America

The pre-Spanish civilizations of Mexico and Central America. Archeological background and traditional history. Ecological adaptation, economic systems, social and political institutions, religious and intellectual achievements.
Prerequisite: ANT 150 or permission of instructor.
Mr. Carrasco
Fall, 3 credits

ANT 211. Peoples of Southeast Asia

Ethnographic, ethnological, and structural-functional analysis of selected tribal and peasant societies of mainland Southeast Asia and Indonesia-Malaysia. An attempt will be made to arrange the societies along a scale of progressive sociocultural complexity, presenting societies representative of each level, and showing some of their important interrelationships.
Prerequisite: ANT 150 or permission of instructor.
Mr. Peranio
Fall, 3 credits

ANT 212. Peoples of Oceania

The study of the environment and cultures of Pacific Island communities of Melanesia, Micronesia and Polynesia. Economic, kinship,

political and religious institutions will be considered as they have been and are now changing.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mrs. Brown
Spring, 3 credits

ANT 213. China: The Social and Cultural Background

The development of Chinese culture from prehistoric times through the present is analyzed from the standpoint of anthropological theories of cultural evolution, diffusion, functionalism, and human ecology. Special attention is directed to critical formative and transitional periods. Distribution of physical types, languages, and ethnicities both within and without the Chinese frontiers is surveyed. Interpretations of Chinese development generated by sister disciplines are discussed with a sympathetic but critical point of view.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mr. Stevenson
Fall, 3 credits

ANT 250. Economic Anthropology

Economic life of primitive peoples and pre-capitalistic civilizations with emphasis on the integration of the economy with technology and with social and political institutions.
Prerequisite: ANT 150.
Mr. Carrasco
Spring, 3 credits

ANT 251. Comparative Religious Systems

A survey of the religious beliefs and practices of primitive peoples with special reference to symbols and value systems. The effects of culture contact on religious behavior and the basic religious beliefs of more complex societies will be discussed.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mr. Stevenson
Spring, 3 credits

ANT 252. Culture and Personality

Culture as a factor in personality and character formation: Anthropological theory and constructs will be considered in relation to such concepts as "self", "personality", and "character". The interrelationships of anthropology with its sister disciplines in the behavioral sciences will also be considered, as well as its importance for cross-cultural studies of socialization, change, and ethnopsychiatry.
Prerequisite: ANT 150 or permission of instructor.
Mr. Peranio
Fall, 3 credits

ANT 253. Political Anthropology

Description and analysis of political institutions among the simpler societies. Selected examples will be taken from many areas of the world to show government, internal regulations and external relations in small bands, villages, tribes and states. Political development in contemporary societies will also be considered.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mrs. Brown
Fall, 3 credits

ANT 254. Problems in Political, Economic Development

A survey of the political and economic problems faced by undeveloped peoples as they become modern nations, and a discussion of some of their successes and failures in political and economic development.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mrs. Brown
Spring, 3 credits

ANT 256. Urban Anthropology

A review of current anthropological research on family and kinship behavior, status and role, personality, social stratification, mobility and assimilation patterns in contemporary urban societies.
Prerequisites: ANT 101, 102, 150. Open to Sociology majors with instructor's permission.
Mrs. Wheeler
Spring, 3 credits

[ANT 261. Peasant Societies and Cultures]

The concept of peasantry will be examined from political, religious and social class angles as well as from the more traditional economic view.
Special attention is given peasant societies in Latin America, Africa, and Asia.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mr. Faron
Spring, 3 credits
Not given 1968.

ANT 271. Social and Cultural Change

An examination of the forms and processes of change which have been and are now taking place throughout the world, transforming isolated peoples of simple economy and social organization into participating members in modern states.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mrs. Brown
Fall, 3 credits

ANT 301. Development of Anthropological Theory and Method

An evaluation of the central ideas of several schools of anthropology since the late nineteenth century, with an appraisal of their effect on contemporary anthropological theory and methodology.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mr. Faron
Fall, 3 credits

ANT 303. Evolution of the State

The theories of a number of seminal thinkers in social history, political theory, economics, sociology, and anthropology are tested against the empirical results of contemporary

anthropological research, both archaeological and ethnographic. Emphasis is upon Asia and Africa but New World materials are also introduced for purposes of comparison.
Prerequisites: ANT 101, 102 or permission of instructor.
Mr. Stevenson
Fall, 3 credits

ANT 308. Seminar in Latin American Cultures

Research and discussion about selected topics in the culture and social structure of Indian and peasant communities in Latin America.
Prerequisites: ANT 101, 102, 150 or permission of instructor.
Mr. Carrasco
Spring, 3 credits

ANT 310. Readings in Social Anthropology

A colloquium in social anthropology emphasizing the impact of French sociology on British anthropology and the translation of these ideas into the post World War II anthropological world. Students will engage in independent library research on themes of their major interests.
Prerequisites: Senior major in Anthropology, but open to senior majors in Sociology and, with consultation between departments, other senior majors in social sciences.
Mr. Faron
Spring, 3 credits
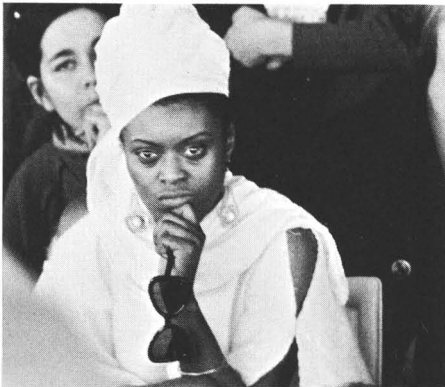
DEPARTMENT OF ART

Professors: LEOPOLDO CASTEDO (*Chairman*), ALLAN KAPROW
Associate Professors: EDWARD J. COUNTEY, JR., JACQUES GUILMAIN
Assistant Professors: JAMES H. KLEEGE, GEORGE KORAS,* ROBERT W. WHITE
Instructors: ALBERT BOIME, TED GORELICK

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, Theatre Arts, English, History, Philosophy, Germanic and Slavic Languages and Literatures, and Romance Languages and Literatures.   6 credits

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.
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.
Fall, 3 credits

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

A beginning course designed to introduce the student to the techniques and formal princi-

*On leave, academic year 1968-69.

ples 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.
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.
Fall, 3 credits

ART 124. Studio IV (Design)

A studio course in the techniques of perspec-

tive 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. Kleege
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.
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.
Fall, 3 credits

ART 223. Studio VII (Graphics I)

A graphics course devoted to the techniques of engraving, etching, aquatint, messotint, 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.
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.
Fall, 3 credits

ART 237. Latin American Art

A survey of the art and architecture of Ibero-America from the Precolumbian civilizations to the present time, emphasizing the Creole or *mestizo* expressions.
Prerequisite: Permission of instructor.
Mr. Castedo
Fall, 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.
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.
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.
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.
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.   Nineteenth Century Art

European art of the nineteenth century.
Prerequisite: ART 334, or permission of instructor.
Mr. Boime
Fall, 3 credits

ART 336.   Twentieth Century Art

European and American art of the twentieth century.
Prerequisite: Humanities 113 or 116, or permission of instructor.
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.
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.
Spring, 3 credits

ART 339.   Precolumbian Art

A survey of the artistic forms of Precolumbian civilizations, from archaeological *Olmecs* to the architecture of *Machu Picchu*.
Prerequisite: ART 237, or permission of instructor.
Spring, 3 credits

ART 340.   Iberian and Ibero-American Art and Architecture from the Fifteenth to the Eighteenth Centuries

A study of Isabelino, Manuelino, Plateresque, Baroque, Rococo and Neo-Classic styles in the Iberian Peninsula and Colonial Ibero-America.
Prerequisite: ART 237, or 332, or 339, or permission of instructor.
Mr. Castedo
Spring, 3 credits

DEPARTMENT OF BIOLOGICAL SCIENCES

Professors: ELOF A. CARLSON, FRANK C. ERK, BENTLEY GLASS, THOMAS F. GOREAU,** C. H. WERNER HIRS *(Adjunct)*, MELVIN V. SIMPSON, LAWRENGE B. SLOBODKIN, DONALD F. SQUIRES,* GEORGE C. WILLIAMS**

Associate Professors: EDWIN H. BATTLEY, VINCENT P. CIRILLO, RAYMOND F. JONES *(Acting Chairman)*, ROBERT W. MERRIAM, CARL MOOS, MONICA RILEY, ROBERT E. SMOLKER, BERNARD D. TUNIK, CHARLES WALCOTT

Assistant Professors: ALBERT D. CARLSON, BERNARD S. DUDOCK, LELAND N. EDMUNDS, JR., GEORGE G. FOGG, JAMES A. FOWLER, MARTIN FREUNDLICH, JOHN J. GAUDET, GEORGE J. HECHTEL, R. PETER KERNAGHAN, ABRAHAM D. KRIKORIAN, MARVIN J. ROSENBERG, CHARLES F. WURSTER

Instructor: STEVEN OBREBSKI**

The undergraduate program in biology is designed to prepare students for graduate or professional 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*

        BIO 151, 152 *(Cytology, Genetics and Evolution)*

        BIO 201, 202 *(General Physiology)*

        BIO 236 *(Field and Theoretical Ecology)*

        BIO 105, 106 *(Freshman Biology Seminar)* is required of all Departmental Majors entering as Freshmen

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*Director, Marine Sciences Research Center
**Member, Marine Sciences Research Center

B. *Courses required in related fields*
CHE 101, 102 *(General Chemistry)*
CHE 201, 202 *(Organic Chemistry)*
CHE 205 *(Organic Chemistry)*
MAT 102, 103 *(Calculus I, II)*
PHY 161, 162 *(Introductory Physics)* or PHY 101, 102 *(General Physics I, II)*.
(Students wishing to take CHE 153 or CHE 154 must take PHY 101, 102.)

C. *Elective Credit*
Seven additional credits in biology or related courses approved by the student's adviser. Students who enter the program as majors after their Freshman year must take nine additional credits in biology or related courses.

Biology majors who intend to satisfy certification requirements for secondary school teaching may substitute eight credits of approved courses in earth and space sciences for the required elective credits in the major in biological sciences.

D. *Foreign Language*
Proficiency in French, German or Russian.

HONORS PROGRAM IN BIOLOGICAL SCIENCES

Departmental majors with a grade point average of 3.0 or better in courses in biology and related fields (see B and C above) are eligible to apply for the honors program, and should do so before the beginning of their senior year.

The *student* must find a member of the faculty of the department to act as sponsor. The student, with the *approval of the sponsor,* must submit a research proposal, in writing, to the department.

Acceptance into the honors program is contingent upon approval of the proposal by the *department.*

Honors students must be enrolled in BIO 291-292 (Senior Project) normally for four (4) hours of credit.

Three (3) copies of the completed thesis or report must be submitted to the sponsor no later than 21 days before the date of graduation. One copy will be returned to the student; one copy will remain with the sponsor; and the third will be placed on file in the department.

Conferral of honors is contingent upon the recommendation of a *reading committee* consisting of the sponsor, another member of the department, and an outside reader. In addition, the student must maintain a grade point average of not less than 3.4 in all biology and related courses taken in the senior year.

COURSES IN THE BIOLOGICAL SCIENCES

BIO 101, 102. Introduction to Biological Sciences

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. Two hours of lectures, one hour of discussion, and one three-hour laboratory per week. Primarily intended for non-biology majors.
Fall and Spring, 4 credits each semester

BIO 105, 106. Freshman Biology Seminar

This course is primarily for freshmen biology majors. It presents a series of lectures by members of the staff who will discuss current trends in the biological sciences, with reference to research work in progress in the department.
Fall and Spring, 1 credit 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 multicellular organisms are used, representing both plants and animals. Three hours of lectures or discussion, and one three-hour laboratory per week.
Prerequisites: Chemistry 102 or 104, and Bio 151, 152
Corequisite: Physics 161, 162, or Physics 101, 102
Fall and Spring, 4 credits each semester

BIO 236. Field and Theoretical Ecology

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, and biogeography, will be discussed, with emphasis on their relevance to the study of evolving biotic communities. Two hours lecture, one four-hour laboratory period per week.
Prerequisite: Junior status or permission of instructor.
Spring, 4 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 lec-

tures or discussion, and two three-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 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. Grade 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, 1 to 2 credits per semester

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 two three-hour laboratories per week.
Prerequisites: Chemistry 201, 202 and 205 or permission of instructor.
Fall, 4 credits

BIO 336. Marine Biology

An introduction to the marine ecosystem with emphasis on 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, and permission of instructor.
Spring, 4 credits

BIO 341. (Same as PSY 341). Introduction to the Nervous System

Comparative survey of gross and microscopic anatomy, physiology and integrative capacities of nervous systems from coelenterates to mammals including a consideration of integrative capacities of non-neural systems such as protozoa, porifera and mesozoans. Emphasis will be on the relation of increasing structural complexity of nervous systems to their integrative capabilities.

Prerequisites: BIO 201, 202.

Fall, 3 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.

Prerequisite: BIO 202 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.

Prerequisites: BIO 151, 152, 201, 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. 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 undergraduates. Consult the *Graduate Bulletin* for details about these courses.

DEPARTMENT
OF CHEMISTRY

Professors: Francis T. Bonner *(Chairman)*, Harold L. Friedman, Edward M. Kosower, Yoshi Okaya, Fausto Ramirez, Sei Sujishi, Max Wolfsberg*

Associate Professors: John M. Alexander, Theodore D. Goldfarb, Albert Haim, Noboru Hirota, Paul C. Lauterbur, William J. leNoble, Arnold Wishnia

Assistant Professors: Robert C. Kerber, George H. Kwei, Steven L. Murov, Robert F. Scheider, Charles S. Springer, Edward I. Stiefel, Jerry L. Whitten
Director of Chemical Laboratories and Lecturer: Paul D. Croft
Coordinator of General Chemistry Laboratories and Lecturer: James W. Hagen

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*)

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*Senior Chemist, Brookhaven National Laboratory, on part-time appointment at the State University of New York at Stony Brook.

CHE 108 (*Quantitative Chemistry Laboratory*)
CHE 153 (*Solution Chemistry*)
CHE 154 (*Equilibrium and Thermodynamics*)
CHE 155 (*Solution Chemistry Laboratory*)
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 fields*

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 MAJORS

YEAR	CHEMISTRY		PHYSICS		MATH	HUM, SOC LANG	TOTAL
I	103[c]	4 credits	101	4 credits 102[a]	3 credits	6 credits[b]	17 cr.
	104,8	5 credits	102	4 credits 103	3 credits	6 credits	18 cr.
II	153,5	5 credits	151	4 credits 155	3 credits	6 credits	18 cr.
	154,6	5 credits	152[f]	4 credits 156	3 credits	6 credits	18 cr.
III	201,3,255,257	10 credits		[ ][d]		6 credits[e]	16 cr.
	202,4,256,258	10 credits				6 credits[i]	16 cr.
IV	305[g]		Electives[h]			6 credits[i]	17 cr.

[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. However, Chemistry 101, 102 will also be accepted for major requirements.

[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.

HONORS PROGRAM IN CHEMISTRY

Students who have maintained a cumulative grade point average of 3.0 in Chemistry, Physics and Mathematics through the junior year may become candidates for Departmental Honors in Chemistry upon application to the Department at the beginning of their senior year. The basic requirement for Honors is completion of a Senior Thesis based upon research performed during the senior year. The thesis will be read by a committee consisting of the student's senior research adviser, one other faculty member from the Department of Chemistry, and a faculty member from another department in a related field. The awarding of Honors requires the recommendation of this committee, and is also contingent upon the maintenance of a 3.0 GPA in all course work in Chemistry, Physics and Mathematics.

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 (or Mathematics 112 for non-chemistry majors).
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. Quantitative Chemistry Laboratory B

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 A**

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.
Corequisites: 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 or 205.
Fall and Spring, 3 credits each semester

**CHE 203, 204.   Organic Chemistry
Laboratory A**

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 hours of laboratory and discussion per week.
Corequisites: CHE 201, 202.
Fall and Spring, 2 credits each semester

**CHE 205, 206.   Organic Chemistry
Laboratory B**

Course material similar to CHE 203, 4. Primarily for non-chemistry majors. Four hours of laboratory and discussion per week.
Corequisites: CHE 201, 202.
Fall and Spring, 1 credit each semester

**CHE 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 cur-

ricular developments. Three class hours per week. This course is identical with Physics 239 and ESS 239.

Prerequisites: 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

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

Introduction to methods of research in organic chemistry with emphasis on use and evaluation of instrumental techniques in qualitative and quantitative organic analysis. The latter half of the course will feature planning and performance of an individual project of an exploratory nature. Two lecture hours and six laboratory hours per week.

Prerequisites: CHE 202 and 204.

Corequisites: 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

CHE 306. Inorganic Chemistry II

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

Prerequisite: CHE 305.

Fall or Spring, 3 credits

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 256.

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 su-

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

COURSES IN CLASSICAL LANGUAGES

The following courses are offered pending the development of a full program:

GRK 111, 112.   Elementary Greek

An introduction to the Greek language, including the study of grammar, with reading and writing.
Prerequisites: None.
Mrs. Wilson
Fall and Spring, 3 credits each semester

LAT 151, 152.   Readings in Latin Literature

Readings in classical Latin literature of the Republic. The course will include a brief intensive review of grammar and the sampling of a number of authors including Catullus, Cicero, Vergil, and Livy.
Prerequisite: Three years of high school Latin.
Mr. Godfrey
Fall and Spring, 3 credits each semester

[LAT 153.   Literature of the Roman Republic]

Selected works of Plautus, Terence, Cicero, Lucretius and Catullus will be translated and examined in their social and historical context. The reading of critical works in English will also be required.
Prerequisite: Three years of high school Latin.
Mr. Godfrey
To be offered 1969-70

[LAT 154.   Literature of the Roman Empire]

Selected works of Virgil, Horace, Livy, Petronius, Martial, Tacitus, and Juvenal will be translated and examined in their social and historical context. The reading of critical works in English will also be required.
Prerequisite: Three years of high school Latin.
Mr. Godfrey
To be offered 1969-70.

DEPARTMENT OF EARTH AND SPACE SCIENCES

Professors: SAMUEL S. GOLDICH, S. NEVIL MILFORD (*Visiting part-time*), ALLISON R. PALMER, OLIVER A. SCHAEFFER (*Chairman*), BENGT STROMGREN (*Adjunct*), PETER K. WEYL
Associate Professors: HONG-YEE CHIU (*Adjunct*), M. GRANT GROSS, MARVIN KALKSTEIN
Assistant Professors: ROBERT T. DODD, JR., GILBERT N. HANSON, PETER ROSE, RAYMOND N. SMITH
Lecturer: MORTON S. ROBERTS (*part-time*)
Curator: CHARLES BUDDENHAGEN

The Earth and Space Sciences undergraduate program prepares the student for gainful scientific participation in the explorations of the oceans, the earth, the moon, the solar system, and the universe which are presently being conducted by industry, governmental agencies and academic institutions. These are areas of scientific inquiry 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 or oceanography are several of the many possible areas of employment.

Students interested in marine biology should major in biological sciences.

The undergraduate program requires no specific set of courses so that a student has a wide choice to take advantage of the interdisciplinary nature of the department. In this way, a curriculum of studies can be selected which is tailored to the special interest of the student. The student's program will be planned in consultation with an adviser assigned by the department.

Elementary and secondary education programs may be elected in the area of earth and space sciences. The elementary education program requires a concentration of 19 credits in earth and space science courses of which at least 6

credits are at the 200 course level or higher and a year's sequence (8 credits) selected from either chemistry or physics. The secondary education program has the same departmental requirements as an earth and space science major.

Requirements for the Major in Earth and Space Sciences

In addition to the general University requirements for the Bachelor of Science degree, the following are required for the major in earth and space sciences:

A. *Study within the area of the major*

27 credits of courses in the Department of Earth and Space Sciences of which at least 9 credits are numbered 300 or higher.

B. *Courses in related fields*

27 credits of courses in biology, chemistry, physics or mathematics of which at least 16 credits are in the same department. If a mathematics concentration is elected, 12 credits in mathematics courses numbered above 150 are required. With few exceptions one year of chemistry, physics and mathematics represents a minimal requirement. As a result, most students will elect more than 27 credits of science and mathematics courses outside the area of the major.

COURSES IN EARTH AND SPACE SCIENCES

INTRODUCTORY COURSES

The following courses while of interest and value to science students are primarily designed for the general university student who is not majoring in a physical science, but who elects the course either because of a personal interest or to fulfill the science requirement of the College of Arts and Sciences. Because these have no prerequisites and can be taken in any order, any two of the courses will meet the laboratory science elective one year sequence for the B.A. or B.S. degree. In addition, the earth science requirement for secondary school science teaching certification may be met with any two of the courses. No mathematical facility beyond simple algebra is required in any of the courses.

ESS 101. Astronomy

The subject is introduced in an historical manner and the modern ideas are interpreted on the basis of the present observations. The development of astronomy is followed from the early Greeks through Kepler and Newton down to the present time. Topics covered are: the determination of planetary and stellar distances, stellar spectra, masses of stars, structure and energy of the sun and stars, stellar evolution, galaxies, the moon and the solar system. The laboratory is devoted to telescopic observations and optical and spectroscopic measurement. Three lecture hours and one 3 hour laboratory per week.

Fall, 4 credits

ESS 102. Geology

Earth processes, such as weathering, sedimentation, glaciation, vulcanism, metamorphism, and mountain building are considered. Laboratory work includes the identification of minerals and rocks, introduction to maps, and field trips in the vicinity. Three lecture hours and one 3 hour laboratory per week.
Fall and Spring, 4 credits

ESS 103. The Atmosphere

An introduction to the near-earth environment. The course will deal primarily with the physics and chemistry of the atmosphere; topics covered will include composition, structure, motions, weather, climate, and instrumentation, observations, synoptic analysis and research projects. Three lecture hours and one 3 hour laboratory per week.
Fall, 4 credits

ESS 104. Oceanography

The surface environment on the earth is unique due to the fact that 80% of it is covered by water. This course shall examine the role the oceans play in making the surface of the earth suitable for the evolution and preservation of life. The evolution of the ocean basins and of sea water during the last half billion years will be examined. The study cuts across the usual fields of specialization as the economy of nature involves among others, the biochemistry of microscopic marine plants, inorganic weathering of rocks, and physical processes in the oceans and the atmosphere. An attempt will be made to gain an insight into the complex life support system that has made the earth a manned satellite of the sun. Three lectures and one 3 hour laboratory per week.
Spring, 4 credits

ESS 106. The Ages Before Man

An introduction to geological history. Methods for dating the past; techniques for interpreting geologic history; the changes of animals and plants since the beginning of life; changes in global geography; and geologic history of selected areas of North America are considered. Laboratory work includes examination of fossils, interpretation of geologic maps and cross-sections, and field trips. Three lectures and one 3 hour laboratory per week.
Spring, 4 credits

COURSES FOR UNDERGRADUATES

The following courses are designed for majors in Earth and Space Sciences or for other majors who choose to elect a course in this area. In general the courses require preparation in chemistry, physics and/or mathematics at the University level.

ESS 122. Physical Geology

An intensive introductory course in geology intended for science majors and other students, including freshmen, with exceptional ability and interest in the physical sciences. Earth and space science majors should take this course in preference to ESS 102. Three lectures and one 3-hour laboratory.
Fall, 3 credits

ESS 201. Rocks and Minerals

A survey of the materials and processes of the earth's crust. The properties of minerals are shown to arise from and reflect their internal structures. A consideration of the influence of changing physical conditions on crystal structures provides the basis for a discussion of rocks and rock-forming processes, and the role of these processes in the evolu-

tion of the crust. Laboratories are devoted to the identification and interpretation of rocks and rock-forming minerals from hand specimen observations and simple physical measurements. Two lectures and two 2-hour laboratory sessions per week.
Prerequisite: Chemistry 102 or 104, or permission of the instructor.
Fall, 3 credits

ESS 212. Introductory Paleontology and Stratigraphy

A study of the major fossil invertebrate phyla stressing aspects of morphology, classification and stratigraphic distribution of fossils as well as a study of the spatial relations of sedimentary rocks and the development of the subdivisions of the geologic time scale.
Prerequisite: ESS 201 or permission of the instructor.
Spring, 3 credits

ESS 239. Materials and Methods in the Teaching of Physical Science

Designed for prospective secondary school teachers of earth and space sciences, chemistry, and physics; 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 and Physics 239.
Prerequisites: Physics 161, 162 or equivalent, Chemistry 101, 102, Mathematics 155, 156 or equivalent and concurrent study of an intermediate course in either chemistry or physics.
Spring, 3 credits

ESS 241. Astronomy, the Solar System

The motions of the planets, comets, and asteroids, planetary atmospheres, the surface of the moon and the planets as well as the origin of the solar system are considered. Three lecture hours per week.
Prerequisites: Mathematics 156, Physics 153 or permission of the instructor.
Fall, 3 credits

ESS 242. Astronomy, Astrophysics

An introduction to astrophysics. The course is concerned with stellar phenomena, the evolution of stars, the extent of the universe, and cosmology. Three lecture hours per week.
Prerequisites: ESS 101, Mathematics 156, Physics 153 or permission of the instructor.
Spring, 3 credits

ESS 261. Descriptive Oceanography

A descriptive survey of the oceans of the world, their water masses and currents. Three hours lecture per week.
Prerequisite: ESS 104.
Fall, 3 credits

ESS 262. Marine Geology

An introductory course of the geology of the ocean floor and surrounding areas. Topics included are continental margins as characterized by beach and shore line features and the continental shelf and slope, marginal ocean basins, mid-ocean rise and ridges, deep ocean basins, sea floor spreading and continental drift. Two hours lecture and one 3-hour laboratory per week.
Prerequisite: ESS 201.
Spring, 3 credits

COURSES FOR SENIORS

The following courses are designed primarily for majors in Earth and Space Sciences in their senior year. The courses may be elected by seniors in other science areas. Qualified juniors will be admitted to the courses with permission of the instructor.

ESS 301.   Optical and X-ray Mineralogy

Identification and interpretation of rock-forming minerals with the petrographic microscope and X-ray diffractometer. Two hours lecture and two 2-hour laboratory sessions per week.
Prerequisite: ESS 201.
Fall, 3 credits

ESS 305.   Field Geology

A field course which may be taken at any one of several approved university field stations. Credit is variable, depending on course taken.

ESS 307, 308.   Advanced General Geology

An intensive study of the basic principles of the earth sciences in which the fundamental knowledge of structural geology, geomorphology, stratigraphy and other areas is considered with emphasis on approaches involving mathematics, physics and chemistry. Topical discussions involve problems associated with larger earth features, such as continents, ocean basins, arcuate structures, geosynclines and orogenic belts. Two hours lecture and one 3-hour laboratory per week.
Prerequisites: ESS 201, ESS 212, Physics 102.
Fall and Spring, 3 credits each semester

ESS 310.   Igneous and Metamorphic Petrology

Principles of the description, classification and interpretation of igneous and metamorphic rocks. Lectures will introduce the students to the use of field and laboratory data for rock interpretation. Laboratories will stress the study of thin sections with the petrographic microscope. Includes field trips to nearby igneous and metamorphic areas.

Two lectures and two 2-hour laboratories per week.
Prerequisite: ESS 301.
Spring, 3 credits

ESS 322.   Introductory Geochemistry

A course of study emphasizing the basic chemical concepts as applied to the problems in elementary and intermediate geology. Topics included are solubility equilibrium, structural chemistry, weathering, sedimentation oxidation potentials, pH and organic matter in sediments. Two hours lecture and one 3-hour laboratory per week.
Prerequisites: CHE 102, senior standing, or permission of instructor.
Spring, 3 credits

ESS 341.   Astronomy and Galactic Dynamics

Introduction to radio astronomy; theory of thermal and non-thermal emission; cosmic rays; discrete radio sources and their description; quasars; emission and absorption of 21 cm hydrogen lines; application to the galactic structure and interstellar gas; cosmology. Three hours lecture per week.
Prerequisites: Physics 212 and 242.
Fall, 3 credits

ESS 342.   Interstellar and Galactic Astrophysics

The general properties of the interstellar gas and dust, the reddening and polarization or depolarization of radio waves and lights, the ionization and neutral hydrogen in interstellar space. The theory and dynamics of nebula, dynamics of stars and galaxies, galactic rotation and the structure of the galaxy, introduction to radio astronomy. Three hours lecture per week.
Prerequisites: Physics 212 and 242.
Spring, 3 credits

ESS 362.   Physical Oceanography

The application of fluid mechanics to the study of waves, tides and ocean currents. Three hours lecture and recitation.
Prerequisites: ESS 261, Physics 101, 102, and Mathematics 102, 103.
Spring, 3 credits

ESS 363.   Sediments and Sedimentary Processes

A study of sedimentary processes as related to the ocean. Sediment environments as related to the coastal ocean, marginal ocean basins, the deep ocean bottom, lakes and fluvial environments are studied. The sediment minerals and the processes important in sediment formation are discussed. Two hours lecture and one 3-hour laboratory per week.
Prerequisite: ESS 262.
Fall, 3 credits

GRADUATE COURSES

Qualified seniors may take 500 level courses with the permission of the Department Chairman. See *Graduate Bulletin.*

DEPARTMENT
OF ECONOMICS

Professors: CHARLES HOFFMANN, ROBERT LEKACHMAN (*Chairman*), EGON
    NEUBERGER, HERMAN STEKLER
Associate Professors: ESTELLE JAMES, PETER KALMAN, ELIYAHU KANOVSKY, MARVIN
    M. KRISTEN, CHARLES E. STALEY
Assistant Professors: JAMES V. CORNEHLS, HELEN KRAMER, EDWIN F. TERRY,
    EDWARD VAN ROY, DIETER ZSCHOCK, MICHAEL ZWEIG

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*
    ECO 101, 102 (*Economic Principles and Problems*)
    ECO 211   (*Intermediate Microeconomic Theory*)
    ECO 212   (*Intermediate Macroeconomic Theory*)
    ECO 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 business fluctuations, anti-trust problems, foreign trade and the farm problem. The first semester emphasizes "macro" economics, the second "micro" economics.

Staff
Fall and Spring 3 credits each semester

ECO 201. Money and Banking

An introduction to modern monetary institutions and mechanisms, their relationship to the economy, and governmental policies in this area.
Prerequisite: ECO 101 or permission of instructor.
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.
Prerequisites: ECO 101, 102 or permission of instructor.
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 non-union; and of the changing composition of was labor force, wage differentials, the theory of wage determination, labor legislation and unemployment.
Prerequisite: ECO 101 or permission of instructor.
Fall, 3 credits

ECO 210.   International Economics

The course covers the theory of international trade, protection, commercial policy customs, unions, capital movements, and international finance.
Prerequisites: ECO 101, 102 or permission of instructor.
Spring, 3 credits

ECO 211.   Intermediate Microeconomic Theory

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.
3 credits

ECO 212.   Macroeconomic Theory

The theory of national income determination, employment, distribution, price levels and growth.
Prerequisites: ECO 101, 102 or permission of instructor.
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.
Fall, 4 credits

ECO 225.   Social Accounting

A continuation of ECO 221, which is a prerequisite.
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.
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.
Prerequisites: ECO 101, 102 or permission of instructor.
Fall, 3 credits

ECO 234. Industrial Organization in Developed Nations

A comparative study of industrial organization, market structure, public controls, and economic planning in Western Europe and Japan. The course will extend the principles developed in ECO 233.
Prerequisite: ECO 233 or permission of instructor.
Spring, 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.
Prerequisites: ECO 101, 102 or permission of instructor.
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.
Prerequisites: ECO 101, 102 or permission of instructor.
Fall, 3 credits

ECO 238. Economics of Manpower Planning

Analyzes changing manpower requirements and labor force composition in the United States. Considers federal manpower develop-ment programs, educational responses to unemployment problems, and American support of manpower planning and educational reform in developing countries.
Prerequisite: ECO 101, 102 or permission of instructor.
Spring, 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.
Prerequisite: ECO 212 or permission of instructor.
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.
Fall, 3 credits

ECO 321. Econometrics

An introduction to the mathematical approach to the measurement and extrapolation of economic variables and the testing of models and data provides an invaluable tool to the solution of macroeconomic problems facing the student and policy-maker. The mathematical formulation of models and data provides an invaluable tool to the solution of macroeconomic economic theories. The mathematical formuable tool to the solution of macroeconomic problems facing the student and policy-maker.
Prerequisites: ECO 211, 212, 221 or permission of instructor.
Fall, 3 credits

ECO 325. Economic Development

A study of the process and problems of economic growth. Models of economic growth are examined and both developed and underdeveloped economies are reviewed with a

view to isolating key factors involved in the growth process.
Prerequisites: ECO 211, 212 or permission of instructor.
Fall, 3 credits

ECO 343. 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.
Fall, 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
Associate Professors: AARON S. CARTON, ELI SEIFMAN (*Acting Chairman and Director of Teacher Preparation*)
Assistant Professors: THEODORE BREDDERMAN, JAMES E. HIGGINS, DELORES HUNTER, ANNA MAE WALKER
Instructors: MARK GOLDBERG, ESTHER GLASS, SHI MING HU, BARBARA LIEBHART, LOUIS MASLINOFF, MORTON MECKLOSKY, ANTHONY RAY, JACK E. WILLIAMS

The Department offers the student the opportunity to pursue a career and study in education by providing programs leading to provisional certification at the elementary and secondary school levels*; courses designed to forward the study of principles and issues in the field of education; and practice and study in education in laboratory facilities maintained through cooperative arrangement with participating schools.

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 160. History of American Education

An analysis of various approaches to the study of the history of American education through an examination of the works of selected histories of education. Emphasis will be placed on developing an understanding of the material of the historical writing (i.e., the events and the characteristics of the events), the principle or principles according to which the subject has been sub-divided, and the aims of the particular history. The semester will be devoted to the analysis of works dealing with the history of education in America. Histories of education selected

for study will be chosen from among the writings of such authors as Bernard Bailyn, Maxine Greene, Lawrence A. Cremin, Raymond Callahan and others. This course is identical with History 160 (History of American Education).
Messrs. Seifman, Williams
Fall, 3 credits

EDU 162. History of Western Education

An analysis of various approaches to the study of the history of western education through an examination of the works of selected histories of education. Emphasis will be placed on developing an understanding of the materials of the historical writing, (i.e., the events and the characteristics of the events), the principle or principles according to which the subject has been sub-divided, and the aims of the particular history. The semester will be devoted to the analysis of works dealing with the history of education during the ancient, medieval and early mod-

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*For a detailed description of these programs, see the section of the bulletin entitled Elementary and Secondary Teacher Certification Programs.

ern eras. Histories of education selected for study will be chosen from among the writings of such authors as Henri I. Marrou, E. B. Castle, William K. Medlin, Charles H. Haskins, Robert Ulich and others. This course is identical with History 162 (History of Western Education).
Messrs. Seifman, Williams
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.
Messr. Peters, Carton
Fall and Spring, 3 credits

EDU 250.   Current Social Issues in American Education

Selected current social issues affecting education will be analyzed by utilizing a theoretical framework of alienation. The issues to be considered will include school integration, school dropouts, "cultural deprivation," etc.
Mr. Williams
Fall and Spring, 3 credits

EDU 345, 346.   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 Philosophy 345, 346 (Philosophy of Education).
Prerequisite: Senior standing.
Messrs. Gardner, Sternfeld, Watson
Fall and Spring, 3 credits

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 junior and senior 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 student teaching experience.
Applications must be filed in the semester preceding that in which the student plans to student teach. The dates by which applications must be completed will be announced.
Prerequisites: Senior standing and approval of Director of Teacher Preparation.
Mr. Seifman and Staff
Fall and Spring, 9 credits
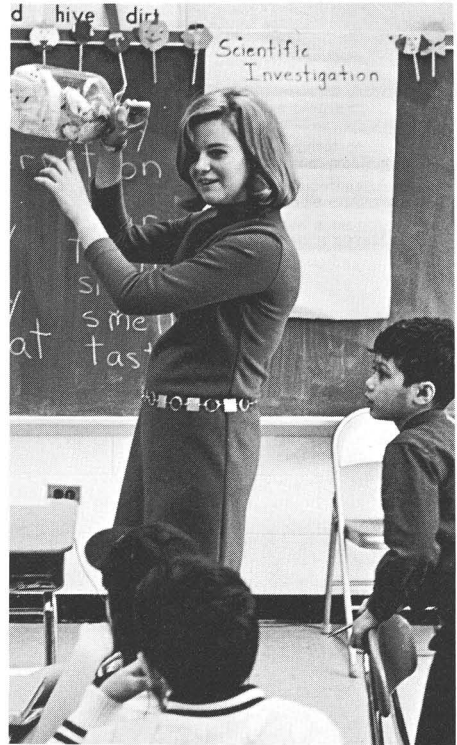
DEPARTMENT
OF ENGLISH

Professors: ROBERT P. CREED, DAVID V. ERDMAN, ALFRED KAZIN, THOMAS KRANIDAS, RICHARD L. LEVIN, *JACK LUDWIG, IRVING RIBNER, LOUIS SIMPSON, HERBERT WEISINGER (*Chairman*)

Associate Professors: EDWARD FIESS, HOMER B. GOLDBERG, THOMAS E. MARESCA, RUTH MILLER, JOSEPH PEQUIGNEY, THOMAS ROGERS, JUDAH L. STAMPFER, JOHN A. THOMPSON

Assistant Professors: KENNETH T. ABRAMS, RICHARD D. BRETT, PAUL J. DOLAN, JANET F. EGLESON, DIANE FORTUNA, BEATRICE L. HALL, JIM HARRISON, HOWARD J. HARVEY, JERAMY LARNER, GEORGIANNA W. LORD, GEORGE PETTY, JONAH RASKIN, SALLIE SEARS, PETER SHAW, ALICE S. WILSON

Instructors: ROBERT A. ACKERMAN, JOSEPH T. BENNETT, SUSAN CHANOVER, CLAUDETTE CHARBONNEAU, JERRY A. DIBBLE, MARCEL EINSTADTER, CATHERINE GILES, STEPHEN B. KOCH, JACKIE PRITZEN, GEORGE QUASHA, WILLIAM WALSH

Requirements for the Major in English

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

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.
   EGL 151 (*Interpretation of Poetry*).
   One other introductory course numbered 150-199.
   2. EGL 211 (*Shakespeare*).
   3. Nine additional courses in the Department beyond the introductory level, to be chosen in consultation with the student's advisor. The Department expects a student to distribute the courses among a fairly wide range of periods and genres. EGL 285, *Methods of Instruction,* and EGL 290, *Writing Workshop,* cannot be counted toward the nine additional courses. Up to two World Literature courses may be counted among the nine additional courses in the Department. Students seeking teacher certification must include EGL 283 or EGL 284.

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* On leave academic year 1968-69.

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.)

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.
Staff

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.
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.
Staff

3 credits

EGL 225.   Poetry of the Early Seventeenth Century

Studies of the poems of Donne, Jonson, Herbert, Hettick, Crashaw, Vaughan, and Marvell, with some attention to the minor poets of the period.
Staff
Fall, 3 credits

EGL 227.   Milton

Study of all Milton's English poetry and se-

lections from his prose works, with major emphasis on *Paradise Lost*.
Staff
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.
Staff
3 credits

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.
Staff
Fall, 3 credits

EGL 237. Eighteenth Century English Novel

Study of form and technique in representative works of Defoe, Richardson, Fielding, Smollett, and Sterne.
Staff
Fall, 3 credits

EGL 247. Nineteenth Century English Novel

Comparative analysis of representative works of Jane Austen, Thackeray, the Brontes, Dickens, George Eliot, and Hardy.
Staff
Spring, 3 credits

EGL 253. Romantic Poetry

Works of Blake, Coleridge, Wordsworth, Byron, Shelley, and Keats.
Staff
Spring, 3 credits

EGL 254. Victorian Poetry

Works of Tennyson, Browning, Arnold, Hopkins, and Hardy, with some attention to other poetry of the period.
Staff
Spring, 3 credits

EGL 256. Victorian Prose

Readings in Carlyle, Newman, Arnold, Huxley, Mill, and Ruskin.
Staff
3 credits

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.
Prerequisite: EGL 161 or consent of instructor.
Staff
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.
Staff
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.
Staff
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.
Staff
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.
Staff
Fall and Spring, 3 credits

EGL 283. The English Language

A linguistic approach to contemporary English; phonemics, usage, and applied linguistics are stressed.
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.
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. (This course cannot be counted as one of the 9 additional courses in the Department as stated in A. 3 of the Requirements for the Major in English.)
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.
Staff
Spring, 3 credits
   (This course cannot be counted as one of the 9 additional courses in the Department as stated in A. 3 of the Requirements for the Major in English.)

EGL 295. The Bible as Literature

Study of literary forms and themes in selected readings from the Old and New Testaments.
Staff
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.
Staff
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.
Staff
Fall, 3 credits

EGL 315. Elizabethan Poetry

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

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.
Staff
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.
Staff
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.
Staff
Fall, 3 credits

EGL 366. William Butler Yeats

Readings in the poetry, plays, autobiographies, and letters.
Staff
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.
Staff
Spring, 3 credits

EGL 370. Early American Prose and Poetry, 1607-1828

Major literary documents of the Colonial and Revolutionary periods through the Enlightenment. Emphasis is on the emergence of literary forms and attitudes.
Staff
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.
Staff
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.
Staff
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.
Staff
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.
Staff
Fall, 3 credits

EGL 382. History of Literary Criticism II

Analytic survey of major texts in the history

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
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.
Fall and Spring, 3 credits each semester

GER 151, 152.   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.
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 152 or language "proficiency," or equivalent, and permission of instructor.
Fall and Spring, 3 credits each semester

GER 231, 232.   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 151, 152, or equivalent.
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 or senior standing and permission of instructor.
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.
Spring, 3 credits

[GER 333.   Lessing]

Reading and interpretation of the most important dramatic and critical works by Lessing. These will be studied in connection with the development of the *Aufklarung*.
Prerequisites: GER 231, 232, or equivalent.
Fall, 3 credits

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 231, 232, or equivalent.
Fall and Spring, 3 credits each semester

[GER 341.   Nineteenth Century German Poetry]

The Romantic poets, especially Novalis, Brentano, Eichendorff. Post-Romantic poets, such as Morike, Heine, Nietzsche, and Meyer. Impressionism and Symbolism: or Hofmannstahl, George, early Rilke.
Prerequisites: GER 231, 232, or equivalent.
Fall, 3 credits

[GER 342.   Twentieth Century German Poetry]

German expressionism, expecially Trakl, Heym, Stramm and Werfel, and late Rilke. The Nature poetry of Loerke and Lehmann. The major survivors of Expressionism: Gottfried Benn and Bertolt Brecht.
Prerequisites: GER 231, 232, or equivalent.
Spring, 3 credits

GER 345.   Nineteenth Century German Drama

Critical reading and analysis of nineteenth century dramas by Kleist, Grillparzer, Buchner, and Hebbel.
Prerequisites: GER 231, 232, or equivalent.
Mr. Flaxman
Fall, 3 credits

GER 346.   Twentieth Century German Drama

Critical reading and analysis of dramas from Naturalism, Neoromanticism, and Expressionism, and by later figures such as Bertolt Brecht.
Prerequisites: GER 231, 232, or equivalent.
Spring, 3 credits

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.
Prerequisites: GER 231, 232, or equivalent.
GER 347 is a prerequisite for GER 348.
Fall and Spring, 3 credits each semester

[GER 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: GER 231, 232, or equivalent.
Spring, 3 credits

[GER 355.   Seventeenth Century German Literature]

Representative baroque lyric (Fleming, Dach, Gerhard, Silesius, Hofmannswaldau, Gryphius), drama (Gryphius, Lohenstein), prose fiction (Grimmelshausen), and literary theory (Opitz). Survey of political, religious and cultural factors that shaped German baroque literature. Reference to the other arts and to foreign influences and parallels, such as Shakespeare.
Prerequisites: GER 231, 232, or equivalent.
Fall, 3 credits

[GER 358.   Sturm und Drang]

Plays of young Goethe, Lenz, Klinger, **Leise**witz, Wagner; lyric of the *Gottinger Hain* and Burger. Irrationalistic, pietistic, and rev-

olutionary tendencies of the later eighteenth century. Influences of Shakespeare, Klopstock, Rousseau.
Prerequisites: GER 231, 232, or equivalent.
Spring, 3 credits

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
Fall and Spring, 3 credits each semester

RUS 151, 152. 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.
Prerequisites: RUS 111, 112, or equivalent.
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. Additional work in the language laboratory is required. May be taken concurrently with or following RUS 211, 212.
Prerequisites: RUS 111, 112, or equivalent.
Fall and Spring, 3 credits each semester

RUS 231, 232. 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 151, 152, or equivalent.
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 231, 232, 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 231, 232, or equivalent.
Spring, 3 credits

RUS 381. Nineteenth Century Russian Literature

Study of selected topics in Russian literature of the nineteenth century. This course is conducted partly in Russian.
Prerequisites: RUS 231, 232, and one additional course in Russian literature.
Fall, 3 credits

RUS 382. Twentieth Century Russian Literature

Study of selected topics in Russian literature of the twentieth century.
Prerequisites: RUS 231, 232, and one additional course in Russian literature. This course is conducted partly in Russian.
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.
Fall, 3 credits

Linguistics 282. 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.

Prerequisite: Major in English, foreign language, or anthropology; or permission of the instructor.

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
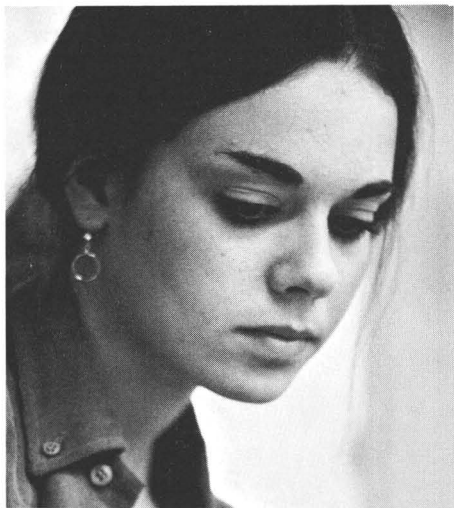
DEPARTMENT
OF HISTORY

Professors: ERNESTO CHINCHILLA-AGUILAR, JACKSON TURNER MAIN, BERNARD SEMMEL *(Chairman)*, WILLIAM R. TAYLOR, DAVID F. TRASK, *ARTHUR P. WHITKER

Associate Professors: WERNER T. ANGRESS, DAVID B. BURNER, **HUGH G. CLELAND *(Executive Officer)*, ROBERT PAXTON *(Director of Graduate Studies)*, JOHN W. PRATT, JOEL T. ROSENTHAL, PHILIP J. STAUDENRAUS, RUBEN E. WELTSCH *(Adjunct)*, ALLAN K. WILDMAN

Assistant Professors: PER A. ALIN, KARL S. BOTTIGHEIMER, HERMAN LEBOVICS, ROBERT H. G. LEE, ROBERT M. LEVINE, ROBERT D. MARCUS

Instructors: RUTH SCHWARTZ COWAN, KARL W. DEMUTH

Documents Collector and Lecturer: W. KEITH KAVENAGH

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 HIS 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. Advanced courses, chosen in consultation with the adviser. Nine credit hours must be taken from two categories of courses designated as Pre-Modern European History, and Non-Western History. At least three credit hours of the nine must be taken in each category.

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.

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*Visiting, Fall Semester 1968.
**On leave academic year 1968-69.

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. European Civilization from the Renaissance to the French Revolution

A study of European ideas and institutions from the Renaissance to the French Revolution, including the heritage of the Middle Ages; Renaissance art, politics, and thought; the Reformation and Counter-Reformation; the rise of the modern state; the new science; the Enlightenment; and the course of the French Revolution to 1815.
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 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.
Staff
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.
Staff
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.
Mr. Levine
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.
Mr. Levine
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

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. Burner
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 221.   History of Central America

Central America from pre-colonial times to the present: The Maya and Aztec civilizations; Spanish conquest; independence; efforts at political and economic unity; relations with the United States and other powers.
Mr. Chinchilla-Aguilar
Fall, 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 nineteenth and twentieth centuries is undertaken, with emphasis on intellectual, economic, and diplomatic relations with the United States and Europe.
Mr. Levine
Fall, 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.
Spring, 3 credits

[HIS 225.   Social History of Colonial Spanish America]

A study of social structure, typologies, stratification and dynamics of the Spanish colonies in the New World during the sixteenth to eighteenth centuries from the Conquistadores to the forerunners of independence. Special emphasis will be given to interracial relations and social position of Indians, *mestizos* and *castas*.
Mr. Chinchilla-Aguilar
Fall, 3 credits
To be offered 1969-70.

[HIS 226.   Economic History of Colonial Spanish America]

A history of land ownership, production, industry, monetary systems and trade, focussed on the two basic types of economic structure: capitalistic, tropical agriculture and mining for export to Europe; and non-capitalistic, self-sufficient, economic farms on marginal and frontier zones. Emphasis is on problems of manpower (slavery, *encomienda, mita,* etc.) , transatlantic trade and navigation, and the impact of the colonies on Spanish and European economic development.
Mr. Chinchilla-Aguilar
Spring, 3 credits
To be offered 1969-70.

HIS 228.   History of Brazil

Brazil from colonization to the present: the transplantation of European culture to Brazil; the development of modern society; problems of political, ethnic, economic and cultural development.
Mr. Levine
Spring, 3 credits

HIS 229.   Argentina since 1810

The political, economic, and social history of Argentina from the end of the colonial period to the present, with special attention to the Rosas tyranny, the "Argentine miracle" of development from 1880 to 1914, and the background, evolution, and aftermath of the Peron regime.
Mr. Whitaker
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 Britanica*; 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 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.
Mr. Seifman
Fall and 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 244. East Central Europe, 1453-1945

A survey of the territorial belt between the German and Russian power bases; the rise and decline of the Polish, Bohemian and Hungarian Kingdoms; the role of the Hapsburg Empire; the Eastern Question; the national movements and successor states up to the Second World War.
Mr. Weltsch
Spring, 3 credits

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though the emphasis will be on political and
social aspects of this period, economic and
cultural trends will be included in the inves-
tigation.
Mr. Angress
Spring, 3 credits

**HIS 391, 392. Senior Honors Seminar
in History**

A two-semester seminar for qualified senior
majors, presenting an introduction to the
methods and problems of historical inquiry
and research. A long paper is written in the
second semester in partial fulfillment of the
requirements for an honors bachelor's de-
gree. The student, in consultation with the
department, may choose his field of special-
ization for the honors paper.
Prerequisites: a 3.0 average in social science
courses, or permission of the department.
Mr. Rosenthal
Fall and Spring, 3 credits each semester

HIS 399. Readings in History

Qualified senior majors in History will be af-
forded the opportunity to read selectively
under the guidance of a faculty member. No
student will be allowed to enroll in this
course more than once in the senior year.
Prerequisites: Major in History, senior stand-
ing, and permission of the department.
Staff
Fall and Spring, 1 to 3 credits
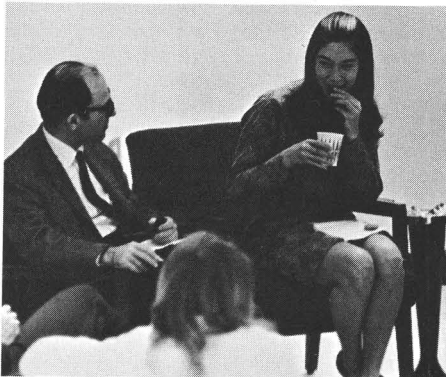
INTERDEPARTMENTAL COURSES IN THE HUMANITIES

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 Gunter 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 Moliere, 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 developments 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: ALFRED ADLER, WILLIAM D. BARCUS *(Acting Chairman)*, RAOUF DOSS, WILLIAM G. LISTER, ELVIRA RAPAPORT, PETER SZUSZ

Associate Professors: WILLIAM C. FOX, GODFREY ISAACS, DONALD WEHN, EUGENE ZAUSTINSKY

Assistant Professors: GREGORY BACHELIS, HUGO D'ALARCAO, DAVID ELWORTHY *(Visiting)*, LAWRENCE FEINER, JACK HACHIGIAN, PAUL G. KUMPEL, JR., Y. Y. OH, DAVID SCHROER, R. SHANTARAM, HENRY TRAMER

Instructors: DAVID BEAUCAGE, ALLAN EDELSON, SANDRA MONTEFERRANTE, LOUIS PIGNO, JOSEPH SEIF

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 MAT 302 and to meet the University language requirement in French, German, or Russian. Many graduate schools require two of these three languages.

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:

MAT 102, 103, 155, 156, 201, 202, 232, 301

MAT 312 or MAT 323

Physics 101, 102

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. Infinite series.
Prerequisite: Mat 102.
Fall and Spring, 3 credits

MAT 105. Elements of Probability and Statistics

Random events and finite probability, discrete probability models, counting procedures. Some basic discrete probability distributions, their uses including prediction and hypothesis testing.
Fall, 3 credits
N.B. MAT 105, 112, 121, and 132 may be used to satisfy requirements in the elementary education program.

MAT 112. Elements of Calculus

An introduction to the calculus. Differentiation and integration with geometric applications.
Prerequisite MAT 101 or permission of the instructor. A student may not take both MAT 102 and 112 for credit.
Spring, 3 credits

MAT 121. Elements of Geometry

Elements of logic and the basic laws of reasoning. Introduction to the modern axiomatic method. Elementary algebra as an axiomatic system. Introduction to projective, euclidean, and non euclidean geometries as examples of axiomatic systems. Groups of transformations and other unifying concepts.
Spring, 3 credits

MAT 132. Elements of Algebra

Topics selected from: the integers; elementary number theory; the rational numbers, polynomials, extensions of the rationals, constructability; transcendental numbers, the real number system.
Spring, 3 credits

MAT 155. Linear Algebra and Vector Geometry

Vector geometry in n-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. Multivariate Calculus

Vector calculus; the differential, Jacobian, directional derivatives, the inverse and implicit function theorems. Multiple integrals. Ordinary differential equations.
Prerequisite: MAT 155.
Fall and Spring, 3 credits

MAT 201, 202. Advanced Calculus

The topology of metric spaces. Limits, continuity, mean value theorems. The operations of differentiation and integration and their interchange with limits. Surfaces, with an introduction to manifolds. Differential forms, Stokes' theorem. Special topics.
Prerequisite: MAT 156.
Fall and Spring, 3 credits each semester

MAT 203. Topics in Calculus I

Ordinary and partial differential equations; Bessel 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 MAT 301.
Spring, 3 credits

MAT 205. Probability and Statistics

Sample space and distribution functions. The binomial, Poisson and normal distributions. 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. Groups and rings together with their homomorphisms and quotient structures. Integral domains, particularly unique factorization domains and principal ideal domains. Fields and polynomial domains over fields.
Prerequisite: MAT 155.
Fall and Spring, 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 theorem.
Prerequisite: MAT 202.
Fall and Spring, 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, 313. Introduction to Topology

Introduction to point set topology; connectedness, compactness, continuity, etc. The fundamental group and covering spaces. Simplicial complexes and introduction to homology groups, classification of surfaces. Differential manifolds, differential forms and DeRham's theorem.
Prerequisites: MAT 202 and 232.
Fall and Spring, 3 credits each semester

MAT 323. Introduction to Differential Geometry

Local theory of curves and surfaces in Euclidean spaces; fundamental forms, curvature, geodesics. Introduction to global differential geometry.
Prerequisite: MAT 202.
Spring, 3 credits

MAT 351. Mathematical Logic

A systematic study of the logical foundations of contemporary mathematics, intended for the general mathematician as well as for the specialist in logic. Formal development of the syntax of a standard theory: propositional calculus, quantification theory, identity and description.
Prerequisite: Two years of college mathematics or permission of the instructor.
Fall, 3 credits

DEPARTMENT
OF MUSIC

Professors: BILLY JIM LAYTON (*Chairman*), * ISAAC NEMIROFF
Associate Professors: JOHN LESSARD, DAVID LEWIN
Assistant Professors: SAMUEL BARON, EDWARD A. BONVALOT, SIMON KARASICK
Instructor: RICHARD A. KRAMER
Director of Choral Music: GREGG SMITH
Performing Artists in Residence: ADELE ADDISON, MARTIN CANIN, RALPH FROELICH, DAVID GLAZER, BERNARD GREENHOUSE, JACK KREISELMAN, PAUL MAKANOWITZKY, RONALD ROSEMAN, ARTHUR WEISBERG

Performing Group in Residence: The New York Woodwind Quintet
The undergraduate major in music is designed as a balanced educational program which serves as preparation for professional careers and advanced training in performance, composition, scholarship, and teaching. Students who intend to teach music in elementary and secondary schools must expect to spend at least one additional semester at some institution of higher learning after the completion of the Bachelor of Arts degree in music in order to meet New York State Education Department requirements for certification as a music teacher.

Requirements for the Major in Music

In addition to the general University requirements for the Bachelor of Arts degree, the following requirements must be met for the major in music:
    A. *Admittance to the major*
        The entering student who chooses to declare a major in music must satisfy the Department of his technical ability and previous experience.
    B. *Study within the area of the major*
        1. Theory
           MUS 125, 126, 127, 128 (*Basic Compositional Skills*)
           MUS 201 (*Analysis of Tonal Music*)
           MUS 203 (*Analysis of Twentieth-Century Works*)
        2. History and Literature
           MUS 141, 142 (*The History of Western Music*)
           Four additional courses numbered 341 or higher, to be chosen in consultation with the student's advisor. The courses should be distributed among a range of historical periods.

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* On leave fall semester 1968.

3. Performance

At least one course from the groups MUS 161-199 (Secondary Instrument or Voice) or MUS 261-299 (Primary Instrument or Voice) every semester. MUS 113, 114 (University Chorus) or MUS 115, 116 (University Orchestra) or MUS 117, 118 (University Band) for two years.

C. *Piano proficiency*

All students will be expected to pass a piano proficiency test after one year of study. A student who has not passed his proficiency test by the end of the second year of study will not be permitted to continue as a music major. The test may be waived, in the case of an obviously qualified student, upon the recommendation of the piano instructor.

D. *Foreign language*

The University proficiency requirement must be met in French or German.

COURSES IN MUSIC

MUS 107.   Foundations of Musicianship

The notation of intervals, scales, rhythms, and meters, together with ear training in these areas.
Prerequisite: None.
Mr. Lessard
Fall and Spring, 3 credits each semester

MUS 113, 114.   University Chorus

Open to all students. Study and performance of a repertory from the Middle Ages to the present. Meets three hours per week. More than four unexcused absences from rehearsals eliminates credit. MUS 113 (Fall semester) carries no credit, but it is a prerequisite for MUS 114 (Spring semester) which carries one credit. May be repeated for a maximum of two credits.
Prerequisite: Auditions.
Mr. Smith
Fall and Spring

MUS 115, 116.   University Orchestra

Open to all students. Study and performance of works from the repertory of the concert orchestra. Meets three hours per week. More than four unexcused absences from rehearsals eliminates credit. MUS 115 (Fall semester) carries no credit, but it is a prerequisite for MUS 116 (Spring semester) which carries one credit. May be repeated for a maximum of two credits.
Prerequisite: Auditions.
Fall and Spring

MUS 117, 118.   University Band

Open to all students. Study and performance of works from the repertory of the concert band. Meets three hours per week. More than four unexcused absences eliminates credit. MUS 117 (Fall semester) carries no credit, but it is a prerequisite for MUS 118 (Spring semester) which carries one credit. May be repeated for a maximum of two credits.
Prerequisite: Auditions.
Mr. Karasick
Fall and Spring

MUS 125, 126.   Basic Compositional Skills I, II

The construction of melodies. Modal coun-

terpoint in two and three voices.
Prerequisite: MUS 107 or the equivalent.
Mr. Lewin
Fall and Spring, 3 credits each semester

MUS 127, 128.   Basic Compositional Skills III, IV

Tonal harmony. Practice in homophonic writing, including the harmonization of chorales.
Prerequisite: MUS 126
Mr. Lessard
Fall and Spring, 3 credits each semester

MUS 141, 142.   The History of Western Music

A survey of style and form extending from antiquity to the present day.
Prerequisite: MUS 107 or the equivalent.
Mr. Bonvalot
Fall and Spring, 3 credits each semester

MUS 151.   Basic Piano

Instruction in keyboard skills for beginners, intended for music majors who are unable to pass the Department's piano proficiency examination. Small groups of students meet one hour per week with the instructor, with four hours individual practice required.
Prerequisite: Permission of instructor.
Mr. Canin
Fall and Spring, no credit

MUS 161 to 199.   Secondary Instrument or Voice

One half-hour individual lesson each week, with five hours practice required. Open to music majors and, enrollment permitting, to other students with a serious interest in music.
Prerequisite: Permission of instructor.
Fall and Spring, 1 credit each semester

MUS 161.   Piano

Mr. Canin

MUS 167.   Violin

Mr. Makanowitzky

[MUS 168.   Viola]

To be offered 1969-70

MUS 169.   Cello

Mr. Greenhouse

[MUS 170.   String Bass]

To be offered 1969-70

MUS 174.   Flute

Mr. Baron

MUS 175.   Oboe

Mr. Roseman

MUS 176.   Clarinet

Mr. Glazer, Mr. Kreiselman

MUS 177.   Bassoon

Mr. Weisberg

MUS 183.   Horn

Mr. Froelich

MUS 184.   Trumpet

Mr. Karasick

MUS 185.   Trombone

Mr. Karasick

MUS 186.   Tuba

Mr. Karasick

[MUS 191.   Percussion]

To be offered 1969-70

MUS 199.   Voice

Miss Addison

MUS 201.   Analysis of Tonal Music

This course will examine, through the study of selected works, the action and interaction of harmonic progression, rhythm, meter, motive and line in defining and articulating tonal structures.
Prerequisite: MUS 128.
Mr. Lewin
Fall, 3 credits

MUS 203.   Analysis of Twentieth-Century Works

Music to be studied will be selected from representative works by Debussy, Bartók, Schoenberg, Stravinsky, Webern, and others.
Prerequisite: MUS 201.
Mr. Lewin
Spring, 3 credits

MUS 213.   Tonal Counterpoint

A study of the art of combining voices under the conditions of tonal harmony as observed in works from Bach through the Romantic composers.
Prerequisite: MUS 128.
Mr. Layton
Fall, 3 credits

[MUS 215.   Advanced Harmony]

Techniques and practices beyond those studied in MUS 128.
Prerequisite: MUS 128.
To be offered 1969-70

MUS 241.   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 esthetics of their day.
Prerequisite: Ability to read music.
Mr. Kramer
Spring, 3 credits

MUS 243.   Opera

A genre, engaging the full genius of Monte-verdi, Rameau, Handel, Gluck, Mozart, Verdi, Wagner, Richard Strauss, Debussy, Berg and others, is investigated through a significant selection of works.
Prerequisite: Ability to read music.
Mr. Bonvalot
Spring, 3 credits

MUS 245.   The Symphonies of Beethoven

This course will examine the nine symphonies of Beethoven, first as independent compositions, second as illustrating the development of the composer's style and thought over his career, third, as pivotal works in the transition from the eighteenth to the nineteenth century in Western music.
Prerequisite: Ability to read music.
Mr. Kramer
Fall, 3 credits

MUS 247.   Music of the Twentieth Century

An introduction to the variegated and rapidly changing trends of the present century, including impressionism, expressionism, neo-classicism, twelve-tone and other serialism, constructivism, chance music, electronic and computer music, as well as styles derived from folk music, jazz and other forms of popular music.
Prerequisite: Ability to read music.
Mr. Nemiroff
Spring, 3 credits

MUS 261 to 299.   Primary Instrument or Voice

One hour individual lesson each week, with 15 hours practice required. Open only to students with adequate preparation who demonstrate a professional commitment to the performance of music.
Prerequisite: Permission of instructor.
Fall and Spring, 2 credits each semester.

MUS 261.   Piano

   Mr. Canin

MUS 267. Violin

Mr. Makanowitzky

[MUS 268. Viola]

To be offered 1969-70.

MUS 269. Cello

Mr. Greenhouse

[MUS 270. String Bass]

To be offered 1969-70

MUS 274. Flute

Mr. Baron

MUS 275. Oboe

Mr. Roseman

MUS 276. Clarinet

Mr. Glazer, Mr. Kreiselman

MUS 277. Bassoon

Mr. Weisberg

MUS 283. Horn

Mr. Froelich

MUS 284. Trumpet

Mr. Karasick

MUS 285. Trombone

Mr. Karasick

MUS 286. Tuba

Mr. Karasick

[MUS 291. Percussion]

To be offered 1969-70

MUS 299. Voice

Miss Addison

[MUS 301. Homophonic Forms]

Composition in Classical and Romantic styles, proceeding from individual phrases to large movements.
Prerequisite: MUS 128.
To be offered 1969-70

MUS 303. Fugue

Application of the skills of tonal counterpoint to fugal composition.
Prerequisite: MUS 213.
Mr. Layton
Spring, 3 credits

MUS 305. Orchestration

The possibilities and limitations of the commonly used instruments. Conventions of notation. Practice in scoring for various ensembles.
Prerequisite: MUS 128.
Mr. Lessard
Spring, 3 credits

MUS 313. Composition

Open only to students demonstrating sufficient aptitude and capacity for original work.
Prerequisite: Permission of instructor.
Mr. Layton
Spring, 3 credits

MUS 317. Conducting

Basic baton technique and the analysis and preparation of instrumental and vocal scores for performance.
Prerequisites: MUS 203, 305 and permission of instructor.
Spring, 3 credits

MUS 319. Ensemble

Chamber music ensembles such as the string quartet, solo vocal ensemble, piano trio, piano duo, and other ensembles, including the mixed groupings characteristic of the twentieth century, each meet one hour per week under the direction of a member of the performance faculty for the study and prepa-

ration of works from the repertories of the respective groups. The work of the course is normally directed toward the performance of the compositions studied. Open only to students with adequate preparation in their primary instrument or voice.
Prerequisite: Permission of instructor.
Fall and Spring, 1 credit each semester

MUS 325. Advanced Instruction in Instrument or Voice

Individual guidance in technique and repertory, with thirty (30) practice hours required each week.
Prerequisites: Open only to advanced students with adequate preparation, with the permission of the instructor and the Department Chairman. (Special students will be admitted by permission of the Dean.)
Fall and Spring, 6 credits each semester.

[MUS 341. Music of the Middle Ages]

The traditions of Europe from early Christian chant to the polyphonic forms of the late fourteenth century.
Prerequisite: MUS 142.
To be offered 1969-70

MUS 345. Classical Chamber Music

The string quartets of Haydn, Mozart and Beethoven provide a central point of reference in the course.
Prerequisite: MUS 142.
Mr. Kramer
Fall, 3 credits

MUS 347. Johann Sebastian Bach

A study of selected vocal and instrumental works.
Prerequisite: MUS 142.
Mr. Kramer
Spring, 3 credits

[MUS 349. The Sixteenth-Century Madrigal]

The development in Italy of this important form is traced to its eventual influence on England.
Prerequisite: MUS 142.
To be offered 1969-70

[MUS 351. Beethoven]

Works of differing scope and medium drawn from every period of his life will be studied.
Prerequisite: MUS 142.
To be offered 1969-70

[MUS 353. The Operas of Mozart]

A general consideration of *opera seria, opera buffa, Singspiel* and other traditions affecting the composer's style accompanies a detailed examination of selected works.
Prerequisite: MUS 142.
To be offered 1969-70

[MUS 355. Verdi]

The operas selected for critical comparison will illustrate the steady growth and refinement of his art over more than fifty years.
Prerequisite: MUS 142.
To be offered 1969-70

MUS 359. Wagner

A study of his progress from romantic opera to music drama will be supplemented by readings in the prose works.
Prerequisite: MUS 142.
Mr. Bonvalot
Fall, 3 credits

MUS 361. Piano Music of the Nineteenth Century

The repertory of the solo instrument from Beethoven to Debussy.
Prerequisite: MUS 142.
Mr. Lewin
Spring, 3 credits

[MUS 363. Stravinsky]

The changing stylistic manners adopted by a pivotal composer of the twentieth century.
Prerequisite: MUS 142.
To be offered 1969-70

[MUS 365. Schoenberg]

The course will turn on his double role as

child of an old tradition and father of a new language.
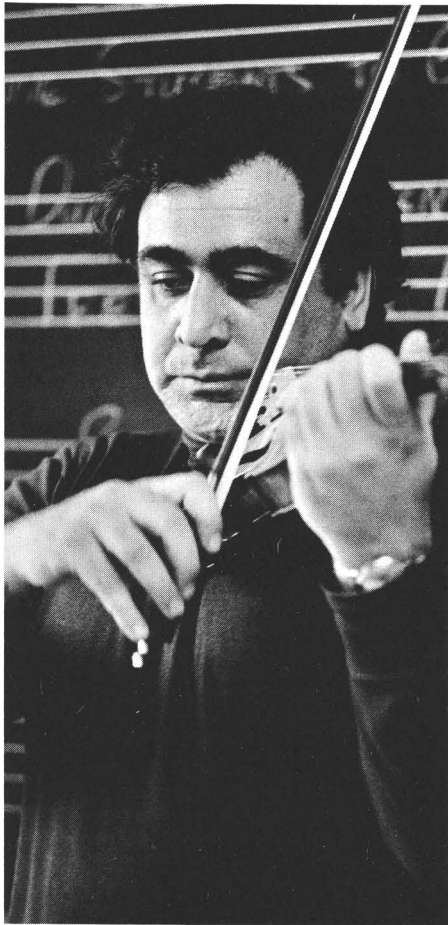Prerequisite: MUS 142.
To be offered 1969-70

MUS 399. Independent Project

Individual study under the guidance of a staff member leading to a major essay or composition.
Prerequisites: Permission of instructor and approval by Department Chairman.
Fall and Spring, 3 credits each semester

DEPARTMENT
OF PHILOSOPHY

Professors: Sidney Gelber (*Chairman*), Robert Sternfeld, Harold Zyskind
Associate Professors: Marshall Spector, Victorino Tejera, Walter Watson
Assistant Professors: Edward Erwin, Sidney Gendin, Patrick Hill
Instructors: David Benfield, John Lango, Doris E. Yocum
Visiting Lecturer: Eddy M. Zemach

Requirements for the Major in Philosophy

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:

PHI 151 (*Ethics*)

PHI 161 or 162 (*Logic* or *Symbolic Logic*)

PHI 211 (*Problems of Esthetics*)

PHI 237 (*Theory of Knowledge*)

Two (2) semesters of the following courses:

PHI 201 (*Major Thinkers: Ancient and Medieval*)

PHI 202 (*Major Thinkers: Modern*)

Two (2) semesters from the following:

PHI 391, 392 (*Advanced Seminar*)

PHI 393, 394 (*Analysis of Philosophic Texts*)
In addition: (a) Two (2) semesters from among any 200 courses, with the exception of PHI 201, 202, 211 and 237, and (b) two (2) semesters from among any 300 courses, with the exception of

PHI 345, 346, 391, 392, 393 and 394.

B. *Courses in related areas*
Approved electives outside philosophy (three semesters)

philosophy of mind. Among the topics discussed are: the logical status of discourse about psychological phenomena and events, and of discourse about other minds; philosophical materialism (the Identity Thesis), philosophical behaviorism and the thesis of physicalism; and the distinction between thoughts and sensations.
Prerequisite: Humanities 122 or consent of instructor.
Mr. Erwin
Fall, 3 credits

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

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 Philosphy.
Mr. Sternfeld
Fall, 3 credits

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, Jaspers, and Sartre.
Prerequisite: One semester of Philosophy.
Mr. Lango
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. Gardner, 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 ex-
aminations of broad scope covering a wide
range of writings unifified 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 philos-
ophy. The course is designed to acquaint
philosophy majors with the fundamental dis-
cipline of philosophy as a carefully wrought
discursive argument which formulates, inves-
tigates, and resolves fundamental problems.
Prerequisite: Two courses in Philosophy.
Staff
Fall and Spring, 3 credits each semester

PHI 399. Reading and Research in
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: HERBERT M. BROWN, BARBARA A. HALL, A. HENRY VON MECHOW, JOHN W. RAMSEY, EDITH STEPHEN, MILDREN R. WEHRLY (*Acting Director*)
Instructors: KENDRA A. BEESLEY, PAUL DUDZICK, KENNETH LEE, ROBERT B. SNIDER

Physical Education Requirement

The physical education requirement requires each undergraduate student of the University to satisfactorily complete one year (two semesters) of physical education. This requirement can be fulfilled during any two semesters chosen by the student with the exception of the Freshman year. However, Freshmen are permitted, with the permission of the instructor, to audit any physical education courses.

The physical education requirement can also be fulfilled, in whole or in part, by a student's participation in intercollegiate athletics.

To receive credit for a semester of physical education, a course will have to be passed, but no credit is to be received nor grades given other than Pass or Fail. The Pass or Fail grade is computed by evaluating the student's attendance and attitude during the semester.

Each student must earn a minimum of 100 points to satisfy the University's physical education requirement. All successfully completed physical education classes are awarded 50 points per semester.

Any student participating in an intercollegiate sport will be awarded points based on attitude and attendance during practice and games; and the equating of time in relation to courses offered.

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. These courses aim to develop knowledge, understandings and skills as well as strategy and social behaviors of a sport or dance activity selected by the student from a wide range of offerings.

PEM 100, 101. Individual and Team Sports

Fall (PEM 100) and spring (PEM 101) courses will consist of two or three sports as scheduled by the Physical Education Office according to the availability of staff and facilities. Instruction will include the techniques, rules, strategy and social behaviors involved in team and individual sports activities. Selections will be made from the fol-

lowing: archery, badminton, baseball, basketball, deck tennis, golf, gymnastics, handball, physical conditioning, soccer, softball, speedball, squash, table tennis, tennis, touch football, track and field, volleyball and weightlifting.
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) will be offered in two sections; Section 1, tennis and badminton and Section 2, golf and squash. The spring sports for women (PEW 101) are Section 1, badminton and tennis and Section 2, fencing and archery.

Staff
Fall and Spring

PEM 102, 103. Team Sports

Fall (PEM 102) and Spring (PEM 103) courses will consist of two team sports as scheduled by the Physical Education Office according to the availability of staff and facilities. Instruction will include the techniques, rules, strategy and social behaviors involved in team sports. Selections will be made from the following: Fall; basketball, soccer, touch football and volleyball. Spring; baseball, basketball, softball, track and field and volleyball.
Staff
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. The spring sports (PEW 103) include basketball and softball.
Staff
Fall and Spring

PEM 104, 105. Individual Sports

Fall (PEM 104) and Spring (PEM 105)

courses will consist of two or three sports as scheduled by the Physical Education Office according to the availability of staff and facilities. Instruction will include the techniques, rules, strategy and social behaviors involved in individual sports activities. Selections will be made from the following: archery, badminton, deck tennis, fencing, golf, gymnastics, handball, physical conditioning, squash, table tennis, tennis and weightlifting.
Staff
Fall and Spring

PEW 104. Physical Education in the Elementary School

A course to help prospective classroom teachers conduct Physical Education activities for the first six grades. The course will include the responsibilities of the classroom teacher in meeting the needs of the elementary child in an activity program.
Miss Beesley
Spring

PEW 106, 107. Officiating Women's Activities

A basic course designed to acquaint the student with the official playing rules of women's activities and the methods and techniques of officiating. National rating tests will be used in conjunction with practical experience at the local secondary schools.
Staff
Fall and Spring

PEM 110, 111. Recreational Sports

Fall (PEM 110) and Spring (PEM 111) courses will consist of one or two recreational sports as scheduled by the Physical Education Office according to the availability of staff and facilities. The courses are designed for students interested in recreational activities. Class sections meet once a week for a double period (2 1/2 hours) . A special fee of $25.00 is necessary for enrollment in this course. Selections will be made from the following: bowling, golf and riding.
Staff
Fall and Spring

PEW 110, 111. Recreational Sports (Equitation)

Fall (PEW 110) and Spring (PEW 111) courses are designed to equip students at the beginner and intermediate level with the theory and practical application of Equitation. This course meets for a double period (2½ hours) once a week and a special fee of $25.00 is necessary for enrollment.
Mrs. Johnson
Fall and Spring

PEM 120, PEW 120. Basic Swimming

Separate courses for men and women designed to equip students at the nonswimmer and beginner levels with basic swimming skills and knowledge.
Staff
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.
Staff
Fall and Spring

PEC 122. Advanced Swimming and Life Saving

A course designed to equip the student 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 Water Safety Instructor.
Prerequisite: PEC 122 or equivalent.
Mr. von Mechow
Fall and Spring

PEW 124. Synchronized Swimming

A fundamental course designed to acquaint students with various synchronized swimming 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.
Miss Stephen
Fall and Spring

PEW 131. Advanced Modern Dance

A study in modern dance composition with intensive experimentation in individual and group choreography.
Miss Stephen
Fall and 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 and Spring

PEC 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 135. Modern Dance Teaching Methods for Elementary School Teachers

A study of the teaching methods and materials used for teaching Modern Dance for ages 6-13 yrs. Simple body-building tech-

niques—freedom of expression and thera-
peutic values.
Miss Stephen
Fall and Spring

PEW 140.   Basic Gymnastics

A basic course covering the four olympic
pieces: free exercise, un-even parallel bar,
horse and balance beam.
Miss Beesley
Fall

PEW 141.   Intermediate Gymnastics

An intermediate course covering the four
olympic pieces, including adaptation of tech-
niques in compositional performances.
Miss Beesley
Spring

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 or *Chemistry* 103, 104; *Chemistry* 108 and either *Chemistry* 153, 154, and 155 or *Chemistry* 201, 202, 205 and 206

Mathematics 102, 103 and *Mathematics* 155, 156

Physics 351, 352, or 341, 342 or *Chemistry* 255, 256

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 and space sciences.

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. Any two of the following: 101, 102, 103, 104, 106

Education 203 (Psychological and Social Foundations of Educational Theory)

Education 345, 346 (History and Philosophy of Education)

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

Education 350 (Practice Teaching)

DEPARTMENT OF PHYSICS

Professors: NANDOR L. BALAZS, GERALD E. BROWN [b], ERNEST D. COURANT [b g], MAX DRESDEN [a], LEONARD EISENBUD, ARNOLD FEINGOLD, GUIDO FINOCCHIARO (*Visiting Professor*), DAVID FOX, MAURICE GOLDHABER (*Adjunct Professor*), MYRON L. GOOD, EDWARD D. LAMBE [h], BENJAMIN W. LEE [b], LINWOOD L. LEE, JR.[c], HERBERT R. MUETHER, T. ALEXANDER POND (*Chairman*), HENRY B. SILSBEE, ARNOLD A. STRASSENBURG [j], CLIFFORD E. SWARTZ, JOHN S. TOLL, CHEN NING YANG [d] (*Einstein Professor*)

Associate Professors: OAKES AMES, HONG-YEE CHIU [f], PAUL P. CRAIG [g], ROBERT L. DEZAFRA, DAVID B. FOSSAN, PETER B. KAHN, YI-HAN KAO, JANOS KIRZ, JULIET LEE-FRANZINI, RICHARD A. MOULD, MALCOLM H. SKOLNICK [i], PATRICK THADDEUS [f]

Director of the Physical Laboratory: KARL EKLUND [e]

Assistant Professors: JAMES A. COLE, DONALD A. EMMONS, DANIEL Z. FREEDMAN [b], ALFRED S. GOLDHABER [b], ERLEND GRAF, PAUL D. GRANNIS, JOHANNES GROENEVELD [b], RUDOLPH C. HWA [b], BORIS KAYSER [b], PAUL R. KRAMER, YONG Y. LEE, HWA-TUNG NIEH [b], PETER PAUL, ROBERT WEINBERG

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 PHY 101, 102, 151, 152, and MAT 102, 103, 155, 156 by the end of his

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[a]Executive Officer, Institute for Theoretical Physics.

[b]Member, Institute for Theoretical Physics.

[c]Director, Nuclear Structure Laboratory.

[d]Director, Institute for Theoretical Physics.

[e]Associate Director, Nuclear Structure Laboratory.

[f]Member, NASA Goddard, on part-time appointment at Stony Brook.

[g]Physicist, Brookhaven National Laboratory, on part-time appointment at Stony Brook.

[h]Director of Instructional Resources Center and Assistant Vice-Chancellor for Instructional Resources and Informational Services of SUNY.

[i]Associate Director of Instructional Resources Center.

[j]Director of Division of Education and Manpower Studies, American Institute of Physics.

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. Extremely able students may accelerate this program sufficiently, to allow inclusion of courses from the Department's graduate offerings in the senior year.

Requirements for the Major in Physics

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

PHY 101, 102 and 151, 152 (*General Physics*) *

One year of Chemistry (commonly, CHE 103, 104)

MAT 102, 103 and 155, 156 (*Calculus*)

PHY 201, 202 (*Electromagnetic Theory*)

PHY 211 (*Thermodynamics, Kinetic Theory and Statistical Mechanics*)

PHY 212 (*Mechanics*)

PHY 235, 236 (*Junior Laboratory*)

PHY 341, 342 (*Modern Physics*)

MAT 203, 204 (*Topics in Calculus*)

Foreign Language: The proficiency requirement must be met in French, German, or Russian.

Seniors preparing for further graduate study in physics are urged, but not required, to take PHY 343, 344 (*Methods of Mathematical Physics*) and/or PHY 345, 346 (*Senior Laboratory*).

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*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.

COURSES IN PHYSICS

The courses General Physics I—IV are designed to present a thorough introduction to classical and modern physics for those who may major in physics, some other physical science, or engineering.

PHY 101, 102. General Physics I and II

The first semester wil be largely a study of mechanics. Topics will include kinematics and vectors; momentum, force, and energy; the conservation laws; rotational motion; gravitation, and planetary motion. Use of the calculus will be introduced concurrently with its exposition in Mathematics 102. The second semester will be devoted mainly to the study of electromagnetic theory. Topics include the electric field, Gauss's law, and electric potential; currents; the magnetic force, sources of the magnetic field, and inductance; Maxwell's equations; and the harmonic oscillator in electrical and mechanical systems. The laboratory program introduces 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 111, 112 (also listed as CHE 111, 112).

A study of physical science for non-science majors. This course is co-sponsored by the departments of chemistry and physics and satisfies the general university requirement of a laboratory science course. In a combination of lectures, demonstrations, and laboratory exercises often done individually at home, students explore several fundamental generalizations concerning our physical universe. During the first semester, conservation of energy and momentum is demonstrated and the consequences form a base for study of the microstructure of matter. During the second semester, two topics are chosen from a list including electromagnetism, astrophysics,

fundamental particles, and complex molecular structures.

Prerequisite: High School algebra.
Fall and Spring, 4 credits each semester

PHY 151. General Physics III

This course is a direct continuation of Physics 101, 102. Wave theory is introduced by studying waves on a string and the properties of elastic waves. Maxwell's equations are then used to derive the principal features of electromagnetic waves in space. This leads through a brief look at geometrical optics to a detailed study of physical optics including interference, diffraction, and polarization. Finally there is an introduction to the properties of ideal gases, to the kinetic theory, and to the principles of thermodynamics, and evidence is presented to demonstrate the need for modification of classical physics, e.g. the problem of specific heats, the blackbody radiation law, and optical spectra. Two lecture hours, one recitation hour, and one three-hour laboratory per week.

Prerequisite: Grade of C or better in Physics 101, 102. In special cases, and with the consent of instructor, this course may follow Physics 161, 162.

Corequisite: Mathematics 155.
Fall, 4 credits

PHY 152. General Physics IV A

Mostly an introduction to particle and quantum physics. Topics studied will include special relativity, the particle aspects of electromagnetic radiation, the wave aspects of material particles, the concept of a wave function, and other fundamentals of the quantum theory. These ideas will be discussed as they relate to atomic spectra and structure, nuclear structure, elementary particles, and as-

pects of molecular and solid-state physics. Two lecture hours, one recitation hour, and one three-hour laboratory per week.
Prerequisite: Physics 151.
Corequisite: Mathematics 156.
Spring, 4 credits

PHY 153.   General Physics IV B

Mostly an introduction to particle and quantum physics. Topics studied will include special relativity, the particle aspects of electromagnetic radiation, the wave aspects of material particles, the concept of a wave function, and other fundamentals of the quantum theory. These ideas will be discussed as they relate to atomic spectra and structure, nuclear structure, elementary particles, and aspects of molecular and solid-state physics. 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 that of PHY 101, 102, 151, 152. Three instructional hours and one three-hour laboratory per week.
Fall and Spring, 4 credits each semester

PHY 175, 176.   Concepts, Methods and Significance of Physical Science

A course for students with philosophical, literary or humanistic interests in physical science. The structures of the major theories of physics are investigated and analyzed. In re-

lation to each theory the mode of its development, its limitations, its relation to the total structure of physics, its philosophical and pseudo-philosophical implications and its technological and social consequences are studied. Three instructional hours and one three hour laboratory per week.
Open only to Juniors and Seniors. Permission from the instructor is required for registration.
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 and Earth and Space Sciences 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 physi-cal 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.
Prerequisites: PHY 235, 236 or permission of the Chairman.
Corequisites: 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.
Prerequisites: 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

(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: RICHARD L. SKLAR, MARTIN B. TRAVIS *(Chairman)*, JAY C. WILLIAMS, JR.

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

Assistant Professors: EDWARD I. FRIEDLAND, ROBERT F. MILLER, FRANK E. MYERS, PETER RANIS, RODNEY P. STIEFBOLD *

Instructors: WINFRIED FRANKE, JAMES P. GIFFORD, ANDREW D. GLASSBERG, CHARLES F. LEVINE

Visiting Lecturer: LEE E. KOPPELMAN

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, International Relations*

2. A course in research methods in political science (either *Political Science* 391 or 392 or 393)

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.

HONORS PROGRAM IN POLITICAL SCIENCE

An honors program is available for capable majors in political science.

Admission to Honors Program

Normally a candidate will first take a Senior Seminar chosen from among POL 391, 392 or 393. Admission will then depend upon: a) A grade point average of 3.0 in Political Science by the end of the fall semester of the senior year: b) Approval of a professor who is willing to supervise the honors paper and of one other member of the department: c) Registration in Political Science 399, Honors Research, during spring semester of senior year.

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* On leave.

Requirements

To receive Honors in Political Science the student will write an honors paper in the spring of his senior year. The research will be directed by the particular professor under whom the student wishes to work. The honors paper must: a) give evidence of intellectual inventiveness whether in an empirical study, an analysis of the literature of some problem, original discourse on some topic, or other mode of study or research: b) be typed on bond paper, with one carbon copy: c) be in the hands of the supervising professor by May 1: d) be graded by a committee made up of the supervising professor, one other departmental member (of senior rank), and one "outside" faculty member: e) receive a grade of "A" from the grading committee.

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.
Staff
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.
Staff
Fall and Spring, 3 credits each semester

POL 103. International Relations

Introductory survey of the international system, its characteristic forms and the principal forces making for conflict and adjustment. Examination of some prevalent analytical concepts, of major current problems and developments and of prospects and alternatives for the future.
Staff
Fall and Spring, 3 credits each semester

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. Williams, Lakoff
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. Sklar
Fall, 3 credits

POL 210. Politics in Africa

A study of nationalism, political thought, and political institutions in Africa. Consideration is given to the quest for unity, the problems of liberation, and the political implications of social change.
Mr. Sklar
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.
Mr. Scarrow
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 214. Politics of Latin America]

A comparative investigation of political trends in Latin American nations. The course will include a survey of twentieth century political change, contemporary political culture, the framework and institutions of government and the interacting social and political forces of the post-World War II period. Attention will be centered on Latin America within the general pattern of political modernization, political development and prevailing ideologies. Wherever applicable, there will be an analysis of policy-making and the role of political leadership.
Mr. Ranis
Spring, 3 credits
To be offered 1969-70

[POL 215. Parties and Pressure Groups in Latin America]

An examination of the types of party systems operating in Latin America with special emphasis on comparing one-, two-, and multiparty arrangements. Attention will focus on party policies, recruitment, leadership and the relationship of parties to the political process. Relevant interest groups, both institutional and associational, will be dealt with in terms of their relationship to parties and their influence on the national government.
Fall, 3 credits
To be offered 1969-70

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 interplay of institutions, ideas and personalities as they affect the vitality of democratic poli-

tics and the future of Western European unity.
Prerequisite: POL 102 or consent of instructor.
Mr. Myers
Spring, 3 credits

POL 219. Soviet Politics

A systematic examination of the political culture and political institutions of the USSR, with special attention to the changing functional and compositional characteristics of the Communist Party in the process of economic and social modernization.
Prerequisite: POL 102 or consent of instructor.
Mr. Miller
Fall, 3 credits

POL 220. Soviet Foreign Policy

An analysis of major developments in the style and content of Soviet foreign policy from 1917 to the present, with special attention to changing patterns of interaction of ideological and power political factors in Soviet behavior toward the West, the socialist countries and the "third world."
Mr. Miller
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 222. International Organization

The course will cover a survey of alternative forms of political organization, their conditions and problems; historical precedents of international organization; the experience of the League of Nations; the United Nations and some of the more important specialized agencies; proposals for reforming the U.N. and possible future developments.
Mr. Franke
Spring, 3 credits

POL 223. Latin America and the United States

Survey of the international relations of the Latin American 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 of International Relations in Latin America

Consideration in depth of selected problems of foreign relations in Latin America including policy formulation, inter-American community development, and foreign policies of key Latin American governments.
Prerequisite: POL 223 or History 154 or consent of instructor.
Mr. Travis
Spring, 3 credits

POL 228. Arms Control and Disarmament Issues

Major issues of arms control and disarmament including use of nuclear energy; nuclear testing; nuclear proliferation; chemical and biological warfare; ballistic missile defense.
Mr. Kalkstein
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, representations, 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 other political 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.
Mr. Glassberg
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.
Spring, 3 credits
To be offered 1969-70.

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 246. Urban Power Structures]

A study of various theories of "who governs," with special attention to the urban environment.
Mr. Glassberg
Spring, 3 credits
To be offered 1969-70.

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

POL 252. The Legislative Process

An examination of American legislative institutions—Congress, State governments, local legislatures—in light of recent research. How legislatures actually operate and how American legislatures contribute to the, "democratic culture."
Prerequisite: POL 101 (American Government) or equivalent.
Mr. Levine
Spring, 3 credits

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. Levine
Fall, 3 credits

POL 254. The Politics of Governmental Planning

An examination of the governmental planning process of all levels—federal, state, regional, and local—with emphasis on the theory and practice of "creative federation" related to the process and the relationships between planning and general governmental decision-making.
Mr. Koppelman
Spring, 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

POL 271. Quantitative Methods in Political Science

Introduction to basic concepts and techniques of statistical inference and model construction in political science. The application of quantitative methods to the study of political behavior and the formulation of public policy. Special emphasis will be placed upon developing student familiarity with the computer as a research tool.
Mr. Friedland
Fall, 3 credits

POL 272. Advanced Topics in Quantitative Political Analysis

Investigation of key issues in the methodology of Political Science. Topics to be covered include: general system theory, quantitative approaches to the study of power, the mathematics of democratic theory, causality and statistical inference, stochastic modeling and the simulation of political behavior.
Prerequisite: POL 271 or permission of instructor.
Mr. Friedland
Spring, 3 credits

POL 299. Directed Readings in Political Science

Individually supervised reading into selected topics of the discipline. This course cannot be taken concurrently with POL 399.
Staff
Spring and Fall, 1 to 3 credits

POL 391. Senior Seminar: Approaches to the Study of Political Science; American Politics

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.
Prerequisite: Enrollment limited to seniors.
Mr. Glassberg
Fall, 3 credits

POL 392. Senior Seminar: Approaches to the Study of 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.
Prerequisite: Enrollment limited to seniors.
Mr. Scarrow
Spring, 3 credits

POL 393. Senior Seminar: Approaches to the Study of Political Science; International Relations

An analysis of the various approaches to the study of international relations including the identification of actors and environmental limitations of the international system, theories regarding actions of states, approaches to the interaction of states, and research techniques and orientations employed in the study of international relations.
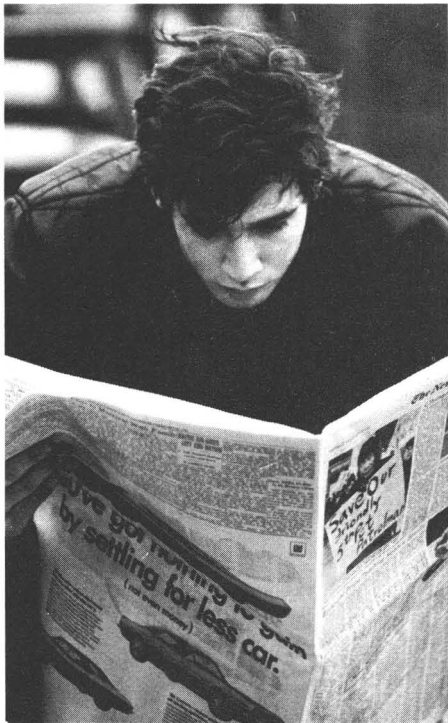Mr. Travis
Spring, 3 credits

POL 399. Honors Research

Individually supervised research for students who qualify for the Honors Program.
Staff
Spring, 3 credits

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DEPARTMENT
OF PSYCHOLOGY

Professors: JACK W. BREHM, JOHN GARCIA, * HARRY I. KALISH *(Chairman)*,
LEONARD KRASNER *(Director Clinical Training)*, ALAN O. ROSS, JOHN
S. STAMM, EVERETT J. WYERS
Associate Professors: DANA BRAMEL, GERALD C. DAVISON, JAMES H. GEER, MARVIN
R. GOLDFRIED, MARVIN LEVINE, **H. WILLIAM MORRISON, JEROME E.
SINGER
Assistant Professors: THOMAS J. D'ZURILLA, DAVID EMMERICH, LESTER G. FEHMI,
JON BARRY GHOLSON *(Visiting part-time)*, FREDRIC M. LEVINE, K.
DANIEL O'LEARY, DAVID M. POMERANZ *(Assistant Director Psychologi-
cal Services)*, ROGER SCHVANEVELDT, MARIUS C. SMITH, STUART VALINS,
JOSEPH L. YOUNG

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 26 units in psychology
PSY 101, 102 *(Introduction to Psychology)*
PSY 162 *(Statistical Methods in Psychology)*
PSY 200 (*(Experimental Methodology)*
One of the following laboratory courses: PSY 201, 202, 203, 204,
or 206.
9 credit hours in psychology electives, no more than six to be
chosen from the 391, 392, 393 series.
B. *Study in related science*
One year of mathematics
One year of biology
One additional year of a laboratory science or one additional year
of advanced mathematics as approved by adviser. (Please note:
Two of these three years of science fulfill the University science
requirement as well.)
C. *Courses in related areas*
The Department requires that students take 15 additional credits

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*On leave academic year 1968-69.
**Associate in Instructional Resources.

of courses related to psychology. These courses may also serve to fulfill the University social science requirements. The student will select these courses in consultation with his adviser.

COURSES IN PSYCHOLOGY

PSY 101, 102. Introduction to Psychology

An introduction to psychology as the science of behavior. The first semester provides an intensive investigation of the major research areas covering learning, perception, and the physiological foundations of behavior. The second semester offers an introduction to the areas of personality theory, testing, and social psychology.
Prerequisite for PSY 102: PSY 101.
Staff
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.
Prerequisites: PSY 101, 102.
Staff
Fall and Spring, 3 credits each semester

PSY 200. Experimental Methodology

An introduction to experimental methodology as applied to psychological processes: conditioning, motivation, psychophysiology of emotion, sensory and perceptual processes, and symbolic mediation.
Prerequisites: PSY 101, 102, 162.
Staff
Fall and Spring, 4 credits each semester

PSY 201. Laboratory in Perception

A study of the techniques and experimental problems in perception and sensation with emphasis on the visual, auditory, and tactual senses. The role of motivation and selective attention on the detection and recognition of stimuli will be investigated.
Prerequisites: PSY 101, 102, 162, 200.
Staff
Fall and Spring, 4 credits each semester

PSY 202. Laboratory in Physiological Psychology

A study of the techniques and experimental problems in the neurophysiological basis of behavior. Techniques and problems relating to sensation, perception, motivation, learning, and memory will be investigated.
Prerequisites: PSY 101, 102, 162, 200.
Staff
Fall and Spring, 4 credits each semester

PSY 203. Laboratory in Personality

A study of the techniques and experimental problems in personality. This course will deal with selected topics in personality derived from most of the prominent theories. Experiments will serve to illustrate many of the major propositions from these theories of personality.
Prerequisites: PSY 101, 102, 162, 200.
Staff
Fall and Spring, 4 credits each semester

PSY 204. Laboratory in Social Psychology

A study of the techniques and experimental problems in social psychology. Techniques will include natural observation, surveys, and experimental design.
Prerequisites: PSY 101, 102, 162, 200.
Staff
Fall and Spring, 4 credits each semester

PSY 206. Laboratory in Learning and Performance

A study of experimental methodology as applied to associative and motivational pro-

cesses. Response acquisition and extinction, reward and punishment, discrimination learning, retention, preceptual-motor skills, and cognitive processes.
Prerequisites: PSY 101, 102, 162, 200.
Staff
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.
Prerequisites: PSY 101, 102.
Staff
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.
Prerequisites: PSY 101, 102 (possible prerequisite or corequisite PSY 162).
Staff
Fall and Spring, 3 credits each semester

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, 102 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.
Prerequisites: PSY 101, 102.
Staff
Fall and Spring, 3 credits

PSY 213. Behavior Deviation in Children

The major focus will be the development and modification of behavioral deviations in children. After an examination of principles derived from the experimental analysis of behavior, applications of these principles to children's problems such as self-destructive behavior, retardation, autism, phobias, and classroom management problems will be studied.
Prerequisites: PSY 101, 102, 211, and permission of the instructor.
Staff
Fall and Spring, 3 credits each semester

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.
Prerequisites: PSY 101, 102.
Staff
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, 102 and Biology 101 or equivalent.
Staff
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.
Prerequisites: 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.
Staff
Spring, 3 credits

PSY 341.   (same as BIO 341) Introduction to the Nervous System

Comparative survey of gross and microscopic anatomy, physiology, and integrative capacities of nervous systems from coelenterates to mammals including a consideration of integrative capacities of non-neural systems such as protozoa, porifera, and mesozoans. Emphasis will be on the relation of increasing structural complexity of nervous systems to their integrative capabilities.
Prerequisites: BIO 201, 202 required; BIO 151, 152 recommended.
Staff
Fall, 3 credits

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

The morphological, ionic, pharmacological, and electrical factors associated with transmission across excitatory and inhibitory synapses and neuro-effector 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.
Prerequisite: BIO 202 or PSY 340.
Staff
Spring, 2 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.
Staff
Spring, 3 credits

PSY 381, 382.   Introduction to Mathematical Psychology

A study of mathematical formulations of theories of behavioral phenomena, with emphasis on learning. Attention will be paid to the process of turning intuition into theory, the mathematical tools and techniques needed to derive testable consequences of theoretical assumptions, and the process of evaluating such theories in the light of empirical evidence. The student will complete an individual project in the second term.
Prerequisites: PSY 101, 102, 162, and MAT 103, or permission of the instructor.
Fall and Spring, 3 credits each semester

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 200 and permission of the instructor.
Staff
Fall and Spring, 3 credits each semester

DEPARTMENT OF
ROMANCE LANGUAGES

Professors: KONRAD BIEBER, OSCAR A. HAAC (*Acting Chairman*)
Associate Professors: LINETTE F. BRUGMANS, HERMAN IVENTOSCH, LEONARD R. MILLS
Assistant Professors: HARRIET R. ALLENTUCH, CAROL K. BLUM, FREDERICK BROWN, JAIME GIORDANO, JAMES MCKENNA, DONALD PETREY, JOSEPH TURSI, KATHLEEN WILKINS, IRIS M. ZAVALA
Instructors: NICOLE BECKER, LISA DAVIS, MERYL EASSON, ALFRED EHRENFELD, ELLEN ENGELSON, JEREMIAH FALLON, MARGARET FRIEDMAN, GABRIELA GREENFIELD, GABRIEL LANDAU, THOMAS MERMALL, NORMAN POULIN, CHARLES SCLAFANI, KAREN SMYLEY, GEORGES TURKEWICZ, ELIO ZAPPULLA, ELLEN ZELLNER

Requirements for the Major in Spanish and French

In addition to the general requirements for the Bachelor of Arts degree, the following requirements of the Department of Romance Languages must be met:

A. *Study within the area of the major language*
1. Nine semester hours in intermediate courses 221 (or by permission 222), 231, and 232.
2. At least eighteen semester hours in courses above 250 including French 275, 321, and 322 for French majors and Spanish 272 and 321 for Spanish majors.

B. *Courses in related areas*
1. Proficiency in a second foreign language.
2. Nine semester hours in related courses with the approval of the department adviser.

C. *Teacher certification*
In addition to the requirements in A and B above, students must take courses in education required for certification including a course in methods of teaching a foreign language. A student must also demonstrate to the department that his ability in the language qualifies him for a teaching position.

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, students 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. "Language proficiency" is normally defined as the level of achievement attained in course 152. All courses except French 100 are conducted in the foreign language.

COURSES IN FRENCH

FRN 100.   Reading French

An introduction for graduate students to attain a basic reading knowledge of French.
Mr. Fallon
Fall and Spring, no credit

FRN 111, 112.   Elementary French

An introduction to spoken and written French, stressing pronunciation, speaking, comprehension, reading, and writing. Selected texts will be read. Practice in the language laboratory supplements class work.
Staff
Fall and Spring, 3 credits each semester

FRN 151, 152.   Intermediate French

An intermediate course in conversation, composition, and the interpretation of French texts. Practice in the language laboratory will further develop audiolingual skills.
Prerequisite: FRN 112, or equivalent.
Staff
Fall and Spring, 3 credits each semester

FRN 153.   Intermediate French

A review of French, also conversation, composition and the interpretation of French texts as offered in course 152. Practice in the language laboratory will develop audiolingual skills.
Prerequisites: A placement test score exempting courses 111, 112 and 151, and three years of high school French.
Staff
Fall, 3 credits

FRN 221.   French Conversation and Composition

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 152, 153, "language proficiency," or permission of the instructor.
Mrs. Brugmans and Staff
Fall, 3 credits

FRN 222.   Readings and Discussion of Modern Authors

Explication de texte, oral and written reports.
Prerequisite: FRN 221 or permission of the instructor.
Mr. Brown and Staff
Spring, 3 credits

FRN 231.   Major Writers in French through the Eighteenth Century

Reading and interpretation of selected works by great French writers from the Middle Ages to the eighteenth century. Works are treated in the context of the history of French lierature.
Prerequisites: FRN 152, 153, "language proficiency," or permission of the instructor.
Mrs. Allentuch and Staff
Fall, 3 credits

FRN 232. Major Writers in French since the Nineteenth Century

Reading and interpretation of selected works by great French writers from the nineteenth century to the present. Works are treated in the context of the history of French literature.
Prerequisites: FRN 152, 153, "language proficiency," or permission of the instructor.
Mrs. Allentuch and Staff
Spring, 3 credits

FRN 262. Pensée et Culture (French Civilization)

French writers and artists and their interpretation of society. The intellectual and cultural climate of modern France.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mr. Bieber
Spring, 3 credits

FRN 275. French Classical Theatre

Analysis of selected works by Corneille, Racine, and Molière.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mrs. Allentuch
Fall, 3 credits

FRN 276. French Classical Prose and Poetry

A study of Pascal, La Rochefoucauld, La Bruyère, Madame du Sévigné, Madame de Lafayette, Saint-Simon, La Fontaine, and others.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mrs. Allentuch
Spring, 3 credits

FRN 277. French Literature in the Eighteenth Century I

Reading of selected works from the literature of the Enlightenment from 1685 to 1750 including Prévost, Marivaux, and Voltaire.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mr. Haac
Fall, 3 credits

FRN 278. French Literature in the Eighteenth Century II

Reading of selected works of Diderot, Rousseau, and their contemporaries.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mr. Haac
Spring, 3 credits

FRN 279. Nineteenth-Century French Literature I

Critical readings and discussion of Romanticism.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mr. Haac
Fall, 3 credits

FRN 280. Nineteenth-Century French Literature II

Critical readings and discussion of Realism, Symbolism, Naturalism.
Prerequisites: FRN 231, 232, or permission of the instructor.
Staff
Spring, 3 credits

[FRN 281. Modern French Fiction to 1945]

Critical reading and interpretation of French fiction in the twentieth century, with emphasis on Proust and Gide.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mrs. Brugmans
Fall, 3 credits
To be offered 1969-70.

[FRN 282. Modern French Fiction since 1945]

Critical readings with emphasis on Malraux, Sartre, Camus.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mrs. Brugmans
Spring, 3 credits
To be offered 1969-70.

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.
Prerequisite: FRN 221, or 222, or permission of the instructor.
Mrs. Brugmans
Fall, 3 credits

FRN 322. Advanced French Grammar and Composition

A course designed to acquaint students with the subtleties of French grammar and style. Extensive practice in composition and in translation from English to French.
Prerequisite: FRN 221, or 222, or permission of the instructor.
Mrs. Brugmans
Spring, 3 credits

FRN 331. Renaissance Prose

The work of the major French prose writers of the sixteenth century, in the intellectual and cultural context of the Renaissance.
Prerequisites: FRN 231, 232.
Mr. Petrey
Fall, 3 credits

FRN 341. 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, and Verlaine with explication of individual poems.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mrs. Brugmans
Fall, 3 credits

FRN 342. Twentieth Century Poetry

A study of the major poets from Apollinaire to St. John Perse. Explication of individual poems.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mrs. Brugmans
Spring, 3 credits

FRN 347. The Modern French Theater

Representative French playrights from Alfred Jarry to the present, with particular emphasis on the post-war theater.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mr. Brown
Fall, 3 credits

FRN 348. The Literature of Commitment in France

Literature of commitment and the reaction against commitment in the twentieth century. Selected readings, prose, poetry, drama, and essays, centered around the theme.
Prerequisites: FRN 231, 232, or permission of the instructor.
Mr. Bieber
Fall, 3 credits

FRN 363. The Nineteenth Century Novel in France

"Representative French novels from the romantic period to naturalism in the context of the history of the French Literature."
Prerequisites: French 231, 232 or permission of the instructor.
Staff
Fall, 3 credits

FRN 381. Seminar in Eighteenth Century French Literature

Intensive study of one author, theme, or literary concept in a specified area of study within the eighteenth century. Diderot and his principal collaborators. Each student will select articles in the *Encyclopédie* for special study.
Prerequisites: Two courses on the 300 level or permission of the instructor.
Mr. Bieber
Fall, 3 credits

COURSES IN ITALIAN

ITL 111, 112. Elementary Italian

An introduction to spoken and written Italian, stressing pronunciation, speaking, comprehension, reading, and writing. Selected texts will be read. Practice in the language laboratory supplements class work.
Mr. Sclafani
Fall and Spring, 3 credits each semester

ITL 151, 152. Intermediate Italian

An intermediate course in the reading and discussion of selected Italian texts. An intensive grammar review with practical language laboratory exercises will offer an opportunity to develop conversational ability.
Prerequisite: ITL 112, or equivalent.
Fall and Spring, 3 credits each semester

ITL 221. Italian Conversation

A course in spoken Italian. At least one hour of laboratory is required.
Prerequisites: Italian 152, "language proficiency," or permission of the instructor.
Mr. Tursi
Fall, 3 credits

ITL 222. Readings and Discussion of Modern Authors

Readings, explication, oral and written reports.
Prerequisite: ITL 221 or permission of the instructor.
Mr. Tursi
Spring, 3 credits

ITL 231. Major Writers in Italian to the Eighteenth Century

Discussion of representative Italian writers from St. Francis of Assisi to Giuseppe Parini. The works read are treated in the context of the history of Italian literature.
Prerequisite: ITL 152 or permission of the instructor.
Mr. Tursi
Fall, 3 credits

ITL 232. Major Writers of Italian of the Nineteenth and Twentieth Centuries

Discussion of representative writers and currents in the nineteenth and twentieth centuries in Italian literature. The works read are treated in the context of the history of Italian literature.
Prerequisite: ITL 152 or permission of the instructor.
Mr. Tursi
Spring, 3 credits

COURSES IN PORTUGUESE

POR 111, 112. Elementary Portuguese

An introduction to spoken and written Portuguese, stressing pronunciation, speaking, comprehension, reading and writing. Selected texts will be read. Practice in the language laboratory supplements class work.
Mrs. Greenfield
Fall and Spring, 3 credits each semester

POR 151, 152. Intermediate Portuguese

An intermediate course in conversation, composition, and the interpretation of Portuguese texts. Practice in the language laboratory will further develop audiolingual skills.
Prerequisites: POR 112.
Mrs. Greenfield
Fall and Spring, 3 credits each semester

COURSES IN SPANISH

SPN 111, 112. Elementary Spanish

An introduction to spoken and written Spanish, stressing pronunciation, speaking, comprehension, reading, and writing. Selected texts will be read. Practice in the language laboratory supplements class work.
Staff
Fall and Spring, 3 credits each semester

DEPARTMENT OF SOCIOLOGY

Professors: *Lewis A. Coser (*Distinguished Professor*), *Rose L. Coser (*Adjunct*), Kurt Lang, Hanan C. Selvin (*Chairman*), Eugene Weinstein
Associate Professor: John Gagnon
Assistant Professors: Stephen D. Berger, Stephen Cole, O. Andrew Collver, Harvey Farberman, Kenneth Feldman, Erich Goode, Norman Goodman, James R. Hudson, Emil Oestereicher, Ned Polsky, Sasha Weitman
Instructor: Ruth Ann Pitts

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*
   SOC 103 (*Introduction to Sociology*)
   SOC 201 (*Research Methods in Sociology*)
   SOC 202 (*Statistical Methods in Sociology*)
   SOC 361 (*Historical Development of Contemporary Sociology*)
   SOC 362 (*Sociology Today*)
   At least 15 additional credit hours in sociology from courses numbered above 103.

B. *Courses in related areas*
   At least twelve credit hours in related social science disciplines beyond the introductory sequence, not more than nine credits of which may be in any one department; to be chosen in consultation with the student's adviser.

The language proficiency requirement should ordinarily be met in French or German.

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* On leave 1968-69.
**That is no course may be used to satisfy both departmental and university requirements.

COURSES IN SOCIOLOGY

SOC 101. Contemporary Society

The basic characteristics of modern industrial society, such as population growth, urbanization, technological change, and bureaucratic organization.
Fall and Spring, 3 credits each semester

SOC 103. Introduction to Sociology

A survey of the main concepts in sociological analysis.
Fall and Spring, 3 credits each semester

(Note: Each of the following courses has as it prerequisite SOC 103 or permission of the instructor.)

SOC 161. Ethnic Relations

The formation, migrations, and conflicts of ethnic and other minority groups; prejudice, discrimination, and minority self-hatred.
Fall and Spring, 3 credits each semester

SOC 201. Research Methods in Sociology

An introduction to methods of social research, emphasizing research design and analysis; the interpretation and critique of a variety of research procedures.
Fall and Spring, 3 credits each semester

SOC 202. Statistical Methods in Sociology

An introduction to the use and interpretation of statistical methods in social research; descriptive and inferential statistics.
Fall and Spring, 3 credits each semester

SOC 203. Social Stratification

Theories of social stratification; patterns of differentiation in wealth, prestige, and power; social mobility; power structures and elites.
Fall, 3 credits

SOC 204. Courtship, Marriage and the Family

The structure and functions of the family as a social institution; social factors affecting courtship, mate-selection, and engagement; dynamics of marital adjustment and parenthood.
Fall and Spring, 3 credits each semester

SOC 207. Social Problems

How social problems emerge and change, focussing on such topics as population imbalance, poverty, generational conflict, urban decay, race relations, and alienation in mass society.
Fall and Spring, 3 credits each semester

SOC 209. Social Conflicts and Movements

An examination of aggregate phenomena. "Revolutionary" and "counter-revolutionary" programs and organizations. Historical and cross-cultural examples will be emphasized.
Fall, 3 credits

SOC 235. Sociology of Religion

The ways in which socio-cultural processes affect and are influenced by religious belief systems and organizations; changing structures and functions of religious institutions.
Fall, 3 credits

SOC 236. Technology and Social Change

Technological and organizational preconditions of economic development; social implications of automation and other changes in technology.
Fall, 3 credits

SOC 237. Deviance and Delinquency

Social factors related to juvenile crime, nonvictim crime, and legal but stigmatized behavior; competing theories and research methods.
Fall and Spring, 3 credits each semester

SOC 239. Sociology of Crime

Crime as a social institution; problems of research method; types of criminal behavior systems and subcultures; sociology of law enforcement; theories of crime causation and control.
Spring, 3 credits

SOC 241. Social Psychology

Individual and social factors in human behavior; the structure of personality; identity development; communication processes; attitudes.
Prerequisite (in addition to SOC 103) : Psychology 101 or permission of the instructor.
Fall and Spring, 3 credits each semester

SOC 251. Work and the Professions

The social patterning of work situations and careers; relations of work organizations to each other and to larger social structures.
Fall, 3 credits

SOC 254. Sociology of Law

Law as an institution of social control; the legal profession, court systems, and bureaucratization of the legal process; the relation of law to social change.
Spring, 3 credits

SOC 256. Political Sociology

Social structures and processes as affecting, and affected by, political behavior and organizations; the sociology of power, authority, and legitimacy.
Fall, 3 credits

SOC 260. Comparative Social Structures

The principal complex societies and their central institutions, with emphasis on industrialization and economic development.
Spring, 3 credits

SOC 262. Mass Communications

Social influences on the content and effects of mass communications; communication systems; the public functions of mass communication.
Spring, 3 credits

SOC 263. Collective Behavior

Major unstructured social phenomena, such as mob violence, panics, fads and fashions, and public opinion, as the outcome of collective problem-solving activity.
Fall, 3 credits

SOC 281. Sociology of Organizations

Bureaucracy as a form of organization; the structure of relations between and within organizations.
Fall, 3 credits

SOC 284. Social Roles

Roles and role-systems in historical and contemporary societies.
Spring, 3 credits

SOC 287. Sociology of Education

Educational institutions as social systems; social patterns in the life-cycles of students and teachers; class and ethnic factors in educational development.
Fall and Spring, 3 credits each semester

SOC 358. War and Military Institutions

The role of violence in social affairs; military organizations; civil-military relations.
Fall, 3 credits

SOC 361. Historical Development of Contemporary Sociology

Main currents in the development of theories and empirical studies of society, culture, and personality.
Fall and Spring, 3 credits each semester

SOC 362. Sociology Today

Recent advances in research, theory, and method in the field of sociology.
Fall and Spring, 3 credits each semester

SOC 391, 392. **Senior Seminars in Sociology**

Special projects and research papers on a topic of sociological interest, which will be announced before the start of the term.
Prerequisites (in addition to SOC 103) :
Major in sociology, senior standing, and permission of the instructor.
Fall and Spring, 3 credits each semester

SOC 394, 395. **Readings in Sociology**

Selected readings, usually in a special area, to be arranged by the student and the instructor. A student may register for each course only once.
Prerequisites: Junior or senior standing, major in sociology and permission of department.
Fall and Spring, 1 to 3 credits each semester
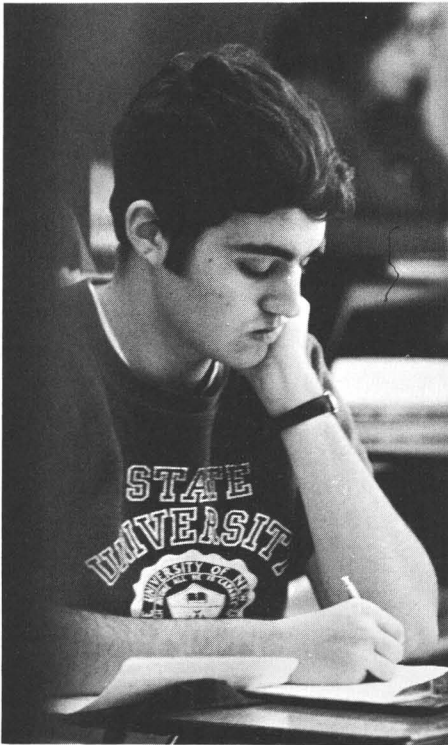
DEPARTMENT
OF THEATRE ARTS

Professor: JOHN NEWFIELD (*Chairman*)
Associate Professors: JACKSON G. BARRY, MILTON B. HOWARTH
Assistant Professor: JOHN H. HERR
Visiting Lecturer: ARNOLD SUNDGAARD

Requirements for the Major in Drama and Theatre

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

A. *Study within the area of the major*
  1. Theory and History of Theatre and Drama (To include THR 131, 132)   21 credits
  2. Applied Theatre Techniques   9 credits

B. *Courses in related areas*
  1. Electives in English and/or foreign dramatic literature including a three-credit course in Shakespeare.   6 credits
  2. Electives chosen from departments of Art, English, History, Music, Psychology or a literature course in a foreign language.   6 credits

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

D. *Departmental Requirements*
  All drama and theatre majors are required to participate in at least two University Theatre productions in at least two different capacities.

COURSES IN THEATRE ARTS
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.
Mr. Barry
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. Barry
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.
Staff
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.
Mr. Herr
Fall and Spring, 3 credits each semester

THR 232. The Fundamentals of Technical Theatre

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. Barry
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. Barry
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 238. American Theatre History

A course designed for majors and non-majors focusing on the history of theatre and drama in the United States since 1750.
Prerequisite: Permission of the instructor.
Mr. Herr
Spring, 3 credits

THR 330. Theory and Methods of Directing

Both a historical and technical approach to the function of the director in the produc-

tion 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 theatre, 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 332.   The Dramatic Image of the Renaissance

The changing ideas of life in the Renaissance and the drama that reflects them will be traced through the classical revival in Italy, the merger of the humanist and popular traditions in England, and the flowering and decline of the Tudor-Stuart Theatre.
Prerequisite: Permission of the instructor.
Mr. Barry
Spring, 3 credits

THR 333.   The History of Theatre I

An historical survey of theatre architecture, staging methods, scenic design and styles of production including the Classical through the Renaissance 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 Theatre II

An historical survey of theatre architecture, staging methods, scenic design, and styles of production including the Baroque and Ro-

coco periods and the 19th century to 1880 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.
Mr. Herr
Fall, 3 credits

THR 336.   Projects in Stage Design

Practice in stage design; analysis and expression of the play in scenic terms. Individual work.
Prerequisites: THR 331 and permission of instructor.
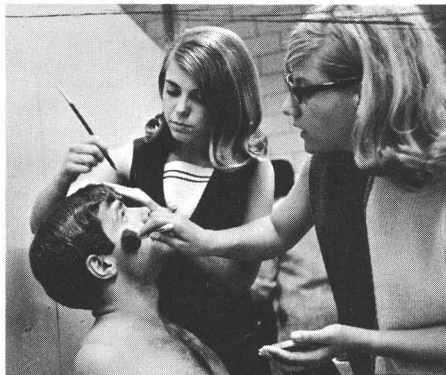Mr. Howarth
Spring, 3 credits

THR 337.   Readings in the Drama and History of the Modern Theatre

Naturalism, realism, and departures from realism in the theatrical literature and styles of production since 1880, are among the subjects considered.
Prerequisite: Permission of the instructor.
Mr. Newfield
Fall, 3 credits

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.
Mrs. Wilson
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, Existentialism, and Expressionism.
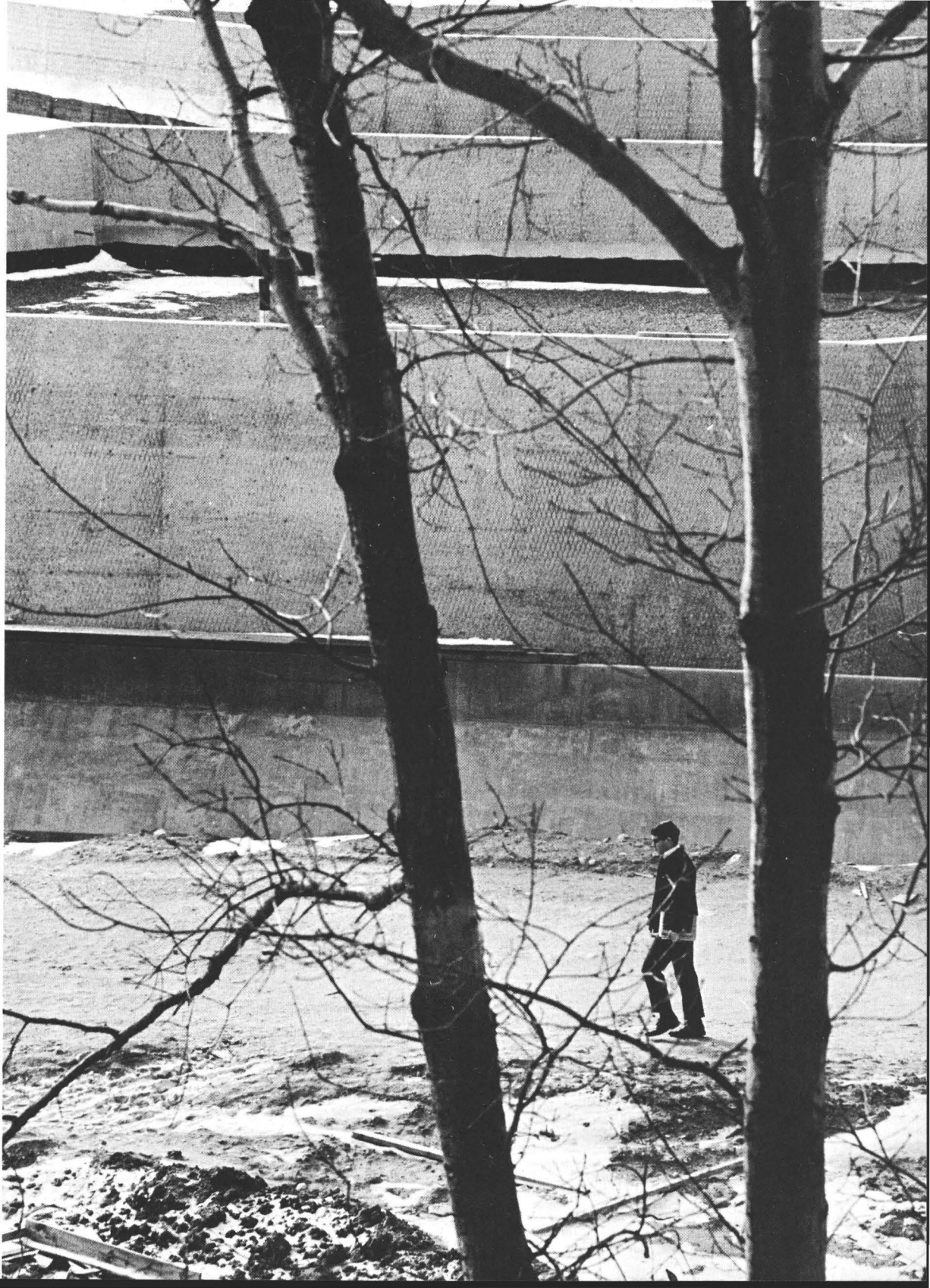Mr. Bieber
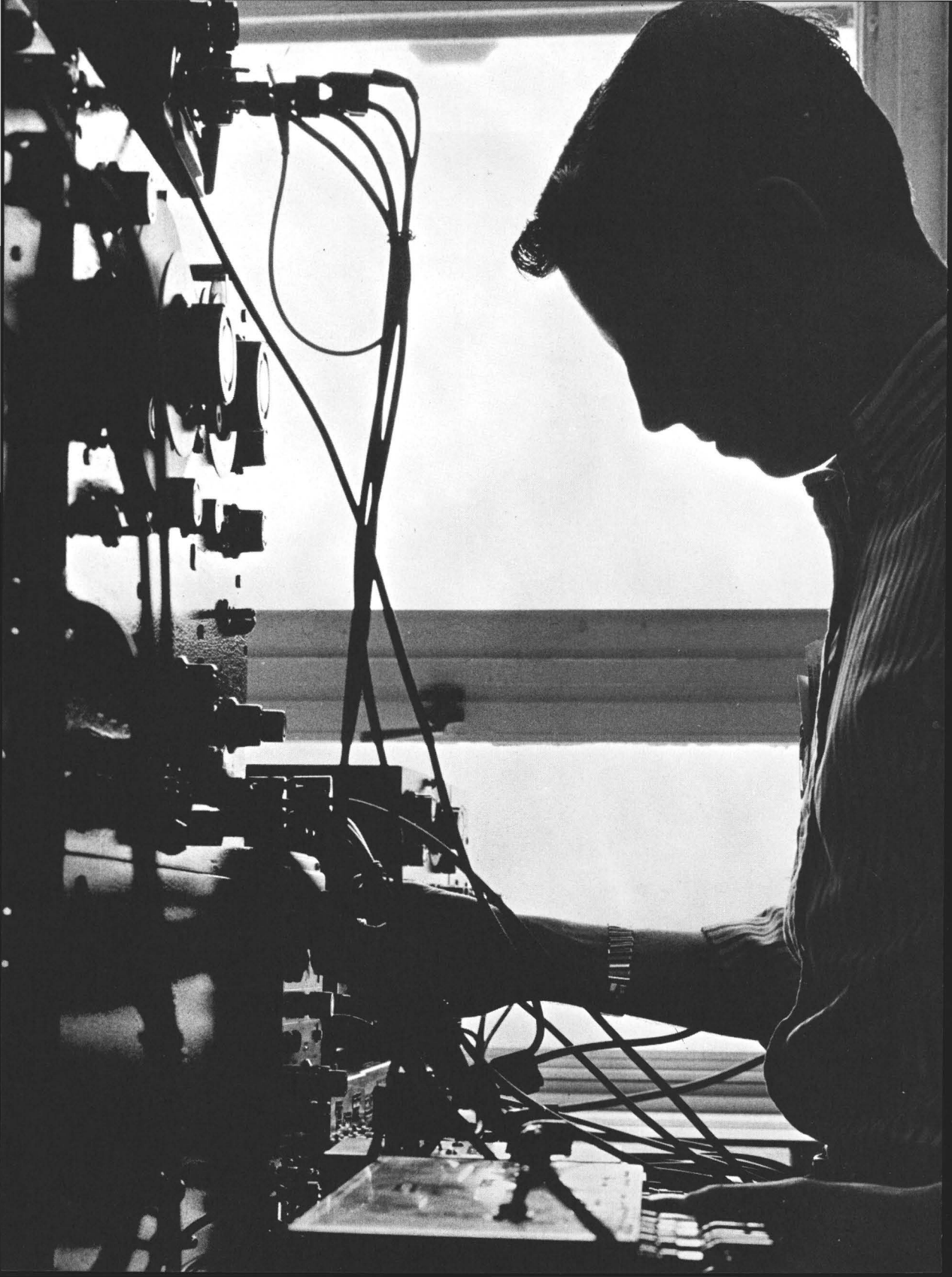*Spring, 3 credits*

WL 395.   The European Novel

Selected masterpieces of European fiction, such as the novels of Stendhal, Balzac, Dostoevsky, and Tolstoy.
Staff
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 101, 102, 106	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 requirements:
Non-Technical Elective: a course in the areas of the humanities, (except foreign language skill courses), and the social sciences. 6 credits are normally required in the sophomore year.

Technical Elective:

    a) an Engineering departmental elective course.

    b) an Engineering first-year graduate course open to undergraduates. A student wishing to take an Engineering graduate course must have a cumulative grade-point average of 3.00 or better, and the approval of the instructor. He should apply to the departmental office for information on the graduate courses currently open to undergraduates.

    c) a course from the physical sciences, biological sciences, and mathematics approved by individual petition to the Curriculum Committee of the College of Engineering. The petition should include a statement of the reason why the student cannot avail himself of an Open Elective to take the course.

6 credits are normally required in the senior year.

Open Elective: any course offered by the University for credit, at any level. 6 credits are normally required in the senior year. 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:

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*
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*

†ESG 151
 Graphic Arts 3
Chemistry 101 4
Mathematics 155 3
Physics 151 4
Elective (Non-Technical) .. 3

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        17

2nd Semester   *Credits*

ESG 161
 Mechanics I 3
†ESG 162
 Introduction to Digital
 Computers 3
Chemistry 102 3
Chemistry 106 1
Mathematics 156 3
*Elective (Non-Technical) . 3

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        16

Third Year

1st Semester   *Credits*

ESG 221 Applied Analysis I .. 3
ESG 251 Electrical Sciences I .. 3
ESG 232 Materials Science I .. 3
ESG 263 Mechanics II 3
ESG 201 Thermodynamics I .. 3
ESG 211
 Engineering Laboratory I .. 2

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        17

2nd Semester   *Credits*

ESG 222 Applied Analysis II . 3
ESG 252 Electrical Sciences II . 3
ESG 233 Materials Science II . 3
ESG 264 Mechanics III 3
ESG 212
 Engineering Laboratory II ... 4

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        16

Fourth Year

1st Semester   *Credits*

ESG 353 Electrical Sciences III 3
ESG 334 Materials Science III . 3
ESG 302 Thermodynamics II . 3
ESG 340 Engineering Design I 1
 Elective (Technical) 3
 *Elective (Open) 3

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        16

2nd Semester   *Credits*

ESG 323 Applied Analysis III . 3
ESG 305
 Heat and Mass Transfer 3
ESG 341
 Engineering Design II 5
 Elective (Technical) 3
 Elective (Open) 3

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        17

*May be reversed with permission of advisor.
†May be taken in either 1st or 2nd semester.

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 Materials Science
ESC: Courses offered by the Department of Mechanics

The numbering of courses will indicate the year in which they are normally taken:

100-150: freshman courses   301-399: senior courses
151-199: sophomore courses   501-699: graduate courses
201-299: junior courses

REQUIRED UNDERGRADUATE COURSES

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.
Six laboratory hours.
Prerequisite: None.
Fall and Spring, 3 credits each semester

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.
Spring, 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.

Two lecture hours, one laboratory hour.
Prerequisites: Sophomore standing and
Mathematics 102, 103.
Fall and Spring, 3 credits each semester

ESG 165. Introduction to Digital Computers

This course is the same as ESG 162, but with
applications appropriate to the social sciences.
For Social Science majors only.
Two lecture hours, one laboratory hour.
Prerequisites: Sophomore standing and
Mathematics 102, 103.
3 credits

ESG 201. Thermodynamics I

The absolute temperature and other thermodynamic variables, including the thermodynamic potentials, are used to describe systems in thermal equilibrium by considering their interrelationships as governed by the laws of classical thermodynamics. Applications to phase transformations, multi-component systems, and power cycles and engines are considered.
Prerequisites: Mathematics 156, Physics 151, Chemistry 102, 106.
Fall, 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.
Prerequisite: Junior standing.
Fall, 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.
Prerequisite: Engineering Laboratory I.
Spring, 4 credits

ESG 221. Applied Analysis I

Analogues; modeling 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.
Fall, 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.
Spring, 3 credits

ESG 232. Materials Science I: The Structure of Materials

The electronic structure of the atom, and its relationship to the binding forces in molecules and crystals is reviewed. Atom packing and crystal structures are studied, followed by a description of the nature and properties of imperfections in crystals. The general features of non-crystalline structures are considered, including glasses, polymers, and gels. Attention is next given to the structure of heterogeneous solids. Phase equilibrium in multicomponent systems, and structures resulting from phase transformations are studied. The basic principles of structural control of alloys, ceramics, and polymers by thermomechanical treatment are described. The essential features of composite materials are elucidated.
Prerequisites: Chemistry 101, 102.
Fall, 3 credits

ESG 233. Materials Science 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 semi-conductors, p-n junction theory, photoelectric, thermoelectric, magnetic and dielectric properties of matter.
Prerequisites: Physics 151, Materials Science I.
Spring, 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.
Fall and Spring, 3 credits each semester

ESG 263. Mechanics II: Mechanics of Solids

An introduction to the mechanics of deformable solids used in engineering structures. Topics include: three-dimensional and two-dimensional descriptions of stress; principal stresses; coordinate transformations using Cartesian tensors; displacements and strain; elastic stress-strain-temperature relations; stress equations of motion; equations of elasticity; 2-D compatibility equation; beam deformations due to bending and axial forces; statically indeterminate beams; elastic instability; introduction to viscoelastic and plastic behavior of solids.
Prerequisite: Mechanics I.
Corequisite: Applied Analysis I.
Fall, 3 credits

ESG 264. Mechanics III: Mechanics of Fluids

An introduction to the mechanics of fluids. Topics include: a review of Cartesian tensors and the description of stress; kinematic matters pertinent to fluid phenomena; the Euler equations with applications including statics and potential theory; constitutive equations; equations of motion of a Newtonian fluid, with applications.
Prerequisites: Mechanics II, Applied Analysis I.
Corequisite: Applied Analysis II.
Spring, 3 credits

ESG 302. Thermodynamics II

Review of the structure and stability of equilibrium states. Phenomenological theories of the structure and stability of non-equilibrium steady states. Statistical foundation of irreversible phenomena. Evaluation of the transport coefficients in gases, liquids, and solids. Introduction to transport phenomena with representative applications in reactive systems, in heat conductive, mass diffusive, and electrically conductive systems, and in systems with fluid flow.
Prerequisite: Thermodynamics I.
Fall, 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 analysis 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 application of the radiation flux equation for absorbing-emitting media.
Prerequisites: Mechanics III, Thermodynamics II.
Spring, 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 non-linear 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 non-linear differential equations. Use of the computer in applying these numerical techniques.
Prerequisite: Applied Analysis II.
Spring, 3 credits

ESG 334. Materials Science III: Phase Transformation and the Mechanical Properties of Materials

This course builds on the concepts presented in Materials Science I. Mechanisms of diffusion and phase transformations in solids and their relation to structure are studied. Oxidation and corrosion phenomena and the principles of oxidation and corrosion resistant materials are delineated. Attention is next turned to the mechanical properties of materials, considering the elasticity of crystals; anelasticity, plasticity, and dislocation theory; cohesive strength and fracture processes in solids. Strengthening mechanisms in solids are then studied with application to metals, ceramics, and polymers.
Prerequisite: Materials Science I.
Fall, 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.
Fall, 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.
*Spring, 5 credits*

ESG 353. Electrical Sciences III: Electromagnetic Theory

The fundamentals of electromagnetic theory. The topics include: elements of vector analysis, Maxwell's equations, relation between

lumped circuit and field concepts, quasi-static fields, interaction of fields with material media, motion of charged particles influenced by an electromagnetic field, relativistic transformations of field quantities, plane waves and radiation.

Prerequisites: Physics 151, Applied Analysis II.

Fall, 3 credits
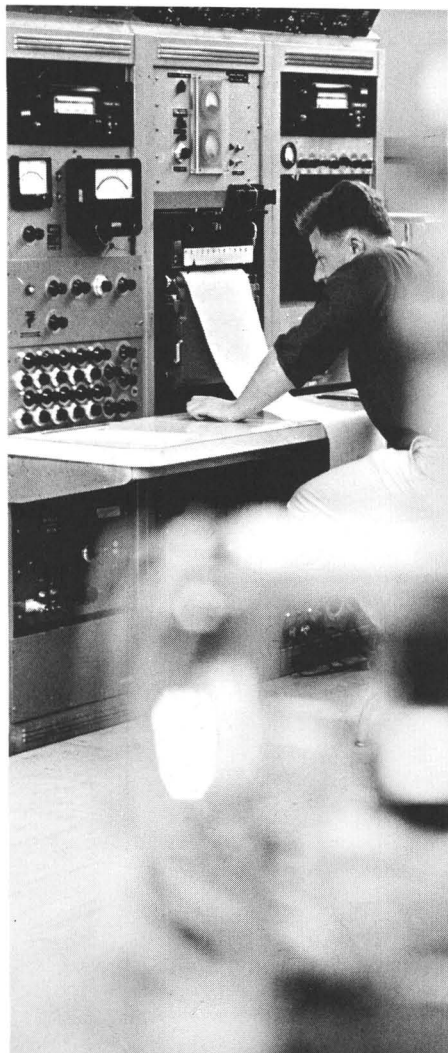
DEPARTMENT OF
APPLIED ANALYSIS

Professors: DANIEL DICKER, *AARON FINERMAN *(Director, Computing Center)*,
HERBERT L. GELERNTER, IRVING GERST *(Chairman)*, *ARMEN H.
ZEMANIAN
Associate Professors: EDWARD J. BELTRAMI, YUNG-MING CHEN, WALTER F. DENHAM,
MARTIN A. LEIBOWITZ, DAVID A. LEVINE, RAM P. SRIVASTAV, REGINALD
P. TEWARSON, DEVIKUMARA V. THAMPURAN, DANIEL H. TYCKO
Assistant Professor: ROY D. JOSEPH
Lecturer: REX G. FRANCIOTTI

DEPARTMENTAL ELECTIVES

ESA 301.   Research in Applied Analysis

A course which will give the student an opportunity to be involved in an independent research project with supervision by the faculty. Permission to register will require that the student have an average grade of B in his engineering courses and that he obtains the agreement of a faculty member to supervise the research. Only one Research elective (ESA 301, ESE 301, ESM 301, ESC 301) may be counted towards fulfillment of elective requirements.
3 credits

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 Applied 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 experimen-

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*On leave, academic year 1968-69.

tal designs, estimation of response relation-
ships, determination of optimum conditions.
Prerequisite: Applied Analysis I.
3 credits

ESA 330. Linear Programming

Formulation of linear programming models.
The Simplex Method and its variations. The
Duality Theorem. Sensitivity analysis. Solu-
tion of practical problems in blending, trans-
portation, etc. with the help of computer.
Prerequisites: Introduction to Digital Com-
puters, Applied Analysis I.
3 credits

ESA 335. Computer Organization and Programming

Logical basis of computer structure, machine
representation of number and characters,
flow of control, instruction codes, arithmetic
and logical operations, indexing and indirect
addressing, input-output, subroutines, link-
ages, macros, interpretive and assembly sys-
tems, pushdown stacks, and recent advances
in computer organization. Several computer
projects to illustrate basic concepts will be
incorporated.
Prerequisite: Introduction to Digital Com-
puters.
3 credits

ESA 340. Introduction to the Theory and Applications of Computers

Topics covered include: Introduction to the
notions of effective calculability and compu-
tability, Turing machines, representation of
information in a digital computer, axiomatic
development of Boolean algebra, digital com-
puter organization and logic, computer stor-
age, control, and input-output devices, on-
line data acquisition systems, information
display devices, image scanning and process-
ing systems, very large read-only memories
and information retrieval. Appropriate prob-
lems in engineering, physics, chemistry, and
biology will be discussed and analyzed.
Prerequisite: Computer Organization and
Programming.
3 credits

DEPARTMENT OF ELECTRICAL SCIENCES

Professors: SHELDON S. L. CHANG (*Chairman*), *RICHARD B. KIEBURTZ, VELIO A. MARSOCCI, GEORGE W. STROKE
Associate Professors: PETER M. DOLLARD, DAVID R. SMITH, DeFOREST L. TRAUTMAN, JR.
Assistant Professors: CHI-TSONG CHEN, GARY L. THOMAS, HANG-SHENG TUAN
Instructor: PATRICK E. BARRY

DEPARTMENTAL ELECTIVES

ESE 301. Research in Electrical Sciences

A course which will give the student an opportunity to be involved in an independent research project with supervision by the faculty. Permission to register will require that the student have an average grade of B in his engineering courses and that he obtains the agreement of a faculty member to supervise the research. Only one Research elective (ESA 301, ESE 301, ESM 301, ESC 301) may be counted towards fulfillment of elective requirements.
3 credits

ESE 310. Modern Circuit Theory

Matrix representation of circuits. Applications to filter and transmission lines and coaxial cables. Introduction of controlled sources to represent active elements. The concepts of linearity and reciprocity. Network theorems. Stability of active circuits. Transient response. Non-linear and time varying circuits. State variable representation.
Prerequisite: Electrical Sciences I.
3 credits

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*On leave, academic year 1968-69.

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 316. Digital Devices and Circuits

Survey of active switching devices, circuit models, large signal amplification, simple logic circuits, design of regenerative circuits, survey of storage devices, circuit systems of logic and design problems of circuit interconnection. Laboratory on construction and testing of simple circuits in latter half of semester.
Prerequisite: Electrical Sciences II.
3 credits

ESE 317. Digital Logic and Systems

The binary-numbers system and simple

codes. Switching algebra and its relation to logic and the algebra of sets. Analysis and synthesis of combinational networks, including partially specified functions, multiple outputs, symmetric functions and functional decomposition. Analysis and synthesis of sequential networks, including pulsed and d.c. operation, minimization, state assignment and elimination of races and hazards. Systems of logic, including counters, analog-digital converters, arithmetic units, feedback shift registers and code generators.
3 credits

ESE 320. Electromagnetic Waves and Antennas

Fundamentals of wave propagation and antenna theory, and applications to communications systems, radar, and radio astronomy. Some of the topics included are: radio waves in the ionosphere, guided wave propagation, transmission lines and waveguides, basic antenna theory, low-noise antennas, introduction to statistical electromagnetic theory, data-processing antenna arrays, radio astronomy antennas.
3 credits

ESE 330. Integrated Electronics

An introduction to semiconductor electronics leading to the characterization of various passive and active devices, with emphasis on integrated-electronic structures. Theory of p-n junctions, the operation of transistors; the characterization of integrated electronic elements, such as passive devices, diodes and transistors, in terms of equivalent circuits; the applications of these devices in active networks; linear amplifiers, switching characteristics of transistors, switching circuits.
Prerequisite: Electrical Sciences II.
3 credits

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   WILLIAM B. WHITTEN

DEPARTMENTAL ELECTIVES

ESM 301. Research in Materials Science

A course which will give the student an opportunity to be involved in an independent research project with supervision by the faculty. Permission to register will require that the student have an average grade of B in his engineering courses and that he obtains the agreement of a faculty member to supervise the research. Only one Research elective (ESA 301, ESE 301, ESM 301, ESC 301) may be counted towards fulfillment of elective requirements.
3 credits

ESM 325. Diffraction Techniques and the Structure of Solids

The structure of solids can be studied using X-ray, neutron and electron diffraction techniques. X-ray diffraction techniques are emphasized in this introductory course. Topics covered are: coherent and incoherent scattering of radiation, structure of crystalline and amorphous solids, stereographic projection and crystal orientation determination. The concept of reciprocal vector space is introduced early in the course and is used as a means of interpreting diffraction patterns. Laboratory work in X-ray diffraction is also included to illustrate the methods.
Prerequisite: Materials Science I.
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: Materials Science 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. Applications will be provided to bioastronautics, artificial organs, environmental control, man-

machine systems, and the stimulation 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: Materials Science I.
3 credits
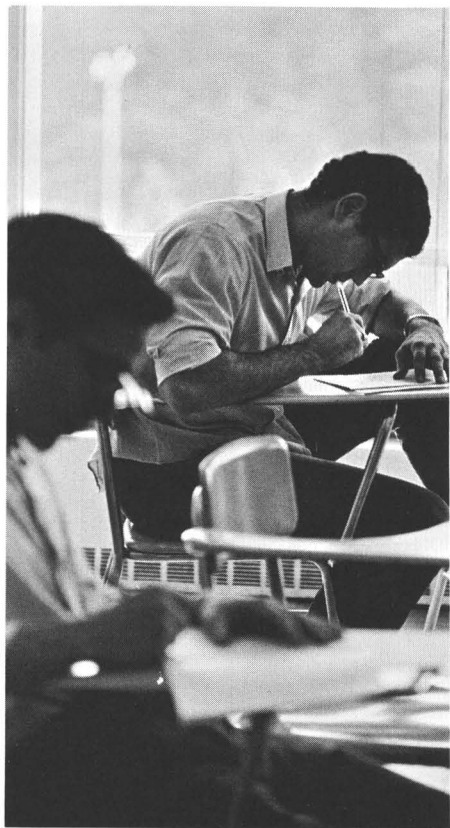
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Assistant Professors: FU-PEN CHIANG, STEWART M. HARRIS, JOHN T. HOGAN, PRASAD VARANASI, LIN-SHU WANG
Instructor: PHILLIP MIGHDOLL

DEPARTMENTAL ELECTIVES

ESC 301.   Research in Mechanics

A course which will give the student an opportunity to be involved in an independent research project with supervision by the faculty. Permission to register will require that the student have an average grade of B in his engineering courses and that he obtains the agreement of a faculty member to supervise the research. Only one Research elective (ESA 301, ESE 301, ESM 301, ESC 301) may be counted towards fulfillment of elective requirements.
3 credits

ESC 321.   Combustion Gasdynamics

Fundamentals of gasdynamics and chemical kinetics. Rankine-Hugoniot relations. Laminar and turbulent diffusion flames. Combustion in nozzle flow. Ignition, quenching and flammability limits. Combustion in boundary layer flow.
Prerequisite: Mechanics III.
3 credits

ESC 342.   Introduction to Experimental Stress Analysis

Elementary theory of elasticity, electrical and mechanical strain gauges, introduction to photoelasticity, and moire method. Brittle coating and analog methods. Application of different methods to the study of static and dynamic problems.
Prerequisite: Mechanics II.
3 credits

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 375.   Viscous Fluids

Constitutive equations of a viscous fluid, the stokesian fluid in simple shear and the Navier-Stokes equations. Exact solutions. Low Reynolds number behavior, lubrication theory and flow through porous media. Singular perturbation theory and applications. Asymptotic behavior at large Reynolds numbers including boundary layers, jets and wakes. Unsteady motions including the elements of laminar instability theory.
Prerequisite: Mechanics III.
3 credits

ESC 381.   Analysis of Structures

An introduction to the analysis of engineering structures subjected to mechanical and thermal loadings. Consideration is given to elastic, plastic and viscoelastic behavior of beams, bars, columns, and shells.
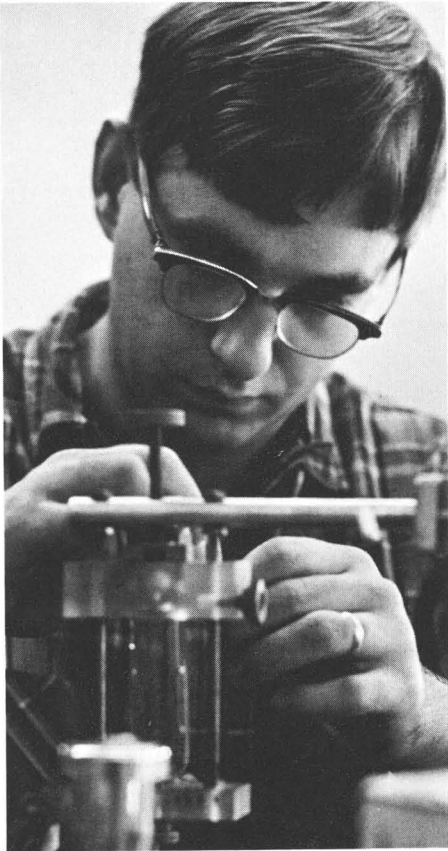Prerequisite: Mechanics II.
3 credits

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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STATE UNIVERSITY AT STONY BROOK	Council
	Officers of Administration
	Faculty
	Staff
CAMPUS MAP	
DIRECTIONS TO STONY BROOK	
STATE UNIVERSITY OF NEW YORK	General Description and Campuses

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*In the listings which follow, the memberships are those effective in the academic year 1967-68, unless explicitly noted otherwise.

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Quadrangle Director

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Senior Cataloger, Library

STATE UNIVERSITY OF NEW YORK

The State University of New York, established by the State Legislature in 1948, comprises 67 colleges and centers. At present, 57 conduct classes: four University Centers, two Medical Centers, ten Colleges of Arts and Science, seven Specialized Colleges, six two-year Agricultural and Technical Colleges and 28 locally-sponsored, two-year Community Colleges.

Three additional Colleges of Arts and Science are in varying stages of development. Two four-year campuses, in Nassau and Westchester Counties are now in early planning. The third campus as proposed in an amendment to the University's 1964 Master Plan, would be upper-divisional (junior-senior years) in concept and located in the Utica-Rome-Herkimer Area. Master's level programs will be offered at all three campuses.

The Trustees also have approved the establishment of seven additional community colleges. In varying stages of development, they are sponsored by Clinton, Columbia-Greene, Cortland-Tompkins, Essex-Franklin, Genesee, Herkimer and Ontario Counties.

State University further comprises the Ranger School, a division of the College of Forestry which offers a 43-week technical forestry program at Wanakena, and the Center for International Studies and World Affairs located at Oyster Bay.

The University offers four-year programs in many fields, including agriculture, business administration, ceramics, dentistry, engineering, forestry, home economics, industrial and labor relations, law, liberal arts and sciences, maritime service, medicine, nursing, pharmacy, professional museum work, public administration, social work, teacher education and veterinary medicine.

Its two-year programs include nursing and liberal arts transfer programs 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 12 of its campuses, and graduate work at the master's level at 24 campuses. The University 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."

CAMPUSES OF STATE UNIVERSITY OF NEW YORK

Office of the Chancellor, Thurlow Terrace, Albany, N.Y., 12201

UNIVERSITY CENTERS
State University at Albany
State University at Binghamton
State University at Buffalo
State University at Stony Brook

MEDICAL CENTERS
Downstate Medical Center at Brooklyn (New York City)
Upstate Medical Center at Syracuse

CAMPUSES OF STATE UNIVERSITY OF NEW YORK *(continued)*

COLLEGES OF ARTS AND SCIENCE
 College at Brockport   College at New Paltz
 College at Buffalo   College at Oneonta
 College at Cortland   College at Oswego
 College at Fredonia   College at Plattsburgh
 College at Geneseo   College at Potsdam
 (Three additional Colleges of Arts and Science are in varying stages of development. Two four-year campuses, in Westchester County at Purchase and in Nassau County at Old Westbury are under development. Old Westbury will admit its first students in limited numbers in September 1968. The third campus will be upper-division (junior-senior years) in concept and located in the Utica-Rome-Herkimer area. Master's level programs will be offered at all three campuses.)

SPECIALIZED COLLEGES
 College of Forestry at Syracuse University
 Maritime College at Fort Schuyler (Bronx)
 College of Ceramics at Alfred University
 College of Agriculture at Cornell University
 College of Home Economics at Cornell University
 School of Industrial and Labor Relations at Cornell University

AGRICULTURAL AND TECHNICAL COLLEGES (Two-year)
 Alfred   Delhi
 Canton   Farmingdale
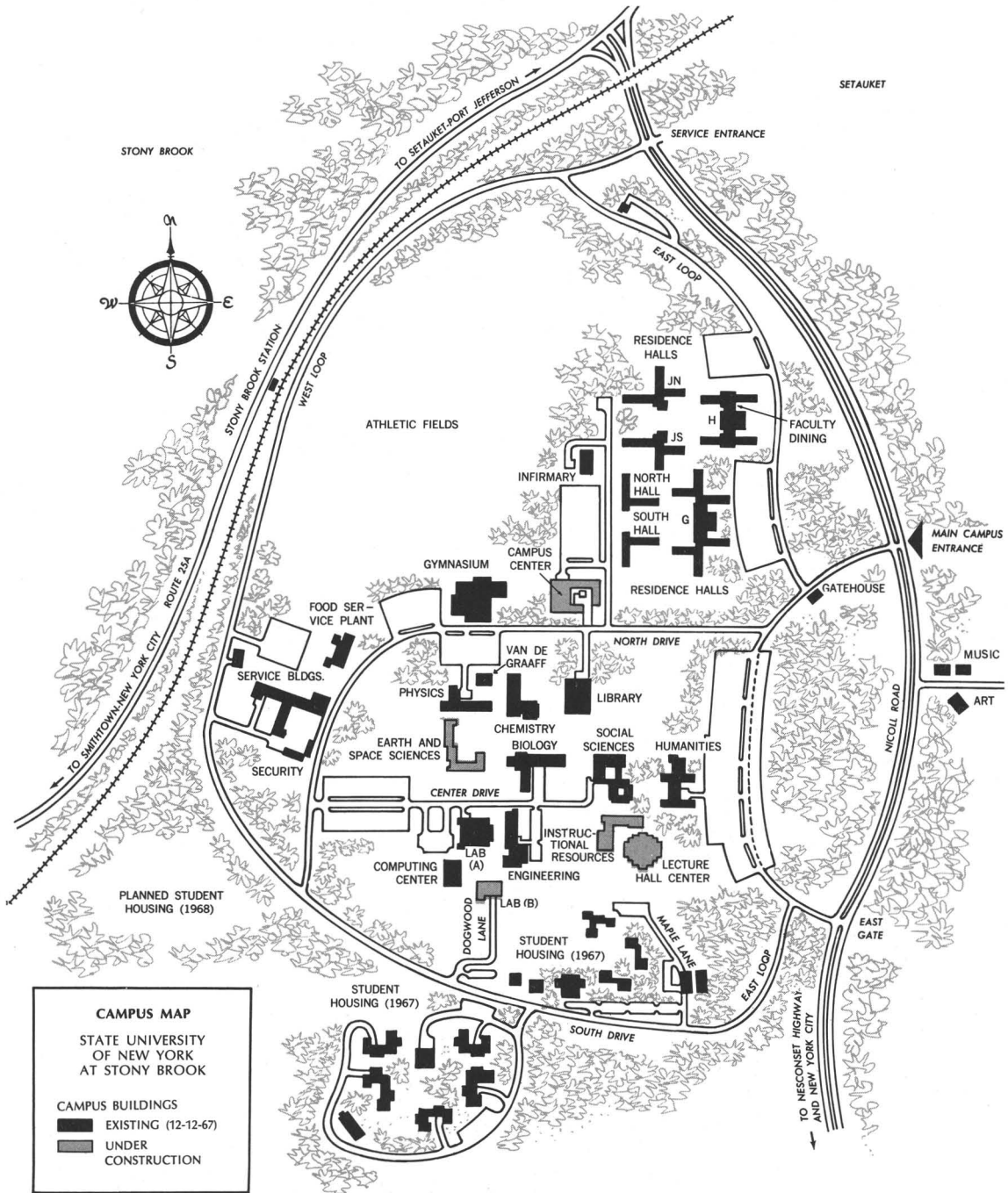 Cobleskill   Morrisville

COMMUNITY COLLEGES
 (Locally-sponsored, two-year colleges under the program of State University)
 Adirondack Community College at Glens 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
 Community College of the Finger Lakes at Canandaigua
 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
 Genesee Community College at Batavia
 Herkimer County Community College at Ilion
 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 Stone Ridge
 Westchester Community College at Valhalla

Five additional community colleges to be sponsored by Clinton, Columbia-Greene, Essex-Franklin (North County), Schenectady and Tompkins-Cortland Counties have been approved by the Board of Trustees and are in varying stages of development. Clinton and North Country plan to admit students in September 1968.
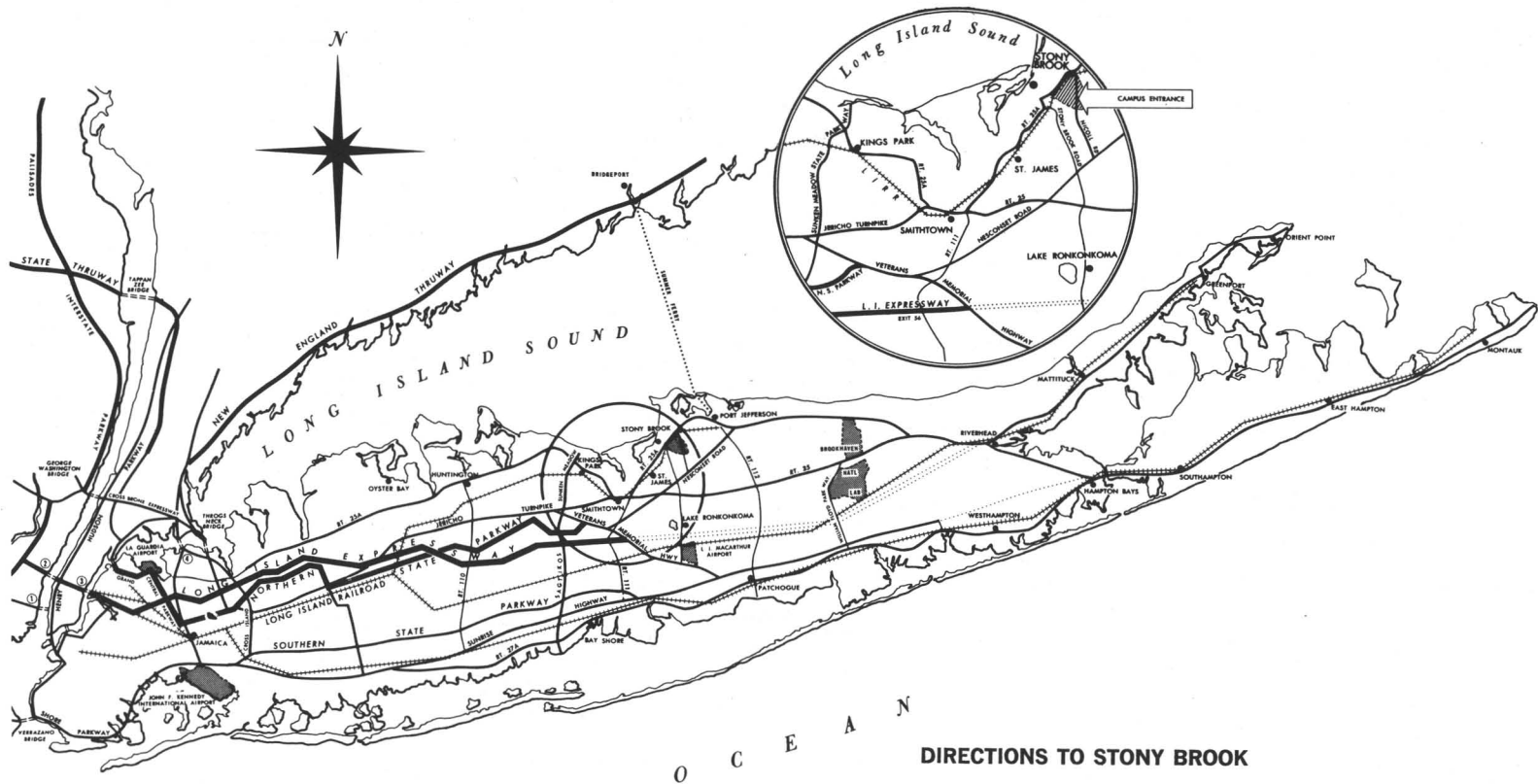
STONY BROOK

SETAUKET

TO SETAUKET-PORT JEFFERSON

SERVICE ENTRANCE

N
W E
S

STONY BROOK STATION

WEST LOOP

EAST LOOP

ATHLETIC FIELDS

RESIDENCE HALLS

JN

H

FACULTY DINING

JS

INFIRMARY

NORTH HALL

SOUTH HALL

G

MAIN CAMPUS ENTRANCE

GYMNASIUM

CAMPUS CENTER

RESIDENCE HALLS

GATEHOUSE

FOOD SER-VICE PLANT

VAN DE GRAAFF

NORTH DRIVE

MUSIC

SERVICE BLDGS.

PHYSICS

LIBRARY

ART

NICOLL ROAD

TO SMITHTOWN-NEW YORK CITY ROUTE 25A

EARTH AND SPACE SCIENCES

CHEMISTRY

BIOLOGY

SOCIAL SCIENCES

HUMANITIES

SECURITY

CENTER DRIVE

LAB (A)

INSTRUC-TIONAL RESOURCES

LECTURE HALL CENTER

COMPUTING CENTER

ENGINEERING

LAB (B)

PLANNED STUDENT HOUSING (1968)

DOGWOOD LANE

STUDENT HOUSING (1967)

MAPLE LANE

EAST GATE

EAST LOOP

STUDENT HOUSING (1967)

SOUTH DRIVE

TO NESCONSET HIGHWAY AND NEW YORK CITY

CAMPUS MAP

STATE UNIVERSITY OF NEW YORK AT STONY BROOK

CAMPUS BUILDINGS

EXISTING (12-12-67)

UNDER CONSTRUCTION

DIRECTIONS TO STONY BROOK

By automobile from west: Long Island Expressway to Exit 56. Left on Route 111 two miles to Nesconset-Port Jefferson Road (Smithtown By-pass). Right six miles to Nicoll Road. Left two miles to campus entrance.

By automobile from east: Nesconset Road or Route 25A to Nicoll Road. Right or left, respectively, to campus entrance.

By Long Island Railroad: Take Port Jefferson line from Pennsylvania Station (Manhattan) or Flatbush Avenue Station (Brooklyn). Change at Jamaica for remainder of trip to Stony Brook Station.